



Consumers' health-related perceptions of bread – Implications for labeling and health communication

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ABSTRACT

There is a wide variety of commercial bread types and the present study identifies potential pitfalls in consumer evaluations of bread from a health perspective. The aim is to describe consumers' health-related perceptions of bread by exploring which health-related quality attributes consumers associate with bread and whether there are differences with regard to age, gender and education level. A postal and web-based sequential mixed-mode survey ($n = 1134$, 62% responded online and 38% by paper) with open-ended questions and an elicitation task with pictures of commercial breads were used. Responses were content analyzed and inductively categorized. Three fourths ($n = 844$) knew of breads they considered healthy; these were most commonly described using terms such as “coarse,” “whole grain,” “fiber rich,” “sourdough,” “crisp,” “less sugar,” “dark,” “rye,” “seeds,” “a commercial brand,” “homemade” and “kernels.” The breads were perceived as healthy mainly because they “contain fiber,” are “good for the stomach,” have good “satiating” and beneficial “glycemic properties.” The frequency of several elicited attributes and health effects differed as a function of age group (18–44 vs. 45–80 years), gender and education level group (up to secondary education vs. university). Difficulties identifying healthy bread were perceived as a barrier for consumption especially among consumers with a lower education level. Several of the health effects important to consumers cannot be communicated on food packages and consumers must therefore use their own cues to identify these properties. This may lead to consumers being misled especially if a bread is labeled e.g., as a sourdough bread or a rye bread, despite a low content.

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1. Introduction

Health is an important dimension in consumers' overall quality perception of food products (Grunert, 2002). The healthiness of food is described as a credence quality dimension, as the consumer can evaluate it only to a limited degree after consumption (Steenkamp, 1990). This makes external sources of information important in forming consumers' health-related quality expectations about food products (Grunert, 2002). In Sweden, proponents of low carbohydrate diets have questioned the healthiness of carbohydrate-rich foods such as bread, which may have affected consumer perceptions (Gunnarsson & Elam, 2012). Exposure to contradictory nutritional health information has been associated with nutrition confusion and may undermine the success of healthy eating campaigns and interventions (Nagler, 2014). Bread is

nonetheless an important source of whole grain and fiber in the Swedish diet (Kyrø et al., 2012). However, like in many other countries, intake of both whole grain and fiber in Sweden do not meet the national recommendations (Amcoff et al., 2012). Lower intake of whole-grain bread among Swedish adults has been associated with a lower education level and younger age (18–45 years), and younger consumers have reported eating less bread overall (Sandvik, Kihlberg, Lindroos, Marklinder, & Nydahl, 2014). There is limited knowledge of whether health-related perceptions of bread vary among younger and older consumers as well as consumers with different educational levels. Gaining insight into consumer perceptions of healthy eating is valuable in assessing how health-promotion messages are interpreted and put into practice. But also, on how consumers may be misled when attempting to identify healthy food products.

In Sweden, bread is the individual food group contributing the most to the total energy intake, with a mean of 11 percent (Amcoff et al., 2012). From a nutritional perspective, there is a wide range of

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commercial breads due to the great variation in ingredients as well as rising and baking methods. Attributes suggested to be important for cereal products promoted as being healthy from a nutritional perspective are a high whole grain and dietary fiber content and a low salt, added sugar and saturated fat content. With regard to physiological functionality, cereal products should contribute prebiotic potential, increased gastrointestinal transit rate and fecal weight as well as promote satiety and a slow glycemic profile (Poutanen, Sozer, & Della Valle, 2014). Regarding bread, these physiological functionalities can be achieved in different ways. High fiber content is related to beneficial gastrointestinal effects (Anderson, Baird, & Davis, 2009) and can be achieved either by using fiber-rich cereals such as rye instead of wheat or by supplementing with bran or other fiber sources (Poutanen et al., 2014). The structure of the bread is important for satiety and is e.g. affected by the dietary fiber present in the grain (Isaksson, Fredriksson, Andersson, Olsson, & Åman, 2009). Moreover, sourdough fermentation, whole cereal kernels, a high rye content and soluble dietary fiber are examples of attributes that may positively affect the glycemic profile (Fardet, Leenhardt, Lioger, Scalbert, & Remesy, 2006; Liljeberg, Lönner, & Björck, 1995; Rosén et al., 2009). For consumers without a scientific background, the above-mentioned attributes may be difficult to understand, making it challenging for such consumers to identify healthy bread in a buying situation. Just as in other countries (Slavin, Tucker, Harriman, & Jonnalagadda, 2013), official national Swedish recommendations regarding bread consumption are to choose whole grain as well as Keyhole labeled products (NFA, 2015a). The Keyhole is a Nordic evaluative signpost label which indicate that the bread contains more whole grain and fiber and less sugar and salt (NFA, 2005, 2015b).

When forming health-related expectations about a food product prior to purchase, consumers may use intrinsic cues, i.e. the physical characteristics of the product, and extrinsic cues, i.e. packaging, price, brand and/or labels (Grunert, 2002). Although research has shown widespread interest among consumers in nutrition information on food packaging, responses to nutrition labeling, health symbols and nutrition and health claims have been studied largely in isolation from the rest of the package information (Lähteenmäki, 2015). The food packages “speak” to the consumer about the health-related and other quality attributes of the product. This is done through the semiotic cocktail that includes brand elements and signpost labels, food names, text, facts and figures, illustrations and other non-verbal elements (Smith, Clement, Møgelvang-Hansen, & Sørensen, 2011). Consumers encounter the packaging with their different backgrounds and knowledge, which are decisive in making sense of the visual cues, and cues other than those regulated by authorities may be associated with healthfulness in a given consumer's mind.

Several qualitative research studies have focused on consumer perceptions of healthy eating from an overall perspective (Bisogni, Jastran, Seligson, & Thompson, 2012). Overall perceived healthiness of selected meals has for example also been investigated by studying consumers' choices in a fake food buffet (Bucher, Müller, & Siegrist, 2015; Mötteli, Keller, Siegrist, Barbey, & Bucher, 2016). Gellynck, Kühne, Bockstaele, Van de Walle & Dewettnick (2009) investigated Belgian consumers' overall quality perceptions of bread. The consumers were segmented based on their perceptions but in all groups the majority of the respondents agreed to the statement that “little is known about the nutritional value of bread”. This study did not differentiate between different bread types and one health-related statement that the respondents answered were e.g., “Bread is good for the digestion.” In previous research consumers have rated overall perceived healthiness of different breads without packaging (Bucher et al., 2015; Sandvik,

Nydahl, Marklinder, Naes, & Kihlberg, 2017). Consumers were shown to differentiate between bread types and when associating their ratings to sensory descriptions of the bread samples, dark brown color, compact texture and sour flavor was shown to be associated with perceived overall healthiness (Sandvik et al., 2017). In the present study, consumer perceptions of health-related bread quality are further investigated, giving insight into the pre-existing knowledge that consumers use when making sense of different breads and packages, for example in the shopping situation. This knowledge can help in identifying the potential pitfalls in consumer evaluations of bread from a health perspective.

The aim of the present study is to describe consumers' health-related perceptions of bread by exploring which health-related quality attributes consumers associate with bread and whether consumer perceptions differ as a function of age, gender and education level.

2. Materials and method

A total of 3000 subjects aged 18–80 years, chosen by random selection from the national population address register, received a postal invitation to participate in a web-based survey. Non respondents thereafter received an identical postal questionnaire and data were thereby collected in a web-based and a postal sequential mixed-mode survey (De Leeuw, 2005). The ambition was for most of the questionnaires to be completed online, enabling both financial and environmental savings. Every postal invitation included a unique code that was registered upon initiation of the survey response session. Fig. 1 shows the data collection procedure.

The survey was part of a larger study investigating consumer perceptions of bread and the present study focuses on the perceived healthiness of bread. First and foremost, open-ended questions were used to explore consumers' health-related perceptions of bread; it is these perceptions that are analyzed in the present paper. The goal of this approach is to try to understand how consumers respond without the assisted recall provided by a set of predetermined response alternatives (Perreault & Leigh, 1989). The approach has previously been used to study consumer perceptions of different foods (e.g., Hough & Ferraris, 2010; Péneau, Linke, Escher, & Nuessli, 2009; Symoneaux, Galmarini, & Mehinagic, 2012). The following questions were included to explore whether the respondents differentiate between bread types from a health perspective, which bread types are perceived as healthy and which health effects are most well-known: *Are you aware of bread that, in your opinion, is good for health? If yes, which type of bread are you thinking of? And in what way is it, in your opinion, good for health?*

Attribute elicitation (Bech-Larsen & Nielsen, 1999), based on pictures of commercial breads, was used to further explore which product properties were important in evoking expectations of health-related bread quality. Pictures of six commercial breads were shown, both with and without their packaging. The back-of-package information (ingredient list in descending order and nutrients; energy, protein, carbohydrates, sugars, fat, saturated fat, fiber and sodium) was also available to the respondents by clicking a separate link in the online survey or by looking on the back of the paper version. In store, consumers must pick up the specific product to read the back-of-package information. Thus, to increase the validity, respondents were required to take an extra step to access this information. All six breads were produced by major national bakeries and available throughout the country. The breads (A–F) were selected to achieve variation in the factors whole grain, cereal type, sugar content and fermentation method. Sample A (Frökusar, Fazer AB) and F (Äntligen Toast, Pågen AB) could be described as modern bread types, A: a roll made with spelt and sunflower seeds and F: a white wheat toast bread with added

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