



# The influence of product- and person-related factors on consumer hedonic responses to soy products



Anna Fenko\*, Birte W. Backhaus, Joris J. van Hoof

University of Twente, The Netherlands

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## ABSTRACT

Consumers in Western countries increasingly appreciate health benefits of soy products. However, several barriers prevent full acceptance of these products. This study investigates the effects of product-related factors (perceived familiarity and expected healthiness) and person-related factors (food neophobia and health interest) on consumer hedonic responses to various soy products. In the pre-study, 48 German-speaking participants assessed the perceived familiarity, healthiness and tastiness for 21 soy products. In the main study, four soy products that differed in familiarity and healthiness were presented to German consumers ( $n = 327$ ) as images supplemented by product names and slogans stressing either health or taste benefits. Participants rated their attitudes towards the product, product liking, taste expectations and willingness to try the products in a 2 (familiar or unfamiliar products)  $\times$  2 (healthy or tasty products)  $\times$  2 (low or high food neophobia) between-subject design. As hypothesized, neophilic consumers showed more positive responses to soy products compared to neophobic consumers. Neophobics showed more positive responses to familiar soy products, whereas the responses of neophiles were not influenced by product familiarity. Health interest positively influenced the willingness to try soy products. However, the effect of healthiness manipulation on hedonic responses to experimental products was not significant. The results of the study suggest that perceived familiarity might be more important for acceptance of soy products than expected healthiness. Successful marketing strategies for soy products should target neophobic consumers by increasing the level of familiarity of soy foods.

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## Introduction

Soybeans are traditionally used for food production in many East and South-East Asian countries, where they are popular and valued for their taste and health benefits (Tu, Hussen, Sutan, Ha, & Valentin, 2012). In contrast, soy foods just recently received attention in Western countries due to their health benefits. Consumption of soy may be related to the prevention of osteoporosis, lowering of menopausal symptoms, anticarcinogenic effects, protective effects against obesity, fighting heart diseases and reduction of harmful cholesterol (Barnes, 1998; D'Adamo & Sahin, 2014; Friedman & Brandon, 2001; Nagata, Takatsuka, Kawakami, & Shimizu, 2001; Parthasarathy, 1998). Replacing consumption of animal protein (e.g., meat, milk, eggs) with soy protein comes along with positive health impacts, like a reduced chronic disease risk and a lower overall mortality (Fleddermann et al., 2013;

Messina, 2010). Such a dietary shift would lead to public health gains and environmental benefits (Meier et al., 2014; Westhoek et al., 2014).

In the last decade, Western consumers are recognizing health benefits of soy-based products (Granato, Branco, Nazzaro, Cruz, & Faria, 2010; Wansink, Park, Sonka, & Morganosky, 2000; Worsley, Wahlqvist, Dalais, & Savage, 2002). However, the consumption of soy-based products is not increasing at the same speed as the health awareness related to soy foods (Rah, Hasler, Painter, & Chapman-Novakofski, 2004).

Different factors influence consumer responses to soy products, including taste perception (Roininen, 2001; Wansink & Chan, 2004;), health benefits (Chang, Moon, & Balasubramanian, 2012; Moon, Balasubramanian, & Rimal, 2011), product familiarity (Martins & Pliner, 2005; Schyver & Smith, 2005), and personal factors (Choe & Cho, 2011; Hoek et al., 2011). The aim of the present study is to investigate the relative effect of product-related factors (perceived familiarity and expected healthiness) and person-related factors (food neophobia and health interest) on hedonic responses to soy products among Western consumers.

\* Corresponding author at: Universiteit Twente, Postbus 217, 7500 AE Enschede, The Netherlands. Tel.: +31 (0)53 489 2157.

E-mail address: [a.fenko@utwente.nl](mailto:a.fenko@utwente.nl) (A. Fenko).

### Health-taste trade-off

A negative taste perception has been identified as one of the main barriers to soy acceptance (Tu et al., 2012). Expected taste is the dominant factor driving soy acceptance (Chang et al., 2012; Roininen, 2001; Wansink & Chan, 2004). Soy-based food products, like many healthy food choices, are often perceived as having a bad taste (Gulseven & Wohlgenant, 2014; Wansink et al., 2000; Yeu, Lee, & Lee, 2008). The mere mentioning of soy on a product package influences taste perceptions negatively in Western societies (Wansink et al., 2000). People dislike the taste of products presumably containing soy even if the product does not actually contain any soy (Wansink, 2003).

Healthy foods are overall expected to have an unpleasant taste (Wansink & Chan, 2004). This phenomenon has been referred to as ‘unhealthy = tasty intuition’ (Raghunathan, Naylor, & Hoyer, 2006) or “health-pleasure trade-off” (Kümpel Nørgaard & Brunso, 2009). Several studies demonstrate that perceived healthiness of products has an adverse effect on consumers’ taste expectations and taste perceptions. For instance, unhealthy crackers that were labeled as high in sugar and fat were expected to taste better than healthy crackers (Raghunathan et al., 2006). Consumers also perceived the taste of an unfamiliar Indian drink (Mango Lassi) more positively when the drink was introduced as “unhealthy” rather than “healthy” (Raghunathan et al., 2006). The taste of the chicken soup was perceived more negatively when health labels informing about reduced salt content were placed on the front of soup packages (Liem, Aydin, & Zandstra, 2012). As a result, a large amount of consumers consider tastefulness and healthfulness as incompatible attributes (Keller, Sternthal, & Tybout, 2002). Studies have shown that consumers are not willing to compromise on taste for health. For instance, health remains secondary to taste in the selection of corn chips (Tepper & Trail, 1998) and functional foods (Verbeke, 2006).

Soy products may differ in their perceived healthiness. Therefore, we suggest the following hypothesis:

*H<sub>1</sub>: Hedonic responses to soy products that are perceived as healthy are less positive compared to soy products that are perceived as unhealthy.*

### Product familiarity and food neophobia

Other barriers to soy acceptance include the lack of familiarity with soy foods and their preparation process in Western countries (Martins & Pliner, 2005; Schyver & Smith, 2005). In a comparative study of French and Vietnamese consumers’ beliefs about soy-based foods, Vietnamese consumers perceived soy as a traditional product in their diet and liked its taste due to the habitual consumption from an early age on (Tu et al., 2012). French consumers had a negative attitude towards soy-based products because soy is still an unfamiliar diet component in Europe. Key barriers to consumer acceptance of meat replacement are the unfamiliarity the lower sensory attractiveness of substitutes compared to meat (Hoek et al., 2011).

Familiarity with novel foods has been seen as a possible promoter of a successful introduction of novel foods in the market (de Barcellos, Aguiar, Ferreira, & Vieira, 2009). Repeated exposure to products in which salt was replaced with naturally brewed soy sauce had positive effect on product liking (Kremer, Shimojo, Holthuysen, Köster, & Mojet, 2013). Therefore, we propose the following hypothesis:

*H<sub>2</sub>: Hedonic responses to soy products that are perceived as familiar are more positive than to soy products that are perceived as unfamiliar.*

The reluctance or unwillingness to consume unfamiliar food products has been defined as food neophobia (Pliner & Hobden, 1992). Food neophobics show the tendency to reject and avoid unfamiliar foods without even tasting them (Heath, Houston-Price, & Kennedy, 2011), while food neophilics enjoy trying unknown foods (Henriques, King, & Meiselman, 2009; Schickenberg, 2010). Food neophobia has been shown to influence the willingness to try unfamiliar ethnic foods (Choe & Cho, 2011) and consumer acceptance of soy meat substitutes (Hoek et al., 2011). Food neophobia also influences the level to which a consumer dislikes unfamiliar food (Knaapila et al., 2007; Pliner & Hobden, 1992). Neophobics tend to be more pessimistic in their expected liking of an unfamiliar food (Fenko, Leufkens, & van Hoof, 2015; Henriques et al., 2009) and have lower hedonic responses to the unknown food product than food neophilics (i.e., Barrena & Sanchez, 2013; Veeck, 2010; Arvola, Lahteenmaki, & Tuorila, 1999).

Since soy products are mostly perceived as unfamiliar in Western countries, we suggest the following hypothesis:

*H<sub>3</sub>: Food neophobics show less positive hedonic responses to soy foods compared to food neophilics.*

Not all soy products on the Western market are perceived as unfamiliar. Some soy foods, such as soy sauce and soymilk, have been already introduced decades ago and have been massively promoted by food manufacturers (Tu et al., 2012). Familiarity with soy products may increase product acceptance in neophobics, leading to the following hypotheses:

*H<sub>4</sub>: Food neophobics show more positive hedonic responses to familiar soy products compared to unfamiliar soy products.*

### Health benefits and health interest

The perceived health benefits of soy have found to significantly influence the likelihood and frequency of soy consumption (Tu et al., 2012). Consumers who have a more elaborate knowledge of soy’s health benefits perceive soy to be useful in weight management, the reduction of heart diseases and the fight against some types of cancer (Granato et al., 2010). However, specific health benefits of soy products are still unknown to many consumers. For instance, consumers do not recognize the link between soy protein and the healthfulness of soy products (Chang et al., 2012).

The awareness of health benefits of soy may be beneficial for the acceptance of soy products (Chang et al., 2012; Wansink et al., 2000). However, only individuals who consider healthy eating to be important for them are willing to change their diet in response to information about health benefits of a product (McFarlane & Pliner, 1997). General health interest (Roininen, Lähteenmäki, & Tuorila, 1999) was found to be a good predictor of dietary behavior (Zandstra, de Graaf, & Van Staveren, 2001).

Soy labels have been found to negatively influence on taste-oriented consumers, but positively influence health-oriented individuals (Wansink et al., 2000). Similarly, individuals who held positive attitudes towards a reduced fat spreads judged the margarine as more tasty when the same margarine was labeled as “reduced fat” compared to “full fat” (Aaron, Mela, & Evans, 1994). Therefore, health motives seem to influence food acceptance. We suggest the following hypothesis:

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