

Nutritional claims and framing effect: how does the way of communication impact on the product perception?

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Cristina Zerbini - Donata Tania Vergura - Beatrice Luceri
Guido Cristini

Abstract

Framing of the research. The paper falls within the literature concerning food claims and the framing effect theory, expanding knowledge on the topic.

Purpose of the paper. The research tested the effectiveness of alternative ways of communicating the same information (the absence of added sugars in the product) through nutritional claims. Their impact on consumer perceptions was explored in terms of perceived healthiness, perceived quality, attitude toward the product, purchase intention, and willingness to pay.

Methodology. Images of fruit juice bottle were used as a stimulus and two versions of the pack were created: one with negative claim “no added sugar” and one with positive claim “only fruit sugars”. Data were collected by means of a web survey for a total of 122 completed questionnaires.

Results. Results demonstrated the greatest effectiveness on consumer perception of the claim with positive frame compared to the claim with negative frame.

Research limitations. The research investigated a single product category (fruit juices) and a single ingredient (sugar). More stimuli should be considered.

Managerial implications. The results offer useful information to food companies about the way of communication through product packaging and, in particular, through nutritional claims.

Originality of the paper. The paper analyzes two types of labels that have never been studied in the literature, extending the knowledge in the context of the framing effect theory with reference to nutritional claims.

Key words: nutritional claim; sugar claim; framing effect theory; packaging; product perception; consumer behavior.

1. Introduction

Packaging is becoming an increasingly important part of the product (Underwood *et al.*, 2001; Underwood, 2003) thanks to its ability to create identity and differentiation, to develop promotional activities, and to communicate with consumers. Among the elements that compose it, food claims are recognized as means of communication (van Trijp and van der Lans, 2007) to inform consumers about a) a particular nutritional characteristic of the product like “content claim” (e.g., “sugar-free”, “no

palm oil”) or “comparative claim” (e.g., “reduced sugar”, “more fibers”) (Bul and Brouns, 2015; Mayhew *et al.*, 2016; Vergura *et al.*, 2019); b) a relationship between product and health like “health claim” (e.g., “calcium may help improve bone density”, “in line with a heart-healthy diet”).

Nutrient content claim (or nutrition claim) is “any claim that states, suggests or implies that a food has particular beneficial nutritional properties due to the energy, *Nutrients* or other substances it contains, contains in reduced or increased proportions or does not contain” (European Commission, 2006). It represents a packaging cue useful to aid consumers in food choice and to guide them to healthier food (Kaur *et al.*, 2017; Kristal *et al.*, 1998; Talati *et al.*, 2017). Otherwise expressed, nutrition claims may modulate the consumers’ perception and behavior toward the product (Prada *et al.*, 2021). Since healthy diet has become crucial for people’s wellbeing (Ares *et al.*, 2014), the relevance of claim on product packaging increases, both for consumers and industries (Bech-Larsen and Scholderer, 2007; Kreuter *et al.*, 1997; Perez-Escamilla & Haldeman, 2002). Hieke *et al.* (2016) found that in the European context around 26% of pre-packaged foods had a healthy or nutritional claim. In addition, the health value importance of consumers when making food buying decisions intensified during the Covid19 pandemic and its related restrictions periods (Smiglak-Krajewska and Wojciechowska-Solis, 2021). In particular, Jribi *et al.* (2021) highlighted that the pandemic condition enhanced consumers’ interests to food product labels.

However, Anastasiou *et al.* (2019) have shown that the effectiveness of claims depends on the correct interpretation and understanding of the information provided by the consumer. Unfortunately, this does not always happen (Campos, 2011). For instance, similar claims, such as “reduced fat” and “low fat”, may not be distinguished (Levy and Fein, 1998); a product with a “low cholesterol” claim may be perceived as low in fat (Reid and Hendricks, 1994); contextually, potentially negative product attributes (e.g., high fat) can be hidden by claims that enhance some positive elements (e.g., with fibers) (Wellard *et al.*, 2015).

In general, when a product has a food claim on its packaging, consumers tend to perceive it more positively than it actually is; this is the positivity bias of the so-called “magic bullet” effect (Roe *et al.*, 1999; Williams, 2005). Therefore, a product with a claim will be judged more positively than one without. And, if the positive perception deriving from the claim on a specific ingredient is generalized to other characteristics/elements of the product, we are also dealing with the “halo effect”, that is an overgeneralization effect (Chandon *et al.*, 2007). Thus, for food claims to be truly effective, a supportive educational environment for consumers is needed (Lawrence and Germov, 2004).

The “framing effect” ranks among the range of effects which influence the claim efficacy and the product perception by consumers. Specifically, it refers to the way of presentation of problem, information, or choice options, thus shaping the consumer’s decision-making process. According to framing literature, negative information tends to attract more attention than positive one (Baglione *et al.*, 2012; Hoefkens *et al.*, 2011; van Kleef *et al.*, 2005) and has a stronger impact on consumer behavior (Verbeke and

Ward, 2001). This happens because, as explained in the Prospect Theory by Kahneman and Tversky (2013) people tend to avoid a possible loss compared to achieving a possible gain; therefore, a negative framing has more impact than a positive one.

Regarding food claim, it can be framed as either avoiding a negative or gaining a positive outcome (Broemer, 2004). For instance, the same benefit can be communicated as a disease risk reduction (e.g., reduction of cardiovascular risk) or as a health enhancement (e.g., safeguards cardiovascular health). If, according to the Prospect Theory, people demonstrate greater preferences for nutrition and health claims when outcomes are expressed as possible losses than as possible gains (Levin, 1998); by contrast, the Regulatory Focus Theory (Higgins, 1997) argues that there are individual differences in the effect of framing, depending on whether the focus is on promotion or on prevention. This is why the results about claim's framing effect are still inconclusive.

In this study we explore nutritional claims in order to understand how effectively they communicate the absence of added sugars in a product. In particular, the research carried out intends to compare two different claims that convey the same information, but in two different frames: "no added sugar" vs "only fruit sugars".

To our knowledge, there are no studies in literature that have investigated the effects generated by these types of food claims on the consumer's perception of the product and on their purchasing decisions. Filling the gap in the existing knowledge, we look into consumer perceptions in terms of perceived healthiness, perceived quality, attitude toward the product, purchase intention, and willingness to pay.

The results offer relevant insights to food industries on how to communicate product characteristics through nutritional claims and contribute to the advancement of knowledge in the food claim literature.

The paper is organized as follows. The next section reviews the relevant literature and formulates the research question. In the "Method" section the research design, the material used as a stimulus and the data collection procedure are explained. The subsequent sections present the study results and discussions, highlighting theoretical and managerial implications and suggestions for further research.

2. Literature review and research question

2.1 Framing effect on food claims

Although the literature on the framing effect is consolidated, in the context of food claims the results of prior research are often inconsistent.

In the Levin's well-known study (Levin, 1998), meat's attribute conveyed in a positive framing ("75% lean meat") generated more positive product evaluations compared to an equivalent negative framing ("only 25% fat"). However, according to Van Kleef *et al.* (2005), the effects of framing vary depending on the type of outcome/attribute communicated by the claim and on the specific context. In addition, if the claim with reduction disease

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risk determines higher purchase intention respect to claim with function health, there are no effects on appeal, credibility, and ability to convince. The evidence that framing effect depends on the type of outcome/attribute has also been proven by qualitative studies (FSA, 2002; Svederberg, 2002).

Although the direction of the framing effect in the claim topic is not established, it is certain that the way the information is presented affects the perception and behavior of the consumer. Therefore, it is interesting to deepen the knowledge in this area to understand how different claims, that report the same information, influence the consumers' decision-making process.

2.2 Sugar-related claims

Excessive sugar intake is harmful to health behavior associated with low-quality diets and obesity (WORLD HEALTH ORGANIZATION, 2003; He *et al.*, 2018; Johnson *et al.*, 2009); this is why it must be kept under control and avoided as much as possible. To answer this problem, the food industry has begun to replace sugar in products, at first, with artificial sweeteners (e.g., saccharine, aspartame), and more recently, with natural sweeteners (e.g., stevia, thaumatin).

How does the consumer react to this change?

Realini *et al.* (2014) stated that the use of stevia in beverages is a better option compared to the no-added sugar option: the improved health benefits generated by the total elimination of sugar do not seem to be able to compensate the worsening in consumers' perceived taste. Natural sweeteners, instead, evoke sweet taste or enhance the perception of sweet taste. Contextually, Kamarulzaman *et al.* (2014) revealed that consumers were willing to consume products with stevia as a substitute for sugar.

However, many people believe that when a product is made healthier by changing its ingredients, its sensory characteristics are negatively affected (Lähtenmäki *et al.*, 2010, Nørgaard and Brunsø, 2009, Raghunathan *et al.*, 2006). This has also been demonstrated with reference to perceived taste: as the healthiness of the product increases, the perceived taste decreases (Bialkova *et al.*, 2016, Fenko *et al.*, 2016). This is why the sugar reduction or replacement by sweeteners can decrease consumer hedonic perception (Raghunathan *et al.*, 2006). Prada *et al.* (2021) demonstrated that when a product had a sugar-related claim it was evaluated as healthier, less caloric, and less tasty compared to the regular counterpart. These evidences explain why consumers tend to prefer conventional products compared to their sugar-reduced alternatives (Markey *et al.*, 2015).

2.3 Research question and measured variables

Despite the results of several studies that highlight the preference of conventional products (with sugar), the food industry continues to reduce or eliminate sugar from products, in order to improve the health and well-being of the population. This is why it is so important to understand how to effectively communicate to the consumer the absence of sugar in the product, without affecting their perceptions and propensity to buy it.

Therefore, the proposed paper aims to answer this question:

“How does the different way of communicating the absence of added sugars in the product affect consumers’ perceptions and their behavioral intention?”

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In particular, since some food industries that produce fruit-based products have decided to sweeten them through fruit sugars instead of added sugars, our study intends to test two types of claims communicating the absence of the latter to evaluate their impact on consumer decision-making. The claims tested are: “no added sugar” vs “only fruit sugars”. Referring back to the framing effect, the first is a negative claim, which communicates the total absence of an ingredient; the second one has a positive value as it refers to an ingredient present in the product.

In order to answer the research question, the following variables were considered: perceived healthiness, perceived quality, attitude toward the product, purchase intention, and willingness to pay.

Perceived healthiness is defined as “an individual’s perception that a specific food product will positively contribute to one’s health” (Iles *et al.*, 2018). It is influenced by different factors: type of raw materials, product origin, conservation method, packaging, and so on. (Bonner and Nelson, 1985; Poulsen, 1999). In turn, perceived healthiness acts on eating patterns (Paquette, 2005). Foods can be considered as healthy or unhealthy (Carels *et al.*, 2006; Carels *et al.*, 2007) based, for example, on some stereotypical beliefs connected to their names (Oakes, 2006), or on their perceived fat content (Carels *et al.*, 2006). This categorization may bias estimations of caloric content of products (Carels *et al.*, 2006, Carels *et al.*, 2007): “healthy” foods were perceived as low caloric compared to “unhealthy” foods.

Perceived product quality has been defined as the consumer’s judgment about a product’s overall excellence or superiority (Anselmsson *et al.*, 2007); it is a global assessment characterized by a high abstraction level (Zeithaml, 1988). According to Dodds *et al.* (1991), perceived product quality represents a mediator between extrinsic cues and perceived consumer value. The packaging and its elements (e.g., labels and claims) figure among the product’s extrinsic cues.

Attitude is a psychological tendency, an index of the degree to which a person has a favorable or unfavorable evaluation toward an object - a subject, an event, a behavior (Ajzen and Fishbein, 2005). Therefore, it reflects a person’s evaluation (Ajzen and Fishbein, 1977) and plays a crucial role in determining intentions and behaviors (Dabholkar, 1994). Attitude derives from consumer beliefs, experiences and stimuli assessment, marketing stimuli included (Bagozzi, 1986; Wang and Heitmeyer, 2006), such as packaging.

Finally, choice behavior is operationalized as purchase intention and willingness to pay. Purchase intention, one of the main constructs studied in the marketing literature (Tsotsou, 2006), represents the principal direct antecedent of actual behavior. Contextually, willingness to pay, the maximum price a buyer accepts to pay for a product (Kalish and Nelson, 1991; Kohli and Mahajan, 1991; Wertenbroch and Skiera, 2002), affects

3. Methods

In the present research, images of fruit juice bottle were used as stimuli. Two versions of the pack were created: one with negative claim (“no added sugar”) and one with positive claim (“only fruit sugars”). To avoid any influence deriving from consumers’ familiarity with the product, the bottles created did not correspond to products available on the market, and the brand used was fictional (Fig. 1).

Data was collected by means of a web survey by posting the questionnaire link on various social network pages. Respondents were equally and randomly distributed among the two experimental conditions and, after viewing the stimulus image, they answered the questions. In total, 122 questionnaires were collected: 61 for “no added sugar” claim and 61 for “only fruit sugar” claim.

Research’s latent variables were measured using scales that have been well validated in the literature (Tab. 1). The three semantic differential scale of Bui *et al.* (2013) was used to assess perceived healthiness. The perceived product quality was measured through the four-items of Dodds *et al.* (1991) scale and the attitude toward the product through a set of three bipolar adjectives of Muehling *et al.* (1991). Questions measuring purchase intention were adaptations of the four-item scale proposed by Kaushal *et al.* (2016) and willingness to pay was collected through the three-item scale developed by Konuk *et al.* (2019). All statements were on a seven-point semantic differential/anchored (from “completely disagree” to “completely agree”) scale. The reliability of these scales was assessed through Cronbach’s α and appeared satisfactory for all the constructs ($\alpha > 0.70$; Cronbach’s alpha coefficients are shown in Tab. 1).

Fig. 1: Stimuli

“Only fruit sugar” claim



“No added sugar” claim



Source: our elaboration

Finally, in order to control the tendency in eating healthily between the two groups, the variable “general health interest” was measured using Roininen *et al.* (1999) eight seven-point scales, each anchored by “unlikely” and 7 “likely” ($\alpha = 0.70$). The level of health interest was high for both groups (“no added sugar” claim $M = 4.830$; “only fruit sugar” $M = 4.889$) and the difference was not significant (Mann-Whitney $U = 1975.500$, $p = 0.556$).

Participants' average age was 38.98, ranging from 19 to 72 (SD= 5.834); 67 per cent were female and 33 per cent were male.

To answer the research question, a series of parametric t-tests were carried out using the IBM SPSS statistical software (SPSS Inc, Chicago, IL; release 25.0).

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Tab. 1: Measurement scales and reliability indices

Scale	Items	Cronbach's Alpha
<i>Perceived healthiness</i> (Bui <i>et al.</i> , 2013)	Poor source of Nutrients - Rich source of Nutrients	0.914
	Not very nutritious - very nutritious	
	Not healthy - very healthy	
<i>Perceived quality</i> (Dodds <i>et al.</i> , 1991)	The probability that the product is reliable is (very high - very low)	0.956
	The quality of the composition of the product is: (very low - very high)	
	The quality of the product is (very low - very high)	
	The probability that the product is safe is: (very high vs very low)	
<i>Attitude toward the product</i> (Muehling <i>et al.</i> (1991)	Bad - Good	0.901
	Unfavorable - Favorable	
	Negative - Positive	
<i>Purchase intention</i> (Kaushal <i>et al.</i> , 2016)	I intend to try the product.	0.931
	I am interested in buying this product.	
	Maybe I will buy this product.	
	I will recommend this product to others.	
<i>Willingness to pay</i> (Konuk <i>et al.</i> , 2019)	I am willing to spend more to buy this product.	0.958
	It is acceptable to pay a surcharge to purchase this product.	
	I am willing to pay more to buy this product.	
<i>General health interest</i> (Roininen <i>et al.</i> , 1999)	The healthiness of food has little impact on my food choices (r).	0.700
	I am very particular about the healthiness of food I eat.	
	I eat what I like and I do not worry much about the healthiness of food (r).	
	It is important for me that my diet is low in fat.	
	I always follow a healthy and balanced diet.	
	It is important for me that my daily diet contains a lot of vitamins and minerals.	
	The healthiness of snacks makes no difference to me (r).	
	I do not avoid foods, even if they may raise my cholesterol (r).	

Source: our elaboration

4. Results

To answer the research question, the Mann-Whitney U non-parametric test was used.

The results showed the better effectiveness of the claim with positive frame “only fruit sugars only” compared to the claim with negative frame “no added sugar” on consumer perception.

Specifically, respondents perceived fruit juice with the claim “only fruit sugars” to be healthier and of higher quality than fruit juice with the claim “no added sugars” (respectively, $M=4.951$ vs $M=4.120$, $U= 2476.000$, $p<0.05$; $M=4.000$ vs $M=3.266$, $U= 2362.500$, $p<0.05$). The attitude toward the product also improved significantly when the claim on the label had a positive frame compared to when it had a negative one ($M=5.224$ vs $M=4.306$, $U= 2539.000$, $p<0.05$). Finally, the type of claim also influenced the choice behavior: both the purchase intention and the willingness to pay were greater when the claim was expressed in a positive way compared when it was expressed in a negative way ($M=3.955$ vs $M=2.700$, $U= 2658.000$, $p<0.05$; $M=3.962$ vs $M=3.470$, $U= 2109.500$, $p=0.200$). However, only in the case of purchase intention the difference was statistically significant.

The cell means and standard deviations of the independent variables are shown in Table 2.

Tab. 2: Cell means and standard deviations of the independent variables

	“No added sugar” claim		“Only fruit sugars” claim	
	Mean	SD	Mean	SD
Perceived healthiness	4.120	1.601	4.951	1.440
Perceived quality	3.266	1.547	4.000	1.485
Attitude toward the product	4.306	1.479	5.224	1.180
Purchase intention	2.700	1.560	3.955	1.628
Willingness to pay	3.470	2.014	3.962	1.830

Source: our elaboration

5. Discussion and conclusion

Food claim is an important packaging cue able to guide consumers choice toward healthier foods and to improve their diet (Cowburn and Stockley, 2005). Its ability to determine the behavior toward the product (Prada *et al.*, 2021) makes it an element of interest for literature, both from a theoretical and managerial point of view.

If, on the one hand, the effectiveness of claims varies based on their correct interpretation and understanding by the consumer (Anastasiou *et al.*, 2019), on the other hand, the way in which the claims are set up also influences their perception and, therefore, their effectiveness. According to the framing effect theory, the way of presentation of problem, information, or choice options, has an impact on the consumer’s decision-making process. Specifically, negative frame tends to have a stronger impact on consumer perception (Verbeke and Ward, 2001) and to attract more

attention than positive frame (Baglione *et al.*, 2012, Hoefkens *et al.*, 2011; van Kleef *et al.*, 2005). However, with regards to food claims, the results of prior research on framing effect are inconsistent.

The present study intends to deepen the knowledge on this topic, focusing on sugar nutritional claims. Specifically, based on the framing effect theory, two different ways of communicating the absence of added sugars in a product were tested in order to verify their impact on the consumer perception. In so doing, the paper contributes to the literature on the role of packaging as a communication vehicle, focusing on food claim. In particular, it increases the understanding of the framing effects on consumer decision-making process. Filling the gap in the existent knowledge, we considered the consumer perception and behavioral intention in terms of perceived healthiness, perceived quality, attitude toward the product, purchase intention, and willingness to pay.

The research demonstrates the better effectiveness of claims with positive frame “only fruit sugar” compared to those with a negative frame “no added sugar”. The use of the claim that emphasizes the presence of only fruit sugars inside the product is able to significantly improve its perception in terms of healthiness, quality, and attitude toward it, up to increasing the buy propensity. These results confirm that the way in which information is presented can change the opinion of consumers and, consequently, their decision-making process, as supported by the framing effect theory. They also support the Levin (1998) results with reference to sugar ingredient: product’s characteristic conveyed in a positive framing generates more positive product evaluations compared to an equivalent negative framing. However, our findings are in contrast with previous studies on framing effect which demonstrated the superiority of the negative frame, over the positive one, able to have a stronger impact on consumer behavior (e.g., Verbeke and Ward, 2001). This contrasting result with some of the previous literature represents an interesting finding worthy of attention and further investigation. If, according to Prospect Theory, negative framing has more impact than positive framing because people tend to avoid a possible loss compared to achieving a possible gain, this does not seem to be confirmed in the case of sugar content in products. An explanation for this result could be derived from the importance of sugar in the perceived taste and deliciousness of food: declaring a total elimination of sugar from the product may negatively impact the perception of its quality and tastiness (Raghunathan *et al.*, 2006).

The present research not only contributes to deepen scientific knowledge, but also offers useful managerial insights to food companies. In particular, it gives precise indications about the communication methods to be adopted on the pack to convey the product characteristics. Knowing how to communicate and what to emphasize about the presence or absence of an ingredient is a crucial information since it affects purchasing choices. It is therefore a significant strategic choice, considering the information overload that characterizes the product packaging. It is important to choose the right communication methods to maximize the effectiveness of the nutritional messages. With specific reference to sugar, a communication with a positive frame, which enhances the presence of a specific alternative

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ingredient, is more effective than a communication that highlights the total absence of the ingredient. Declaring the total absence of added sugars in a product worsens its perception, not only in terms of quality, but also in terms of healthiness, negatively affecting the propensity to buy it.

This study provides an important starting point for future research. First, it should be replicated considering both other products and other ingredients. This would allow the results obtained to be generalized to all food categories, or to identify different results depending on the ingredient considered in the claims. Second, the study could be expanded by adding a tasting test to measure the action of the claim on the perceived tastiness of the product by the consumer. Finally, the consumer's actual purchasing behavior with respect to the different claims should be explored.

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Cristina Zerbini
Donata Tania Vergura
Beatrice Luceri
Guido Cristini
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Beatrice Luceri
Guido Cristini
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Academic or professional positions and contacts

Cristina Zerbini
 Senior Researcher, RTDb, of Management
 University of Parma - Italy
 e-mail: cristina.zerbini@unipr.it

Donata Tania Vergura
 Associate Professor of Management
 University of Parma - Italy
 e-mail: donatatania.vergura@unipr.it

Beatrice Luceri
 Full Professor of Management
 University of Parma - Italy
 e-mail: beatrice.luceri@unipr.it

Guido Cristini
 Full Professor of Management
 University of Parma - Italy
 e-mail: guido.cristini@unipr.it

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