

THE HEALTH HALO OF ECO-LABELS: WHEN GREEN MISLEADS

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ABSTRACT

Front-of-package labels can influence product perceptions and lead to positive-biased behaviors. Eco-labels, third-party certifications distinguishing products with lower environmental impact, are perceived as making products tastier and healthier. This work investigates whether an eco-label focusing on ecological aspects can affect the perceived healthiness of food products and connected product attributes, generating a health halo effect and impacting purchase intention. The moderating effects of product involvement and pro-environmental behaviors are analyzed. Results from a within-subjects experimental study confirm that eco-labels create a health halo effect that influences purchase intentions and health perceptions, and generates further positive inferences about product attributes. This emphasizes the need for better consumer communication and uniform labeling to prevent misinterpretation and suboptimal consumption choices.

Keywords: health halo effect; eco-label; health perceptions; purchase intention; nutritional claims; cognitive bias

Introduction and research questions

The halo effect is a cognitive bias (Thorndike, 1920) where a positive attribute of a product leads to generalized positive evaluations of unrelated attributes. Deriving from this, the health halo effect (Chandon & Wansink, 2007; Sundar & Kardes, 2015) is linked to a distorted perception of healthiness where label or package characteristics induce consumers to overgeneralize and infer that the offer has favorable features on other attribute dimensions. Prior studies have shown that nutritional claims like "cholesterol-free" lead to broader inferences about a product's healthiness (Andrews et al., 1998). Front-of-package labels may lead to positivity biases, especially for unhealthy products (Talati et al., 2016), and enhance consumer attitudes and purchase intentions (Andrews et al., 2011). Organic labels have been found to lower calorie estimations, increase willingness to pay (Lee et al., 2013), and influence health perceptions across food and non-food products (Amos et al., 2019). Naturalness claims significantly affect product health perceptions and purchase intentions (Berry et al., 2017). Additionally, brand names with morality and purity signifiers, like "truth" and "clean", can create a health halo effect independently of labelling (Amos et al., 2021). Here, product categories with different levels of involvement can affect how product

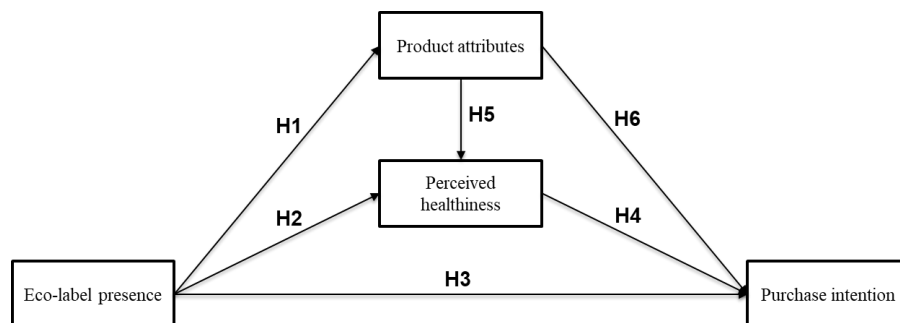
information is processed, with higher involvement typically leading to more considered decisions (Chauhan & Sagar, 2021; Mitchell et al., 2005).

Eco-labels, third-party certifications identifying products or services with lower environmental impact throughout their life cycles (ISO), are increasingly featured on product packaging. Prior studies show that consumers perceive eco-labeled products as tastier and healthier, leading to a greater willingness to pay (Sörqvist et al., 2013, 2015). Furthermore, a correlation between eco-friendliness and healthiness perceptions has been detected, suggesting that consumers infer one from the other (Lazzarini et al., 2016). This raises the question of whether an eco-label focusing on environmental aspects can affect the perceived healthiness of food products and related product attributes, creating a health halo effect which can have an impact on consumers' purchase intention. The moderating effect of product involvement and pro-environmental behaviors are investigated as well. Figure 1 shows the framework of the research.

The research hypotheses of this study are the following.

- H1 Eco-label presence leads to positive product attribute inferences
- H2 Eco-label presence positively impacts product perceived healthiness
- H3 Eco-label presence positively impacts purchase intention
- H4 Perceived healthiness positively impacts purchase intention
- H5 Product attribute inferences positively impact perceived healthiness
- H6 Product attribute inferences positively impact purchase intention

Fig. 1. *Conceptual model*



Method

The empirical research has been organized in two steps: a preliminary study on product involvement to select food products with different level of involvement, and an experiment to investigate the effect of eco-labels on food products with low and high level of involvement.

Study 1: Preliminary study on product involvement

A first study aimed to assess the involvement level with food product categories, as product categories with different levels of involvement may affect how product information is processed (Chauhan & Sagar, 2021; Mitchell et al., 2005). Participants evaluated four product categories (fresh meat, dairy, preserves and cereals) using the Mittal scale for involvement (Mittal, 1989), measuring four dimensions of involvement on 7-point Likert scales (Care, Variety, Importance, Concern). A total of 112 responses were collected, and the results are presented in table 1.

Table 1. *Consumer involvement with 4 product categories*

	Care	Variety	Importance	Concern	Involvement
Fresh meat	5.866	5.571	6.357	5.795	5.897
Dairy	5.589	4.973	5.705	5.098	5.342
Preserves	4.893	4.143	4.670	4.286	4.498
Cereals	4.893	4.321	4.631	4.143	4.497

Fresh meat emerged as the category with the highest involvement, while cereals resulted as the category with the lowest involvement. An ANOVA test between the two categories showed that the difference between the two categories was significant for each of the four involvement components. Furthermore, the resulting averages were consistent and very similar to those reported in the reference study of Beharrel and Denison (1995).

In the following experimental study, fresh meat was chosen as the high-involvement category, and cereals was used as the low-involvement category.

Study 2. Experiment on the effect of eco-labels

The study aimed to explore the effects of eco-labels on consumer perceptions and purchase intention. Using a within-subjects experimental design, participants were presented with two brand alternatives for both the high-involvement and the low-involvement product categories, differentiated by the presence of an eco-label (figures 2 and 3).

Figure 2. *Fresh meat: condition 1*



Figure 3. *Cereals: condition 1*



The eco-label was presented randomly on one of the two alternatives. Drawing on prior research (Kozup et al., 2003; Lazzarini et al., 2016), for each category participants expressed their preference and rated the product on a 7-point Likert scale on seven attributes: environmental sustainability of production processes, specific environmental impact of the product, ingredient healthiness, importance of local sourcing, fair trade practices, fat content and level of processing. Plus, questions related to perceived healthiness and purchase intention were assessed. Finally, questions related to pro-environmental behavior (Sörqvist et al., 2013, 2015) were asked.

Results

A total of 207 valid responses were collected.

A MANOVA was conducted to assess the overall impact of the eco-label on consumer perceptions of food-related attributes. The results revealed a significant positive effect for both product categories (high involvement: Wilks' $\lambda = 0.76$, $F(9, 404) = 14.50$, $p < .001$; low involvement: Wilks' $\lambda = 0.825$, $F(9, 404) = 9.5205$, $p < .001$). ANOVAs showed that all measured attributes, except fat content and level of processing, were affected, confirming H1. A positive direct influence of the eco-label presence is detected also on perceived healthiness and purchase intention, confirming H2 and H3 respectively. The impact of perceived healthiness on purchase intention was tested through a linear regression. As expected, perceived healthiness is a significant predictor

of purchases (C1: Coeff=0.7635, p-value=0.00, R-squared=0.430; C2: Coeff=0.724, p-value=0.00, R-squared=0.437), confirming H4. Furthermore, the results of mediation analyses confirm that the eco-label effect on perceived healthiness is mediated by all the attributes, except for the level of processing (for both product categories) and for the importance of local sourcing (for the high involvement category only), supporting H5. Product attributes also work as mediators of the eco-label presence on purchase intention for all attributes except for the level of processing, supporting H6. Finally, the impact of pro-environmental behaviors is assessed through a linear mixed regression model.

Consumers with higher environmental concerns show to be generally more influenced by the eco-label presence. The results showed a significant positive influence of pro-environmental behavior on all attributes except level of processing and fair trade practices (this latter only for the low-involvement category). Furthermore, the effect is significant on purchase intention for both categories, while for perceived healthiness only for the high-involvement category.

Academic, managerial and policy-makers implications

The study confirms that eco-labels generate a health halo effect, making consumers believe the products are healthier and significantly influencing purchase intentions, shedding light on previous research that missed to explain this association (Lazzarini et al., 2016; Sörqvist et al., 2015). This effect is consistent across diverse levels of product involvement, adding to prior research exploring different product typologies (Sörqvist et al., 2015). Results also show that consumers consider products with a sustainable production to be healthier and with better attribute properties than conventional products, except for the level of processing, which remained non-significant. This result aligns with existing literature, suggesting that the level of processing is perceived as less critical than other attributes (Berry et al., 2017).

Pro-environmental consumers are greatly influenced by the eco-label presence, adding to prior studies showing the eco-label effect is stronger in consumers with positive attitudes toward organic products (Lee et al., 2013; Sörqvist et al., 2013; Wiedmann et al., 2014). This may be due to the higher expectations and more positive attitudes toward sustainable products of pro-environmental consumers, which lead to positive inferences also on other product characteristics. Similar results emerged in prior research, even if only with weak associations between the eco-label effect and the pro-environment consumer index (Sörqvist et al., 2015). Thus the current study also provides a stronger support to such findings.

From a managerial point of view, the work shows that an eco-label makes products more attractive in the eyes of consumers and indicates to marketers possible elements to leverage when designing product communication. Eco-labeled products are better judged also on quality dimensions and social sustainability, leading to increased purchase intention. Thus, the health halo effect may induce consumers to judge better eco-friendly products even if they are not interested in their eco-friendly nature, providing these products a boost in sales. At the same time, however, although

the occurrence of health haloes may represent an opportunity to exploit the health sphere, marketers must be careful not to exploit consumer confusion for their interests. Companies should clarify in their marketing communications what exactly an ecolabel implies, and how consumers can contribute to sustainability through their purchasing choices. Confusion, indeed, may lead to sub-optimal consumption decisions based on erroneous associations, such as overeating (Chandon & Wansink, 2007; Schuldt & Schwarz, 2010). Hence, it is crucial to improve consumer communication to help consumers make informed and ethical choices.

Currently, the regulation of eco-labels is inconsistent, with different national and regional standards following not homogeneity criteria. Diverse entities, including national, governmental, and sectoral organizations, have the authority to manage these labels, with multiple methods of assessment and application. The wide range of environmental aspects covered by eco-labels, such as energy efficiency, water use, and land use, further complicates the creation of a single standard. Furthermore, the freedom to use self-declared claims and logos, granted in conjunction with the heterogeneity of eco-labels, may allow some manufacturers to exploit the lack of regulatory control. Thus, policymakers should aim for uniformity in labeling to prevent misinterpretation and overconsumption.

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