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Research report

Front-of-pack nutrition labels. Their effect on attention and choices when consumers have varying goals and time constraints☆

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ABSTRACT

Although front-of-pack nutrition labeling can help consumers make healthier food choices, lack of attention to these labels limits their effectiveness. This study examines consumer attention to and use of three different nutrition labeling schemes (logo, multiple traffic-light label, and nutrition table) when they face different goals and resource constraints. To understand attention and processing of labels, various measures are used including self-reported use, recognition, and eye-tracking measures. Results of two experiments in different countries show that although consumers evaluate the nutrition table most positively, it receives little attention and does not stimulate healthy choices. Traffic-light labels and especially logos enhance healthy product choice, even when consumers are put under time pressure. Additionally, health goals of consumers increase attention to and use of nutrition labels, especially when these health goals concern specific nutrients.

Nutrition labeling, and front-of-pack labeling in particular, is considered an important policy tool to help consumers make healthier food choices (EC, 2008). By making the health value of food products visible at the moment of choice, nutrition labels reduce the information asymmetry between consumers and food manufacturers (Verbeke, 2005). Yet, there is considerable debate as to how the information should be provided (Drichoutis, Lazaridis, & Nayga, 2006; Feunekes, Gortemaker, Willems, Lion, & Van den Kommer, 2008; Grunert & Wills, 2007). A variety of front-of-pack nutrition labels have been suggested, with nutrition tables, labels based on Guideline Daily Amounts (GDA's), multiple traffic light (MTL) labels, and signpost logos (e.g., Health Tick, Choices Logo) leading the discussion. Essentially these labels differ in the nutritional detail that they communicate. On the one extreme, nutrition tables present nutritional data in detail but no concluding information about how overall healthy a product is. On the other extreme, the presence of a signpost logo provides evidence to the healthiness of a product without revealing the underlying nutrient composition.

Despite the plausibility of the argument that front-of-pack nutrition labels enhance healthy choices empirical evidence is scarce. Rawson, Janes, and Jordan (2008) recently explored consumer use of nutrition labels in real store environments using eye gaze measurement and conclude that "shoppers seem to look at food labels when they have a specific reason (such as locating products for dietary needs), but only when there are such reasons. Otherwise they appear to rely on less effortful ways of finding relevant information to guide their purchasing choices" (p. 4). In other words, consumer goals at the purchase moment matter and attention may be an important bottleneck to label use.

Attention is influenced by two broad sets of determinants: bottom-up factors in the stimulus environment and top-down factors in the viewer (Pieters & Wedel, 2004). Bottom-up factors, such as the type of label or its position on pack, influence the likelihood that a label becomes salient and captures attention (Bialkova & Van Trijp, 2010). Top-down factors drive attention through motivational relevance and include the consumers' goals and time constraints. Recent studies have shown the relevance of top-down factors in directing attention (Glaholt, Wu, & Reingold, 2010; Pieters & Wedel, 2007; Rayner, Miller, & Rotello, 2008). Attention to nutrition labels thus depends on the goals and resource constraints that consumers face. For instance, health goals may stimulate attention and depth of processing more than taste goals (Visschers, Hess, & Siegrist, 2010). Additionally, many

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food choices involve limited time and cognitive resources (Hoyer, 1984; Grunert, Wills, & Fernández-Celemin, 2010). Time pressure is thus likely to determine attention for and use of nutrition labels, potentially depending on label complexity. Yet, surprisingly, this has received little research attention so far.

Two experiments address the role of consumer goals and time constraints on attention for and use of nutrition labels in food choice. Experiment 1 examines the effects of consumers' goal (preference goal, general health goal and nutrient-specific health goal) and different labeling schemes (nutrition table, MTL label and logo). Experiment 2 extends the first experiment to investigate the effect of time pressure on attention for and use of these labeling schemes, using a general health goal.

Front-of-pack nutrition labels

Front-of-pack nutrition labels in a great diversity of formats have a high presence in many countries (Storcksdieck genannt Bonsmann et al., 2010). They are based on a limited number of key nutrients (typically salt, sugar, saturated fat and total fat) in which consumers show most interest (Balasubramanian & Cole, 2002) and of which the negative health effects have been well documented (WHO, 2003).

Three major groups of labels can be identified (Grunert & Wills, 2007), and these differ in their level of "directiveness", that is, the degree to which they provide normative information about healthiness (Hodgkins et al., 2009). Non-directive labels, such as part of the *nutrition table* printed on the front of the pack, communicate the actual levels of key nutrients. Nutrition tables are non-directive in the sense that the evaluation as to whether these levels are low or high is not communicated through the label and the overall conclusion of whether the product is healthy or not is left to the consumer. *Health logos*, such as the Health Tick or the Choices logo, are directive and communicate the overall healthiness of the product in an "all or nothing" format. Logos only appear on products that qualify based on underlying nutrition profile evaluations, which are typically not revealed to consumers as part of the logo. These labels reduce the effort costs of consumers as they do not need to collect relevant information nor construct an overall evaluation. Yet, trust and confidence need to be established because directive labels can be perceived as patronizing and/or raise distrust (Russo, Staelin, Nolan, Russell, & Metcalf, 1986). The *multiple traffic light* label, but also the color coded GDA label, are semi-directive and take an intermediary position on nutrition information provision. They reveal the underlying nutrients on which the scheme is based, which helps consumers identify the key nutrients that they need to consider (Jones & Richardson, 2007). Additionally, MTL's provide an evaluation through a color scheme: red (high), amber (medium) and green (low), while leaving the overall integration (weighting) of the partial evaluations to the consumer.

Considerable research has been directed at identifying consumer preferences for the alternative labeling schemes, mainly by consumer organizations, retailers and the Food Standards Agency (see Grunert & Wills, 2007, for a review). Overall, this line of research shows that consumers generally like the idea of front-of-pack nutrition labeling, claim to understand the information conveyed, and state that they are using the information in actual purchase and consumption behavior (e.g., Feunekes et al., 2008). Despite this high appreciation of front-of-pack nutrition labels there is good reason to believe that these findings may, at least partly, be biased by the self-report survey methodology adopted (Van Trijp, 2009) and that effects on actual food choices are much less pervasive (Muller, 1985). Studies using observational and experimental research paradigms suggest that much of the nutrition information may go unnoticed in the actual purchase process. For example, a field experiment on an in-store intervention involving nutrition information (including labels) reveals that only 50% of customers reported having noticed an intervention, and only 25% had noticed that it concerned a labeling intervention (Steenhuis et al., 2004). In-store observations equally report a low percentage of customers who look at nutrition information on pack (Grunert, Wills, et al., 2010; Grunert, Fernández-Celemin, Wills, Storcksdieck genannt Bonsmann, & Nureeva, 2010; 27% and 16.8%, respectively) and customers rarely mention nutrition information during their shopping trip when using think aloud protocols (Higginson, Kirk, Rayner, & Draper, 2002). Moreover, a recent study by Rawson et al. (2008) used a head-mounted eye tracker in a supermarket to pinpoint the information that "catches the eye" while shopping. The authors conclude that there is very limited attention for nutrition information, unless consumers do their shopping with a dietary goal in mind.

The extent to which nutrition labels are used by consumers in actual product choice has recently received research attention. Vyth et al. (2010) show that consumers who claim to pay attention to the Choices logo have more products with this logo in their shopping basket (an increase from 17% to 24% of all products purchased). However, the causality of this relationship is unclear. One might argue that the ultimate test is a comparison of sales data prior and after the introduction of nutrition labels. This is what Sacks, Rayner, and Swinburn (2009) did in an analysis of supermarket sales data for two product categories (sandwiches and ready meals) four weeks before and four weeks after the MTL label was introduced. They show only a mild increase in sales for ready meals (2.5%) and no effect for sandwiches.

In summary, there is only limited research evidence that front-of-pack nutrition labels enhance the healthy choice in actual in-store purchase situations, despite the fact that such labels are well appreciated and understood by consumers. The present paper posits that attention is a key bottleneck in this process and suggests that attention can be enhanced through the type of nutrition labeling ("bottom-up"), as well as specific goals and time constraints of consumers ("top-down").

Evaluation of, attention to, and use of nutrition labels

For nutrition information to have a possible impact on decision making, it needs to be initially appealing, attended to and processed, and used as a basis for decision making (see Grunert & Wills, 2007 for a more extensive scheme). Each of these stages cannot be taken for granted in the context of front-of-pack nutrition labels.

Appeal of labeling scheme

Interestingly, label formats that are very effective in communicating product healthiness are not necessarily preferred the most (Levy, Fein, & Schucker, 1992). Consumer self-reports on label liking may thus be poor predictors of the effect of labels on actual choice behavior. More specifically, consumers often say that they appreciate and would use labels with detailed information, seemingly not (sufficiently) taking into account the effort required in using these labels for day-to-day purchases (Drichoutis et al., 2006; Grunert & Wills, 2007). Based on this, we expect that consumers evaluate nutrition tables, which provide detailed nutrient values, most positively, even when these labels may be less effective in directing their choices towards more healthy alternatives, as we will discuss later.

H1. Nutrition tables will be evaluated better than logos and MTL labels.