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Does front-of-pack nutrition information improve consumer ability to make healthful choices? Performance of warnings and the traffic light system in a simulated shopping experiment

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ABSTRACT

The inclusion of more attention-grabbing and easily interpretable front-of-pack (FOP) nutrition information is one of the public policies that can be implemented to empower consumers to identify unhealthful food products and to make more informed food choices. The aim of the present work was to evaluate the influence of two FOP nutrition labelling schemes – the traffic light labelling and the warning scheme – on consumer food purchases when facing a health goal. The study was conducted with 1182 people from Montevideo (Uruguay), recruited using a Facebook advertisement. Participants were randomly allocated to one of three between-subjects experimental conditions: (i) a control condition with no FOP nutrition information, (ii) FOP nutrition information using a modified version of the traffic light system including information about calorie, saturated fat, sugars and sodium content per portion, and (iii) FOP nutrition information using the Chilean warning system including separate signs for high calorie, saturated fat, sugars and sodium content. Respondents were asked to imagine that they had to purchase food in order to prepare a healthy dinner for themselves and their family, using the website of an online grocery store. Results showed that FOP nutrition information effectively improved the average healthfulness of participants' choices compared to the control condition, both in terms of the average nutritional composition of the purchased products and expenditure in specific product categories. No relevant differences between the effect of the traffic light and the warning system were found.

1. Introduction

Multi-faceted interventions aimed at encouraging people to make more healthful food choices have been identified as one of the priorities for reducing the increasing burden of non-communicable diseases worldwide (Beaglehole et al., 2011; World Health Organization, 2013). These interventions include advertising restrictions (Reisch et al., 2013), social marketing for encouraging consumption of healthy foods (Evans, Necheles, Longjohn, & Kaufer Christoffel, 2007), and policies that disrupt consumers' unhealthy dietary habits (Verplanken & Wood, 2006). Considering that nutrition knowledge has been positively associated with healthful food choices (Spronk, Kullen, Burdon, & O'Connor, 2014), a particular focus of public policies has been on education as well as on providing nutrition information and creating awareness and motivation to choose and eat healthily (Capacci et al., 2012).

However, consumers have difficulties interpreting nutrition information on food packages or pay little attention to it in the food choice situation. This has been shown by several studies conducted in different countries (Cowburn & Stockley, 2005; Grunert, Fernández-Celemín, Wills, Storcksdieck genannt Bonsmann, & Nureeva, 2010; Sharf et al., 2012). This might be due to the

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information overload in the market place and the breadth of potential choices (Mick, Broniarczyk, & Haidt, 2004). Consumers tend to infer healthfulness from marketing communication campaigns, health claims and symbolic information available on packages (e.g. fruit images) (Abrams, Evans, & Duff, 2015; Evans, de Challemaison, & Cox, 2010; Lähteenmäki et al., 2010; Sütterlin & Siegrist, 2015). These inferences can be conflicting with the actual nutritional content and prevent people from making healthful food choices, even if they are willing to do so (van Kleef & Dagevos, 2015).

In this situation of competing information, the inclusion of more attention-grabbing and easily interpretable front-of-pack (FOP) nutrition information can empower consumers to identify unhealthful food products and to make more informed food choices (Hawley et al., 2013). Different FOP nutrition labelling schemes have been developed, which differ in the extent to which they assist consumers to make healthfulness judgements (Hodgkins et al., 2012). Schemes that include interpretative aids to facilitate consumer understanding have, in fact, been reported to facilitate consumers' ability to find and understand nutrition information (Antúnez, Giménez, Maiche, & Ares, 2015; Feunekes, Gortemaker, Willems, Lion, & van den Kommer, 2008; Hawley et al., 2013). In addition, it has been shown that interpretative FOP labels attenuate the strong influence of health claims and other marketing strategies commonly used by food companies on consumer perception (Arrúa, Curutchet, et al., 2017; Maubach, Hoek, & Mather, 2014; McLean, Hoek, & Hedderley, 2012; Talati et al., 2016).

The traffic-light system is one of the most studied FOP nutrition labelling schemes (Hawley et al., 2013). It is a system advocated for by consumer organisations (Consumers International, 2015), and often found to be preferred by consumers (Mejean, Macouillard, Péneau, Hercberg, & Castetbon, 2013). The traffic-light system includes information about the content of key nutrients and uses colour code and text descriptors to classify them as low, medium or high (Department of Health, 2016). However, this system still requires consumers to arrive at their own overall healthful judgement based on the simultaneous evaluation of the content of several nutrients, and this has been reported to be a difficult task (Black & Rayner, 1992). Recent research has shown that the inclusion of the traffic light system may not necessarily decrease consumers' healthfulness perception of unhealthful products (Arrúa, Machín et al., 2017) or not necessarily improve their ability to differentiate healthful from unhealthful products (Talati et al., 2017). For this reason, more directive systems providing greater guidance may be beneficial for consumers.

Nutritional warnings have been recently proposed as an alternative and more directive FOP nutrition information scheme with the goal of facilitating consumer ability to identify unhealthful products in particular and, consequently, discouraging their consumption (Corvalán, Reyes, Garmendia, & Uauy, 2013). This FOP labelling scheme has been recently implemented in Chile (Ministerio de Salud, 2015) to identify products with high content of key nutrients (calories, sodium, sugar and saturated fat). According to Chilean regulations, separate black octogonal warning signs should be included on the label of food products if the content of each of the key nutrients exceeds the criteria set by the Ministry of Health (Ministerio de Salud, 2015). This directive system avoids one of the disadvantages of health logos as it would never identify products with low nutritional value as healthful, even if the item is more healthful in relation to other products in the respective category (Nestle & Ludwig, 2010). Arrúa, Machín et al. (2017) have recently reported advantages of warnings over the traffic light system in terms of goal-directed attention and ability to decrease healthfulness perception of unhealthful products. This system should be of particular importance in a food environment characterized by a high and increasing share of ultra-processed foods (Baker & Friel, 2016; Monteiro, Moubarac, Cannon, Ng, & Popkin, 2013), as it is the case of Latinamerican countries (Pan American Health Organization, 2015). However, research on the performance of this FOP scheme is yet scarce, as is research on consumer perception of nutrition labelling schemes outside of the US, Oceania and Europe (Mandle, Tugendhaft, Michalow, & Hofman, 2015). In particular, the present study was conducted in Uruguay, the Latinamerican country that has shown the largest increase in sales of ultra-processed products between 2000 and 2013 (Pan American Health Organization, 2015).

Although there is evidence of the effectiveness of FOP nutrition labelling on consumer understanding and perception, evidence of their influence on actual food choices is still lacking (van Kleef & Dagevos, 2015). Thus, it has been argued that the contribution of FOP labels to dietary change is minor at best, and that their ability to modify consumers' food choices strongly depends on consumer interest in and motivation for eating more healthfully (Grunert & Wills, 2007). FOP labels are expected to have a larger effect on consumers' choices when they have a specific health goal in mind (Visschers, Hess, & Siegrist, 2010; van Herpen & van Trijp, 2011).

In this context, the aim of the present work was to evaluate the influence of two FOP nutrition labelling schemes – a modified version of the traffic light system and the Chilean warning scheme – on consumer food purchases when facing a health goal. Although this might not be a natural goal for all participants, the study aimed at evaluating if FOP nutrition labelling schemes can improve consumer ability to perform a healthful food purchase. This type of comparison is relevant under the premise that the implementation of FOP labelling schemes would be accompanied by communication campaigns and other policy actions aimed at increasing consumer motivation to choose healthful foods. It was hypothesized that firstly, the FOP nutrition labelling would enable consumers to choose more healthful foods, and secondly, that the warning would perform better than the traffic light scheme in this regard. To ensure greater external validity, the study was conducted in a simulated shopping situation with real product images – thus including all product package textual and visual elements – and using an online grocery store that mirrored actual online store design. In order to compare the schemes in terms of the type of information they provide, the same criteria to classify nutrients as high were used.

2. Materials and methods

2.1. Participants

The study was conducted with 1182 people from Montevideo (Uruguay), recruited using a Facebook advertisement. Participants had to click on the link included in the website to be redirected to the website of the study, where detailed instructions were given. Before the main test, participants completed some socio-demographic questionnaire and were screened for being at least occasionally responsible for food purchase in the household. Participants gave informed consent and were given the possibility of entering into a raffle for a 70 US$ voucher. The study was conducted between April and May 2017.

2.2. Experimental design

Participants were randomly allocated to one of three between-subjects experimental conditions: (i) a control condition with no FOP nutrition information, (ii) introduction of FOP nutrition information using a modified version of the traffic light system, and (iii) introduction of FOP nutrition information using the Chilean warning system. Randomization was automatically generated by