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Change is good!? Analyzing the relationship between attention and nutrition facts panel modifications

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ABSTRACT

Many consumers do not pay attention to nutrition information, a necessity to make healthy food choices. We measure attention to a Nutrition Facts Panel (NFP) currently used in the U.S. and to a modified NFP that emphasizes key information, using eye-tracking in a between-subjects experiment. We test for differences between attention to the current and modified NFP but also for differences across food items. We find asymmetric effects, depending on the product. For healthier items more attention is paid to the modified NFP than to the current NFP. For less healthy items less attention is paid to the modified NFP than to the current NFP. Results suggest that a single modified design may not be uniformly effective.

1. Introduction

Given the societal and economic impacts of overweight and obesity, governments are searching for solutions to guide individuals towards making healthier food choices. Food labeling is designed to inform consumers on the healthiness of a product. It is a common approach to provide consumers with relevant information on the packaging itself to assist with healthy food choices. Regardless, consumers need also to attend to the information provided in order to make an informed decision. Since nutrition information is often ignored, we investigate if, and if so, how format (design) changes to a common Nutrition Facts Panel (NFP) affects attention to a variety of healthy and unhealthy food products.

Reliable information that is easy to comprehend is necessary to make good health decisions. This information is important for all individuals, not only the overweight and obese. Information can be provided on either the front or the back of the packaging. Front of packaging labeling is usually comprised of optional information left to the discretion of the food manufacturer, whereas mandatory NFPs are located on the back or side of a food product. For instance, in the U.S. the National Labeling and Education Act requires product specific information related to nutrition to be displayed in a NFP. NFPs are also mandatory in countries, such as, Canada, Mexico, and the EU member states (e.g., Cowburn and Stockley, 2005; Banterle and Cavaliere, 2014; Regulation (EU) No. 1169/2011, for more information see European Food Information, 2014).

While the NFP has been mandatory in the U.S. for almost three decades, European Countries have not had mandatory labeling for such an extensive period of time. Nonetheless, the EU has a number of standards and voluntary labels to provide nutrition information (Jo et al., 2016). For example, the EU recently introduced three regulations related to food labeling policy (Regulations No. 1924/2006, 1169/2011, and 432/2012). The regulations address nutrition facts (or declarations), and nutrition claims on food packaging, as well as health claims. The food product's nutritional content (e.g., fat content, carbohydrates, and proteins) is provided with Regulation No. 1169/2011. This regulation became obligatory in December 2016, and includes key changes such as improved legibility of information by using a minimum font size for mandatory information. Maybe the most important part of the regulation is that it makes nutritional facts mandatory for producers

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on most prepacked processed food (Banterle and Cavaliere, 2014; European Commission, 2017).[1,2]

In most countries that require an NFP on packaged food products (e.g., U.S., EU member states), the regulations call for nutrition facts related to the "Big 7" (energy/calories, protein, fat content, saturated fat, carbohydrates, sugars, and salt) (e.g., Regulation No. 1169/2011; FDA, 2016). Hence, the nutrition information provided on most food packaging in those countries is similar. Also, a comparison of the format of the NFP from the U.S., Canada, Mexico and the EU shows that they are very similar in nature (ESHA Research, 2017).

Because research has demonstrated that nutrition information is often neglected by consumers (e.g., Grunert, 2008; Grunert and Wills, 2007; Grunert et al., 2010), a persistent question is, does it matter how the information is presented, regardless of the country? To this end, the U.S. Food and Drug Administration (FDA) recently modified their NFP to "make it easier for consumers to make better informed food choices" (FDA, 2016). Whether consumers are using the offered information depends on their perception. If they do not perceive presented information it will not be available for guiding their product choice (Grebitus, 2008; Grebitus et al., 2015). This means that even detailed information such as the NFP, which provides a host of nutrition information, will only enable the individual to make an informed choice if it is perceived (van Trijp, 2009). In this regard, visual attention amplifies perception. Information can only be perceived, and be part of product evaluation and choice, if an individual fixates their gaze on it. This leads to a relationship between attention and eye movement (Orquin and Mueller Loose, 2013).

Previous studies have found little effect of the current U.S. NFP on consumers' search intensity for nutrition information, as well as, recall efficiency (e.g., Balasubramanian and Cole, 2002). Research from Europe also provides evidence that most consumers do not attend to nutrition when grocery shopping (Grunert, 2008; Grunert and Wills, 2007; Grunert et al., 2010). As found by a study conducted in six European countries, less than one third of consumers pay attention to this information when buying food (Grunert, 2008; Grunert et al., 2010). This result indicates that the majority of consumers does not utilize nutritional information when making food product decisions. This finding was also confirmed by Cowburn and Stockley (2005) who conducted a literature review of more than 100 studies, and found that consumers' use of nutrition labeling for choosing food is limited. When reviewing consumers' comprehension of nutrition communication regarding EU legislation on nutrition and health claims, van Trijp (2009) pointed out that nutrition labels are unlikely to lead to an improvement in healthy food choices if consumers do not pay attention to them.

Perhaps this lack of attention is due to poor label design. Graham and Jeffery (2011) found that both the location of the label itself on the product, as well as the specific position of nutrients on the label, influences how much attention is paid to it. They show that information at the top of the label receives more attention than that on the bottom. The authors corrected for self-reported measures regarding attention to specific nutrition facts on the label by means of eye-tracking (Graham and Jeffery, 2011). Bialkova and van Trijp (2011) analyzed attention to information presented on the front of yogurt packaging, including nutrition information (Guideline Daily Amounts-GDAs) using eye-tracking as well. The authors tested for the effects of non-directive versus semi-directive GDAs on attention, and found that attention might be a limiting factor for making healthy food choices based on information. Van Herpen and van Trijp (2011) stated that consumers value nutrition information but attend to it only marginally. The authors tested attention to a health tick, a nutrition table including sugar, fat, saturated fat and salt, as well as, a color-coded label on the same nutrients for cereal. They provide evidence that consumers are less likely to attend to nutrition information presented in a table as compared to a logo (health tick). A study by Orquin et al. (2012) shows the likelihood of eye fixations increases when surface size and saliency of elements of the product packaging are increased. However, the authors also found that the more nutrition information (GDA label, Nordic keyhole label) is attended to, the lower the likelihood that consumers will choose the related product. Finally, Balcombe et al. (2015) used eye-tracking to measure (non-)attendance to traffic lights for a food shopping basket. They found limited proof that a longer fixation duration (i.e., more attention) is related to importance of attributes.[3]

In lieu with these studies on label design, and the related inattention problem, changes were proposed to the NFP in the U.S. in 2014 by the FDA. The FDA subsequently publicized a new Nutrition Facts label in 2016 that differs from the previous version. For example, serving size appears in bolder font type, and calories appear in larger font type (FDA, 2016).[4] The objective of this study is to investigate consumers' attention towards the current NFP, as well as, towards a modified NFP that provides key information in a more prominent way. Given that the Big 7 are the same across countries, and the format is similar, we focus on attention towards the current and modified U.S. NFP to address the issue if "how the information is presented" affects attention to the NFP. Given the similarities among NFPs in major countries, we expect the results from our study to carry over to other countries that have similar label designs / similar formats. This research aims to investigate whether modifications to the NFP lead to a change in consumers' attention. For example, will the modifications increase attention by raising the time consumers spend looking at it, or will it decrease the time needed to notice the information?

Based on van Trijp's (2009) work, we analyze differences in consumers' attention towards the forthcoming modified U.S. NFP as compared to the current U.S. NFP[5] to measure whether specific key elements pointed out by the FDA increase or decrease eye fixations on nutrition information before the consumer purchases a food product. We account for attention to the NFP as a whole, as well as, for specific areas of interest on the NFP, for a variety of food products in a simulated shopping situation. We focus on attention towards the two main areas of change: the modified display of serving size information and the larger font type for calorie information. One reason to change these areas is that reference amounts of foods have changed since the introduction of the NFP making it necessary to adjust the serving size requirement and making it more feasible for consumers to make informed food choices (FDA, 2016). For example, portion size has been adjusted to reflect a more realistic amount of intake, and the related footnote on the label has been removed (FDA, 2016). Furthermore, Grunert (2008) found that most consumers attend to calories when attending to nutrition information, and Bialkova and van Trijp (2010) confirmed that an increased size improved attention. This is taken into account by increasing the size of calories displayed on the panel.

Our research extends the current literature in several more realistic directions. First, to our knowledge only Graham and Roberto (2016) have considered the forthcoming modified version of the U.S. NFP proposed in 2014 in an eye-tracking study in a similar fashion. However, in contrast to Graham and Roberto (2016), and Graham and

[1] Regulation No. 1924/2006 is a framework for legal issues related to nutrition and health claims which was partially amended by Regulation No. 1169/2011, which provides a legal framework on food labelling offering specific standards for the indications to be on labels. Regulation, No. 432/2012 addresses approved health claims as per the EU Commission (Banterle and Cavaliere, 2014). For example, Lähteenmäki et al. (2010) conducted a study on health claims to test consumers' information processing.

[2] In 2004 about half of all food products in the EU was labeled with nutrition facts (Barreiro-Hurlé et al., 2010).

[3] See Graham et al. (2012) for an overview on nutrition label use investigated with eye-tracking.

[4] The new label differs from the current format through an application of a larger, bolder type for servings, updated serving sizes, larger type for calories, updated daily values, inclusion of added sugars, requirement of a change in nutrients, declaration of actual amounts of nutrients and a new footnote regarding the daily values (FDA, 2016).

[5] In the following, we refer to the U.S. NFP without specifically mentioning the U.S.