



# Nutrition Label Viewing during a Food-Selection Task: Front-of-Package Labels vs Nutrition Facts Labels



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## ARTICLE INFORMATION

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## ABSTRACT

**Background** Earlier research has identified consumer characteristics associated with viewing Nutrition Facts labels; however, little is known about those who view front-of-package nutrition labels. Front-of-package nutrition labels might appeal to more consumers than do Nutrition Facts labels, but it might be necessary to provide consumers with information about how to locate and use these labels.

**Objective** This study quantifies Nutrition Facts and front-of-package nutrition label viewing among American adult consumers.

**Design** Attention to nutrition information was measured during a food-selection task. **Participants/setting** One hundred and twenty-three parents (mean age=38 years, mean body mass index [calculated as kg/m<sup>2</sup>]=28) and one of their children (aged 6 to 9 years) selected six foods from a university laboratory-turned-grocery aisle.

**Intervention** Participants were randomized to conditions in which front-of-package nutrition labels were present or absent, and signage explaining front-of-package nutrition labels was present or absent.

**Main outcome measures** Adults' visual attention to Nutrition Facts labels and front-of-package nutrition labels was objectively measured via eye-tracking glasses.

**Statistical analyses performed** To examine whether there were significant differences in the percentages of participants who viewed Nutrition Facts labels vs front-of-package nutrition labels, McNemar's tests were conducted across all participants, as well as within various sociodemographic categories. To determine whether hypothesized factors, such as health literacy and education, had stronger relationships with front-of-package nutrition label vs Nutrition Facts label viewing, linear regression assessed the magnitude of relationships between theoretically and empirically derived factors and each type of label viewing.

**Results** Overall, front-of-package nutrition labels were more likely to be viewed than Nutrition Facts labels; however, for all subgroups, higher rates of front-of-package nutrition label viewership occurred only when signage was present drawing attention to the presence and meaning of front-of-package nutrition labels.

**Conclusions** Consumers should receive education about the availability and use of new nutrition labels.

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**O**BESITY AND ITS ASSOCIATED HEALTH PROBLEMS are significant public health concerns in the United States. The National Health and Nutrition Examination Survey reveals that more than one-third of US adults and nearly one-fifth of youth were obese in 2011 to 2012.<sup>1</sup> Obesity contributes to the development of heart disease, type 2 diabetes, cancers, and other negative health

outcomes.<sup>2</sup> Attention to nutrition, including reading food labels, can be an effective way to improve dietary behaviors and prevent these weight-related chronic diseases.<sup>3</sup> Use of nutrition information on food labels is associated with lower fat intake,<sup>4</sup> consumption of diets higher in vitamin C and lower in cholesterol,<sup>5</sup> higher fiber and iron intake,<sup>6</sup> and less sugar consumption.<sup>3</sup>

A large body of existing research describes characteristics of consumers who use Nutrition Facts labels and other side- or back-of-package nutrition labels.<sup>7,8</sup> Greater use of side- or back-of-package nutrition labels is associated with demographic characteristics (ie, being female, being married, being younger relative to older, having some college education, and living with others), as well as beliefs and behaviors

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(ie, having more nutrition knowledge; believing that a healthy diet is important; having higher diet-specific self-efficacy; believing that diet is related to health outcomes, including cancer; placing a higher priority on product safety and nutrition than taste; and actively trying to lose weight).<sup>4,5,9-13</sup>

Relative to Nutrition Facts label users, less is known about the characteristics of consumers who use front-of-package nutrition labels. Existing research indicates that front-of-package nutrition labels are well received by consumers<sup>14,15</sup> and better understood than Nutrition Facts labels.<sup>16</sup> Up to 87.5% of consumers are able to identify the healthiest of three foods via front-of-package nutrition labels.<sup>17</sup> Rates of identifying healthier choices using Nutrition Facts labels tend to be substantially lower.<sup>7,8</sup> In light of the policy attention currently given to front-of-package nutrition labels in the United States,<sup>18</sup> and given that the US Food and Drug Administration is considering what type of front-of-package nutrition labels, if any, to require on food packaging,<sup>19</sup> it is imperative to understand front-of-package nutrition label use among US consumers. Although it is possible that only those same motivated consumers who use Nutrition Facts labels will use front-of-package nutrition labels, there are reasons to hypothesize otherwise. For example, consumers are less likely to view nutrition information located on the back or side of a package vs the front,<sup>15</sup> and when nutrition information is made readily available, most individuals tend to view it.<sup>20</sup>

In addition, as previous research has found a positive association between health/nutrition concern and label use,<sup>4,5,10</sup> consumers with lower overall health concern often do not intentionally seek out Nutrition Facts label information. However, these consumers might be impacted by seeing nutrition information on the front of packages, even if they did not intend to view it there. Research indicates that even when individuals are not overly concerned with healthy eating, they do eat more healthfully if they read Nutrition Facts labels.<sup>21</sup>

An additional subset of consumers who may be more likely to use front-of-package nutrition labels than Nutrition Facts labels are those with lower levels of literacy and numeracy.<sup>22</sup> Poor label comprehension correlates with lower literacy and numeracy skills, and even those with higher literacy may have difficulty interpreting Nutrition Facts labels.<sup>23</sup> Consumers with lower literacy and numeracy might not understand the relatively more complex Nutrition Facts label format and therefore might not use Nutrition Facts labels. Such consumers might find it easier to use the relatively less complex front-of-package nutrition labels, particularly those with simplifying heuristic strategies, such as colors and symbols for conveying nutrition information. A recent review of eye-tracking research examining various types of nutrition labels reports that consumers better understand labels that are color-coded (rather than monochromatic), such as traffic-light labels, with red, yellow, and green indicators for levels of healthfulness among key nutrients.<sup>24</sup> Therefore, front-of-package nutrition labels that use heuristic strategies may reach consumers who do not understand the Nutrition Facts label's more complex numerical layout.

In light of the theoretical and empirical indications that front-of-package nutrition labels may be seen by and appeal to more types of consumers than Nutrition Facts labels, the present study hypothesized that consumers would be more likely to view front-of-package nutrition labels vs Nutrition

Facts labels during a food-selection task. The present study also examined the extent to which two different front-of-package nutrition label formats would be viewed by consumers in a food-selection context in the absence of any explanation of these labels, and whether it would be necessary to draw attention to and explain these labels (using in-aisle signage) in order for these front-of-package nutrition labels to be viewed by consumers while selecting foods. It was further hypothesized that multiple traffic-light labels (which have a colorful, readily interpretable design) would be viewed more than the monochromatic Facts Up Front labels (introduced by the Grocery Manufacturers Association and Food Marketing Institute as Nutrition Keys in January 2011<sup>25</sup> and since renamed), both in the presence and absence of explanatory signage. A third hypothesis proposed that in-aisle signage describing front-of-package nutrition labels would increase consumer attention to the front-of-package nutrition labels, but not to nutrition information more generally (ie, not Nutrition Facts labels). Finally, it was proposed that a broader spectrum of consumers (eg, spanning a wider array of education, general health concern, and health literacy levels) would view front-of-package nutrition labels vs Nutrition Facts labels.

## MATERIALS AND METHODS

### Setting

This study was conducted at the University of Minnesota's Epidemiology Clinical Research Center between June 2012 and April 2013. An office set up to resemble a grocery store aisle contained 90 products placed in the approximate locations that they occupied at a popular local grocery store.

### Participants

Parent/child pairs (n=155) were recruited via a variety of electronic, print, and in-person means in the Twin Cities, MN, area for a study of "family food preferences." Child participants were between 6 and 9 years of age. Parents were screened by phone and excluded if they were unable to read and write in English. Potential participants were informed during the telephone screening that the study would involve selecting foods to take home from a laboratory grocery aisle. They were also informed that both parent and child would wear eye-tracking glasses (Tobii) during the food-selection task. Potential participants were told that the eye-tracking glasses would record video and audio so the researchers would be able to see what participants looked at and hear what they said while selecting foods. Those who were eligible to participate were scheduled for a one-time 1-hour laboratory visit. Upon arrival for the visit, participants provided written consent (parent) and assent (child) to participate. All procedures were approved by the University of Minnesota's Institutional Review Board.

Participants were randomly assigned to select foods from a grocery aisle configured in one of five ways, based on a 2 (front-of-package nutrition label type: Facts Up Front [see Figure, panel A] or multiple traffic-light labels featuring the same format as the Facts Up Front labels, but using red, amber, and green color-coding to reflect high, medium, and low levels of three key nutrients to limit, saturated fat, sodium, and sugar [see Figure, panel B]) $\times$ 2 (in-aisle signage explaining front-of-package nutrition labels: present or

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