Understanding and Facilitating the Use of Nutritional Labels By Low-Literate Consumers

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This research examines how low-literate consumers use nutritional labels on packages as well as ways in which such usage can be facilitated. Using research on nutritional labeling and on low-literate consumers as bases, we designed an experiment to test specific hypotheses about the effects of graphical versus non-graphical formats on usage of nutrition information by consumers with different levels of literacy. Implications of our findings for future research as well as for public policy are discussed.

[to cite]:
Madhubalan Viswanathan, Manoj Hastak, and Roland Gau (2009), "Understanding and Facilitating the Use of Nutritional Labels By Low-Literate Consumers", in AP - Asia-Pacific Advances in Consumer Research Volume 8, eds. Sridhar Samu, Rajiv Vaidyanathan, and Dipankar Chakravarti, Duluth, MN : Association for Consumer Research, Pages: 200-201.

[url]:
http://www.acrwebsite.org/volumes/14790/volumes/ap08/AP-08

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**EXTENDED ABSTRACT**

Most research on nutrition labeling has been conducted with literate adults. Research examining the effects of literacy on usage of nutritional panels is practically non-existent. However, estimates of functional literacy range from a fifth of the population or higher. This paper is the first attempt we know of to examine how low-literate consumers use nutritional labels on packages.

Past research shows that “summary” information facilitates the processing of detailed nutritional information on food labels. For example, several studies have shown that provision of average information (i.e., average values for key nutrients for the product category) and range information (i.e., the range of values for key nutrients for the product category) leads to better assessments of the nutritional quality of brands (Viswanathan 1994; Barone et al. 1996; Viswanathan and Hastak 2002). However, these studies have been conducted with literate consumers. It is unclear whether the beneficial effects of providing summary information uncooked in past research will hold for low-literate consumers as well.

Literacy has been defined as “the ability to exhibit all of the behaviors a person needs in order to respond properly to all possible reading tasks” (Bormuth 1975). Functional literacy refers to competencies required to function adequately as adults (Kirsch, Irwin, and Guthrie 1997), and links the notions of literacy and numeracy to day-to-day functioning. The question of how low-literate consumers manage shopping environments has not received much attention (Wallendorf 2001). Recent studies have begun to examine the role of low literacy in consumer behavior (Adkins and Ozanne 2005; Viswanathan, Rosa, and Harris 2005). This research suggests that low-literate consumers exhibit cognitive predilections and decision-making styles that may require distinctly different approaches to facilitating the use of nutrition information than those discussed earlier, such as the use of %DVs and averages. Difficulties with numerical symbols and a predilection for pictographic thinking suggest the use of pictorial formats to facilitate use of nutrition information. Thus, graphical presentations of nutrient values or amounts may be easier for low-literate consumers to use.

Based on our review of past research, we designed an experiment to specifically test the efficacy of graphical presentation formats for low-literate consumers. Four presentation formats were tested. Two of these labels were the “average” and “%DV” formats that have been examined in past research (Viswanathan and Hastak 2002). In light of past research as well as the insights we gleaned from our own qualitative interviews, we expected that these formats might prove to be too abstract for low-literate consumers to interpret and use. In contrast, concrete, pictorial representations of nutrient values may be more effective for low-literate consumers. Therefore, two additional graphical formats for presenting summary information were created - the graphical range format and the graphical rating format.

We expected respondents with higher levels of literacy to make better judgments of healthfulness based on the nutrition facts panel relative to respondents with lower levels of literacy, regardless of presentation format of the nutrition information. Furthermore, we expected that consumer literacy level would interact with presentation format in influencing comprehension of nutrition information. For respondents with lower levels of literacy, summary information presented in graphical formats (i.e., the graphical range format and the graphical rating format) was expected to be more effective than was summary information presented in non-graphical formats (i.e., the %DV format and the average format) in communicating product healthiness. On the other hand, for respondents with higher levels of literacy, all four of the formats were expected to be equally effective.

A total of 214 respondents with varying levels of literacy were randomly assigned to each of four format conditions. The design was a 4 (label format) by 3 (literacy level) between subjects design. Respondents were sequentially exposed to and then rated three different brands of potato chips (healthful, neutral, and unhealthful) on overall healthfulness as well as specific nutrients (fat, calories, etc).

The data were analyzed via a 3 (literacy level) by 4 (format) MANOVA, followed by specific ANOVA, and finally a series of a priori (planned) contrasts. Overall, the results were consistent with our predictions. First, literacy level had a significant effect on the ability of consumers to process and understand the nutrition facts panel. Regardless of format, the facts panel was better understood by consumers at higher levels of literacy. Second, consumers with lower levels of literacy appeared to benefit from graphical presentations more than did respondents with higher levels of literacy. Finally, the benefits of graphical presentation formats appeared to accrue to consumers with educational attainment through 0-12 grade levels. Nevertheless, we did find some evidence to suggest that low literacy consumers (0-4 grade equivalent) differed from moderate literacy consumers (5-12 grade equivalent) in this regard.

In conclusion, our findings suggest improved use of nutritional information for new, graphical formats. Importantly, summary information, (e.g., average) which has been shown to benefit literate consumers, was not useful for low-literate consumers. Our findings provide insights into the overall effects of literacy as well as levels of literacy where graphic presentations may have advantages. A wide range of literacy levels from 0-12 appears to benefit from such presentations that are in graphical form.

The paper concludes with a discussion of the theoretical and practical implications of our findings, limitations, and areas for future research.

**REFERENCES**


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