Number Sharpness in the Communication of Nutritional Information

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Three studies show that consumers more concerned with nutritional information (e.g., dieters) evaluate products using sharp vs. round numbers to describe nutritional information more favorably. This effect is driven by satisfaction with the amount of information that sharp vs. round numbers provide, and disappears for products framed as “healthy” options.

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/1020176/volumes/v43/NA-43

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EXTENDED ABSTRACT

The communication of nutritional information has become more important in recent years, as preventable health conditions relating to poor diet and exercise have continued to rise (Macera, 2010), even though healthy options are increasingly available to consumers. While researchers have addressed such important topics as utilizing technology to provide consumers with nutritional information (Lowe, de Souza-Monteiro, & Fraser, 2013), an important question is how consumers process and are influenced by numerical nutritional information displayed on food packages. For example, a stroll down the grocery aisle shows that both “round” (e.g., 10g fat) and “sharp” (e.g., 9.5g fat) numbers are commonly displayed on food packages. While some authors have examined the role of round vs. sharp numbers in prices (Thomas, Simon, & Kadiyali, 2010), researchers have yet to examine whether consumers process round and sharp numbers differently in the context of nutritional information, and whether consumers’ evaluations of food products will be influenced by the use of sharp vs. round numbers in the specification of nutritional information. The present research addresses these questions.

Drawing from previous research showing that sharp numbers are perceived as providing more specific and concrete information (Janiszewski & Uy, 2008; Zhang & Schwarz, 2013), while round numbers are easy to process and provide more abstract information (Thomas et al., 2010), we propose that when people are more concerned about nutritional ingredients, their desire for precise and concrete information will be stronger, and consequently they will favor sharp numbers over round numbers. In contrast, when people are less concerned about nutritional ingredients, the advantage of round numbers (processing ease) and the disadvantage of sharp numbers (processing difficulty) will stand out; consequently people will be more likely to favor round numbers over sharp numbers. We tested this general proposition in three studies and find consistent support.

Study 1 tested our proposition by examining an individual-difference variable that influences individuals’ concern about nutritional information: dieting status. Participants were asked to imagine that they were shopping for canned soup in a supermarket and came upon a brand of canned soup. They were shown a can of “Progresso” soup, on which a banner near the center of the package displayed a piece of nutritional information. We manipulated a) whether the number was round (10) or sharp (9, 9.5, 10.5, or 11), and b) whether the nutritional ingredient was healthy (grams of protein) or unhealthy (grams of fat). For the dependent measure, participants were asked to indicate how much they were willing to pay for a can of the soup. At the end of the study, participants indicated whether or not they were currently on a diet. We reasoned that dieters would be more concerned about nutritional information than would non-dieters. An ANOVA on WTP found a significant dieting x number sharpness two-way interaction (the four sharp numbers were combined into a single sharp-number condition). The pattern was in accord with our proposition: Dieters indicated significantly higher WTP in the sharp-number condition than in the round-number condition, whereas non-dieters indicated slightly higher WTP in the round-number condition than the sharp-number condition. Ingredient valence did not influence this two-way interaction or have a main effect on WTP. The findings of Study 1 suggest a general tendency of consumers to favor sharp numbers when they are more concerned about nutritional information.

Study 2 extended these findings by examining how positioning a product explicitly as a healthy option moderates this basic pattern. We reasoned that the presence of a “healthy” label would lower dieters’ concern about and decrease their attentiveness to nutritional information, consequently decreasing their preference for sharp numbers. To shed light on the underlying process, we measured participants’ satisfaction with the amount of nutritional information provided. The product was the same as that in Study 1, though only the negative-ingredient condition (fat) was included; we also employed a different set of numbers (round: 10.0; sharp: 9.5, 9.7, 10.3, or 10.5). Half of the participants were told that the soup was part of a health-conscious line of low-fat soups; the other half were not given this information. Results revealed a significant three-way interaction. When the low-fat frame was absent, we found a significant two-way interaction, replicating the results from Study 1. When the low-fat frame was present, however, there were no significant main effects or interactions. Analysis of the satisfaction measure revealed a significant three-way interaction, the pattern of which was similar to that found for WTP. When the low-fat frame was absent (present), dieters were more satisfied with the amount of nutritional information in the sharp-number (round-number) condition. Furthermore, mediation analysis showed that the indirect effect of the 3-way interaction on WTP through satisfaction with the amount of information was significant.

Study 3 aimed to generalize the findings of Study 2 by examining another individual-difference variable that influences motivation to process nutritional information—objective knowledge about nutrition. We reasoned that more knowledgeable individuals would be more attentive to the quantitative nutritional information on the soup than would less knowledgeable individuals. The design of Study 3 was similar to that of Study 2, except that we measured participants’ nutritional knowledge using the scale from Andrews, Netemeyer, and Burton (2009), rather than dieting status. To show that our findings generalize to other dependent measures, we used ratings of purchase likelihood as the dependent variable. The results replicated the three-way interaction found in Study 2, such that more (less) knowledgeable participants showed the same pattern of results as the dieters (non-dieters) in Study 2 on both purchase likelihood and satisfaction with the amount of information. Mediation analysis of the 3-way interaction was also replicated.

Together, these studies show that both the type of product under consideration and consumer characteristics affect how round vs. sharp numbers are evaluated, contributing to our knowledge of numerical processing and the communication of nutritional information. Moreover, due to the increasing importance of nutritional information and the ubiquity of numbers in the marketplace, these results have important implications for both the effective marketing of food products and consumer welfare.

REFERENCES


