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A Comparison of Dieticians and the Public: Nutrition Focus, Food Choice, and Mental Accounting

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Abstract

Diet-related health conditions such as diabetes and CVD are an important public health issue. In response, many countries have instituted nutrition labels on packaged foods. How well do people do at extracting and using information from information labels? And how do laypeople compare to experts? This study compares three different conceptualizations of expertise – a body of knowledge, better processing skills, or a greater facility for mental accounting. This study compared the focuses, food choices, and mental accounting of dieticians and the public. The results demonstrate similar focuses, food choices, and mental accounting by both groups. The main effect of expertise appears to be in consistency between focus and food choice. The minimal effects of knowledge suggest that people may be adequately educated about nutrition. As a result, education may now be less important than structural changes such as increasing the availability of healthy food.

Background

Diet-related health conditions such as diabetes and CVD are an important public health issue. To this end, many countries around the world have required nutrition labels on packaged foods (e.g., Nutrition Labeling and Education Act, 1990). Two important questions relating to the use of nutrition labels is how difficult is it to process this information and how good are people at making use of that information. Some research in the area of information overload examined nutrition information (Jacoby, Chestnut & Silberman, 1977). At first it appeared to show that people were only able to evaluate a limited amount of information. However, later analyses suggest the evidence to suggest there was an "overload" is weak (Malhotra 1984).

Research on human decision making suggests that information processing should depend on knowledge. But there are three very different conceptualizations of knowledge (Sternberg, Grigroneko & Ferrari, 2002). One conceptualization is what William Butler Yeats referred to as the "filling the bucket" model of education. According to this conceptualization, knowledge is the accumulation of facts (Grigroneko, 2003). People are better able to understand labels when they have a good collection of nutrition information. Nutritionists, because of their formal training and their need to stay abreast of the latest development in evidence-based practice (Byham-Gray, Gibride, Dixon & Stage, 2005) should be more knowledgeable about what to eat. They should know what things to look for in food selection and what is a "good" level, and what is a "bad" level. Therefore the focuses and choices of nutritionist should be superior to those of the public.

A second conceptualization of knowledge is information-handling ability. This approach is based on theories of schema and expertise. Early research compared chess experts and novices and found that novices were able to handle less information (Chase & Simon, 1973). The ability to handle information has also been studied in the context of nutrition labels, showing that novices often make mistakes (e.g., Jacoby, 1984; Malhotra, 1984). Novices may also resort to heuristics or shortcuts to sift through information in ways that simplify

decisions (Kahneman & Tversky, 1974). But there is also reason to believe that experts use heuristics, too. Experience can lead people to developed better cognitive processing schemes than the public, and more familiarity with these shortcuts in the same way a chess master can see a layout as related to several strategies and options forward such as the ability to adapt to knowledge through selective processing (Sternberg, Grigroneko & Ferrari, 2002).

In the realm of nutrition behavior, one of our most important heuristics is whether or not the information is relevant to our personal needs (Bargh, 1988; Jacoby, 1984; Petty & Cacioppo, 1981). So a potentially useful heuristic that may be applied is health concerns. Research supports the notion that decision heuristics simplify decision making (Bettman Johnson and Payne 1991). When individuals are aware of a need to reduce or increase the intake of certain nutrients, then that nutrient information is more highly attended. Past studies have revealed that these heuristics can decrease fat and increased fruit and vegetable consumption (Brug et al., 1996; Campbell et al., 1994). In the case of the most prevalent nutrition-related health concerns -- cardiovascular disease (CVD) and diabetes -- CVD patients are often instructed to minimize their saturated and trans fat intake while diabetics are often instructed to reduce their sugar intake. If heuristics are used, then we should find evidence of these differential focuses.

Another possible nutrition decision heuristic is the negativity bias, where people focus more heavily on avoiding "bad" things than on easting "good" things. These are mentioned above. However, recommendations for people with CVD and diabetes are different. Those with CVD are generally advised to limit their fat *and* sodium intake. In contrast, those with diabetes are often advised to reduce carbohydrates but *increase* fiber. Since people tend to focus more on decreasing harmful elements than on increasing beneficial elements, instructions to decrease fats or carbohydrates is likely to receive more attention than to increase fiber. So we expect decision quality, especially of the public, to suffer as a result of this more difficult complex assessment.

A third conceptualization of knowledge is the ability to manage and keep track of information (e.g., Thaler's 1985 theory of mental accounting). One current nutritional recommendation is that people keep a running tally of their daily consumption of certain food elements such as fat and fiber. But Thaler's research suggests that experts should be better able to keep a mental tally of their choices, details of these choices, and a running assessment. By comparing nutritionists and the public's ability to tally their choices we should be able to evaluate this conceptualization.

Method

An online survey was used for this research. We examined what criteria the public and nutritionists used to select food, simulated food choices, and their memory for the dietary intake of their food choices.

Registered dietitians were recruited through personal e-mail and through a posting on the American Dietetic Association web page. One hundred thirty one (131) participated in this study. The average number of years as a dietitian was 12.7, with a minimum of one half year and a maximum of 40 years.

This study also recruited participants from an on-line panel. An invitation was sent to 2,200 Zoomerang panel members over the age of 40. A total of 977 panel members began the study (44%), 171 terminated before completion (18%), resulting in 806 completed surveys (82%). This study only examined the subjects that were not given nutritional instructions, so the final sample was 387 respondents. A total of 107 (28%) self-reported having diabetes, 40 (10%) self-reported having CVD, 237 (62%) respondents were classified as "no health concern" and those who reported both diabetes and CVD were excluded from the analyses.

Procedure

Respondents viewed an introductory informed consent statement. They were told that they would be selecting foods from a pre-set menu. For each of the nine menu items they were given the choice of three different options, and selected one option for each of the menu items. This was designed to replicate a typical day's consumption of packaged and processed foods. Nutrition labels from real products were used. Following these choices, respondents were asked to estimate the total amount of a variety of nutrients contained in the menu they just selected. They were then asked a variety of survey questions.

Results

Focus

Overall, the results show that although dieticians placed a greater emphasis on fiber and fat, while the public put more emphasis on cholesterol, sugars, and protein. These results are shown in Table 1. The pattern for specific health conditions was similar for dieticians and the public.

Table 1: Importance of Nutrients to Dieticians versus the Public

Nutrient	Dieticians	Public	Significance
Calories	4.62	4.88	
Saturated Fat	6.06	5.45	***
Trans Fat	6.10	5.42	***
Unsaturated Fat	4.85	4.81	
Cholesterol	4.22	4.90	***
Sodium	5.53	5.23	
Carbohydrates	4.59	4.74	
Sugars	4.50	4.98	**
Fiber	6.16	4.91	***
Protein	4.06	4.57	***
Vitamins	4.19	4.28	
Minerals	4.23	4.15	

Note: recorded on a 1-to-7 (not at all to very important) scale, ** $p < .01$, *** $p < .001$

Food selection

After respondents made their 9 selections, we totaled the amount of the calories, fat, saturated and trans fat, unsaturated fat, cholesterol, sodium, carbohydrates, sugar, fiber, and protein from these selections. The results show that dieticians minimized sodium and maximized fiber while the public minimized their carbohydrates (perhaps partly as a result of the Atkins diet fad) and maximized their protein. These results are shown in Table 2.

Table 2: Total Nutrients of Food Selections by Dieticians versus the Public

Nutrient	Dieticians	Public	Significance
Calories	1651	1622	
Total Fat	26.8	26.7	
Saturated + Tran Fat	5.8	5.9	
Unsaturated Fat	17.8	17.4	
Cholesterol	94	90	
Sodium	3407	3594	***
Carbohydrates	260	252	***
Sugars	58.9	53.3	
Fiber	24.4	18.7	***
Protein	51.7	48.8	***

Count of nutrient values of food selections, *** $p < .001$

Prediction model

To assess how closely food choices followed their focuses, a prediction model was calculated. The results show that dieticians' choices were more consistent with their focuses for fat, sodium, fiber, and protein. The public's choices were more consistent on sugar. There were no significant differences for calories, total fat, carbohydrates and sodium. So dieticians were slightly more consistent in making food selections consistent with their focuses. These results are shown in Table 3.

Table 3: Prediction models (Beta and R^2)

Nutrient	Dieticians Beta	Dieticians Model R^2	Public Beta	Public Model R^2
Calories	-0.14	0.12	-0.12	0.12
Total Fat	N.A.	0.29	N.A.	0.21
Saturated + Tran Fat	-0.32	0.41	-0.29	0.28
Unsaturated Fat	-0.21	0.26	-0.08	0.20
Cholesterol	-0.07	0.20	-0.11	0.09
Sodium	-0.10	0.10	-0.30	0.05
Carbohydrates	-0.20	0.23	-0.25	0.14
Sugars	-0.13	0.27	-0.29	0.28
Fiber	0.34	0.14	0.24	0.08
Protein	0.12	0.23	0.21	0.11

Note: Standardized beta and R^2 from regression using importance to predict food selections

Mental accounting

Finally we examined how accurate dieticians and the public were in keeping track of their choices. Totals for food selected were compared to estimates, so that if people selected food totaling 2000 calories, but estimated their choices at 1000 calories, this was recorded as 50%. The results demonstrate that dieticians were generally no more accurate than the public in estimating the nutrition totals of the foods consumed and are shown in Table 4.

Table 4: Mental Accounting Accuracy

Nutrient	Dieticians	Public	Significance
Calories	113%	102%	n.s.
Total Fat	101%	114%	n.s.
Saturated + Trans Fat	150%	120%	**
Unsaturated Fat	98%	88%	n.s.
Cholesterol	131%	67%	***
Sodium			
Carbohydrates	79%	45%	***
Sugars			
Fiber	77%	99%	**
Protein	104%	82%	**

Number represent ratio of estimate of food selection to actual values, ** $p < .01$, *** $p < .001$

Discussion

Conceptualizing knowledge as a collection of information, the results demonstrate that dieticians and the public had similar nutrition focuses. There were some differences, however. Dieticians focused slightly more on fiber, saturated and trans fats and protein, while the public put more emphasis on dietary cholesterol and protein. Importantly, health concerns affected product choices for both groups, and appear to serve as a heuristic.

Testing the conceptualization of information as information handling, we examined the simulated food choices that were made. Here, dieticians chose a diet lower in sodium and higher in fiber while the public chose a diet higher lower in carbohydrates and higher in protein. These choices were consistent with dieticians' greater focus on fiber and the public's greater focus on protein. The results suggest that dieticians sometimes did better in making food choices that reflected their focuses. This is partial support for knowledge as ability to handle information.

The results of this study suggest that nutritional expertise, at least as reflected by a license to practice in the field, does not necessarily reflect itself in nutritional focus, food selection, or keeping a mental tally of those choices. Nutritional expertise, however, appears to be related to a better consistency between focus and choices – the match between what they were seeking and how well they chose.

Overall, it appears that the public is knowledgeable about selecting foods, at least in this information-only task. This finding suggests that people are able to use nutrition and do not appear to be suffering from some of the information overload proposed earlier (Jacoby, 1984). In this simulated task, their selections mirror those of dieticians. This result suggests that people can make use of nutrition labels. Perhaps the public has grown sufficiently aware of food labels and how to make food choices over the past 10 years, at least for people with health concerns. These findings suggest that education-based approaches to food selection may no longer be necessary with this group. Instead, structural factors such as increasing the availability of healthy and tasty options may be more useful in changing the way people eat.

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