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THE EFFECT OF NUTRITIONAL INFORMATION ON ATTITUDES AND CONSUMPTION:  
THE CASE OF YOGURT

by

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# The Effect of Nutritional Information on Attitude and Consumption: The Case of Yogurt

## Abstract

*The purpose of this study was to establish an empirical link between information exposure, attitudes and behaviour. To do this, an after-only with control field experiment was undertaken using a print medium. The data resulting from the experiment was analysed using group comparison and regression analysis techniques. Both methods provided statistically significant results. From the group comparisons, it was found that the group exposed to the nutritionally positive advertisement when compared to the control group had a higher overall attitude toward the healthiness of yogurt consumption and a higher consumption level of yogurt. The group exposed to the article containing negative nutritional information had a lower overall attitude toward the healthiness of yogurt, fewer intentions of buying yogurt but had a higher consumption level when compared to the control group. From the regression analysis it was found that the advertisement affected consumption only by changing attitudes whereas the article affected consumption both indirectly through changes in attitude and directly by changing consumption. Surprisingly, the net affect of the negative nutritional information in the article was an increase in consumption. The implication is that information exposure in the form of articles appears to have a more direct impact on behaviour than does information exposure from advertisements. Unfortunately, exposure to an article does not necessarily imply recall of the content of the article, thus the intended impact on consumption, from exposure to the article, may be counter productive.*

## Introduction

Consumers, today, are more conscious of their diet and the effect it has on their health than they have been in the past. Trends in food consumption over the past fifteen years reflect this change. People are eating less red meat and more white meats, fruits and vegetables (Statistics Canada 1990). The consequence of this health awareness is an increased demand for some agricultural products (oat bran, for example) and a reduced demand for others (beef, eggs, butter).

In response to decreasing demand, many Canadian agricultural marketing boards and agencies have undertaken massive advertising campaigns. In 1992, the Beef Information Centre spent over \$2.7 million in advertising, the Canadian Egg Marketing Agency spent \$2.9 million and the Ontario Milk Marketing Board spent over \$9.6 million. A common strategy in these campaigns is to increase or maintain sales by incorporating positive nutritional information about their product into their

advertisements. The premise is that exposure to positive nutritional information may alter negative consumer attitudes and increase consumption. This particular advertising strategy leads to two important research questions: Does exposure to nutritional information affect nutritional attitudes? Does a change in nutritional attitude translate into a change in consumption?

The methodological issue raised by these questions is how to establish a link between exposure to nutritional information in advertising and in articles, changes in nutritional attitude and corresponding changes in behaviour. If a causal relationship can be established, the conclusion may be that providing positive nutritional information through advertising is money well spent by agricultural marketing boards. If however, the causal relationship is weak, alternative campaign strategies may be more appealing. A potential weakness of the nutritional advertising strategy is that consumers may perceive nutritional information provided in advertising to lack credibility.

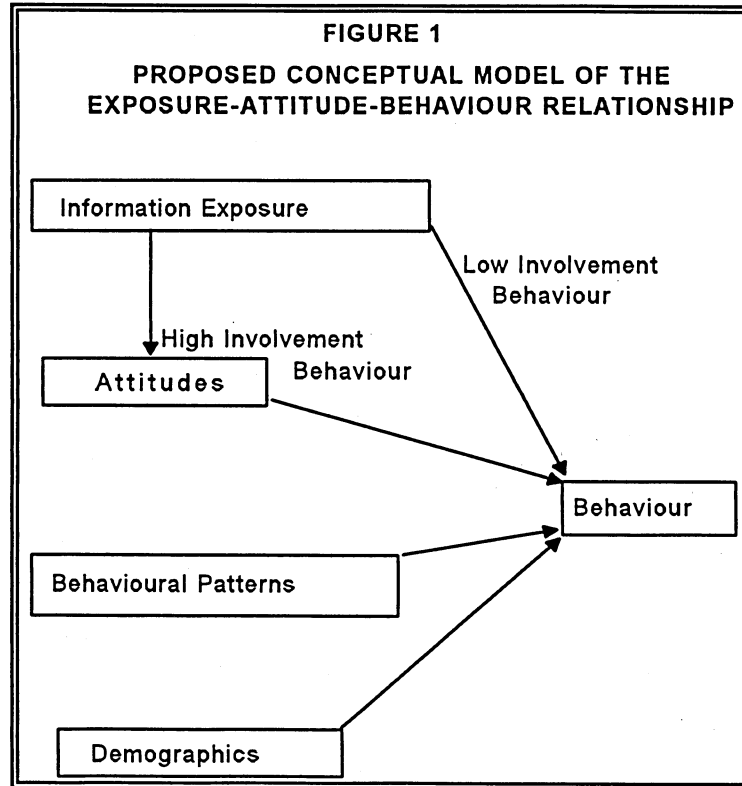
To study how information exposure affects nutritional attitudes and behaviour, an after-only with control field experiment was undertaken. The experiment examined consumer attitudes and behaviour after exposure to an article containing negative nutritional information about yogurt and after exposure to an advertisement containing positive nutritional yogurt information. A control group, which was exposed to neither the article nor the advertisement, was used to control extraneous variation. The resulting data was analysed using group comparison and regression analysis techniques.

The ensuing section presents the model that formed the basis for the field experiment. This is followed by a description of the experiment and a discussion of the data generated by the experiment. The next two sections present empirical results followed by conclusions.

## **Model**

Before establishing an empirical link between exposure to nutritional information, changes in nutritional attitude and changes in behaviour, a theoretical framework of consumer behaviour was postulated. The framework postulates that behaviour is affected by information exposure, attitudes, behavioural patterns, and demographics. It is suggested that attitudes, behavioural patterns and demographics directly affect behaviour, while information exposure can affect behaviour directly and indirectly through changes in attitudes. The manner in which information exposure affects behaviour is said to be predictive of the level of behavioural involvement (Figure 1). If information exposure affects behaviour directly, behavioural involvement is said to be low. If information exposure affects behaviour indirectly by changing attitudes first,

behavioural involvement is said to be high. This framework follows from the model of advertising response postulated by Kinnucan and Venkateswaran (1990).



Behavioural involvement is the level of involvement or cognitive thought processing the person undertakes before taking an action. A high level of involvement is said to exist if a person considers the consequence of their actions before the action is carried out. A low level of involvement is said to exist if very little or no thought is taken before the action is carried out (Krugman 1966, Petty and Cacioppo 1981). It is postulated then, that the stronger the relationship between information exposure, a person's attitudes and their behaviour, the higher is their level of involvement in that activity. Conversely, the weaker the relationship between information exposure, a person's attitudes and their behaviour the lower is their level of involvement.

Advertisers that are attempting to change consumer attitudes and ultimately behaviour through positive nutritional messages are assuming that the information-attitude-behaviour relationship is strong and that consumers are highly involved in their purchasing activity. If, on the other hand, consumers take a low involvement approach to buying food, nutritional advertising campaigns may be successful in changing attitudes but ineffective in changing behaviour. Since the ultimate objective of advertising is to change behaviour, traditional advertising strategies may be more effective under such circumstances. Alternatively, if nutritional

advertising is pursued under such circumstances, higher involvement behaviour would have to be encouraged using parallel messages such as encouraging health conscious diets, introducing recipe suggestions or by monetary savings with coupon.

## Experimental Design

Yogurt was used in the experiment because it is purchased frequently, has wide popular appeal and growing consumption (Statistics Canada 1989). The only deterrent in choosing yogurt for this experiment is it carries a generally positive nutritional perception. Use of a neutral commodity, in terms of nutritional attitudes, would have been preferred so as to have unbiased results. Unfortunately, there are very few nutritionally neutral agricultural and food commodities.

The nature of the experiment was to randomly distribute a booklet that contained nutritional information about yogurt among its regular sections and to later survey consumer awareness, attitude, and consumption. The booklet was an advertising supplement from PARTICIPaction<sup>1</sup>. The booklet contained nutrition and fitness articles as well as advertisements from various food groups. Using this as the base, three different booklets were printed and distributed. One booklet contained a yogurt article with a negative nutritional message. A second booklet contained a yogurt advertisement with a positive nutritional message, and a third booklet contained both the negative yogurt article and the positive yogurt advertisement. In the booklet containing both the advertisement and the article, the article followed two pages behind the advertisement.

The article entitled "Is Yogurt Really That Nutritious?" emphasised the sugar, fat and cholesterol content of yogurt. The tone of the article stated that levels of these ingredients in yogurt were comparable to levels found in ice cream (Dairy Science, University of Guelph). Since it is typically thought that ice cream is high in calories, fat and cholesterol, readers of the article were expected to form a negative attitude toward the nutritional content of yogurt after reading the article. The written style of the article and the PARTICIPaction logo on the cover of the nutrition and fitness booklet contributed to the credibility of the negative nutritional information contained in the booklet.

The yogurt advertisement was a full page Danone advertisement for no fat Plain Yogurt. The intent of the advertisement was to contradict the content of the article, specifically the fat content of yogurt. Readers of the advertisement were expected to have a positive attitude toward yogurt and its nutritional content after observing the advertisement.

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<sup>1</sup> PARTICIPaction is a well recognized, highly regarded non profit organization.

Guelph was chosen as the survey site because of the ease in distributing the booklets and undertaking the interviews. From census information, seven census tracts were randomly selected. Within each tract, neighbourhood blocks were used to separate households into one of the three experimental groups receiving booklets and the control group that did not receive a booklet. A total of 975 households for each experimental group was used in the experiment. From a preliminary survey in March 1990, it was deduced that only 50% of the people could be expected to be home when the questionnaire was dropped off, 65% ate yogurt, and 30% look at advertising mail. Using these percentages together with an 80% response rate, it was expected that 75 questionnaires per group would be completed for a final sample size of 300 households.

Three weeks after the booklets were dropped off, households were surveyed to determine their attitudes towards and consumption of yogurt. A questionnaire was used to collect information on consumption of yogurt, attitudes towards yogurt and nutritional attitudes in general, reliability and use of nutritional information, recognition and recall of the advertisement and article, and demographics. The questionnaire was self administered and took about 10 minutes to complete<sup>2</sup>.

A single questionnaire, administered after exposure to the nutritional information, was preferred to a before and after design because a single questionnaire eliminates testing effects. A before measurement was not taken because it could have affected the person's response to the after exposure questionnaire by making the consumer more aware of their nutritional attitude towards yogurt.

## Data

A major obstacle in establishing an empirical link between exposure to nutritional information, changes in nutritional attitude and corresponding changes in behaviour is finding accurate measures for exposure, attitude and behaviour.

Two common measures of information exposure are recall and recognition. Recognising information is being able to say that some information has been seen before. Recalling information requires the reproduction of some of the information seen before (Baggozi and Silk 1983). One of the major factors influencing recognition and recall is whether the information is verbal or visual (Krugman 1977). Recall, for example, is typically very low for graphic advertisement because it is difficult to put visual memory into words. Recall scores are typically much higher for written articles.

<sup>2</sup> Three weeks after the booklets were dropped off, an interviewer approached the home and asked to speak with the person who did most of the grocery shopping. Along with the questionnaire the respondent was given a brown envelope and instructed to place the completed questionnaire into the envelope and place it outside the door to be picked up the following day.

To determine exposure levels to the yogurt advertisement and article contained in the distributed booklets both recall and recognition data were used.

The general response rate of completed questionnaires was quite high. Completed questionnaires totalled 1359 and were relatively evenly distributed across the four experimental groups (326, 351, 392 and 390 for the control, ad, article, and ad and article groups, respectively). Within these samples, however, the recognition and recall rates for the article and advertisement were quite low. For the group receiving the positive advertisement, one fourth of the respondents remembered seeing a yogurt advertisement recently and only 10% recalled the content of the advertisement. For the group receiving the negative article, only 3% of the respondents remembered seeing an article about yogurt but almost all of them recalled the content of the article. Although low, these response rates document the notion that verbal information is more readily recalled than visual information. Of the respondents that recognised the visual advertisement, only 20% could recall its content. Of the respondents that recognised the written article, 90% were able to recall its content.

Two approaches to measuring attitudes were used in this study. One approach was the use of a semantic differential question to measure the underlying attitudes toward yogurt. The question asked respondents to rate the healthiness of yogurt on a seven point scale from 'very unhealthy' to 'very healthy'. The second approach used a multi-attribute attitude scale. This scale combines semantic differential questions about the healthiness of eight individual ingredients contained in yogurt with questions that ask respondents how much of each ingredient they feel yogurt contains. The ingredients examined were cholesterol, fibre, butterfat, protein, sugar, calories, vitamins, and preservatives. This approach follows from Fishbein (1963) who postulated that an attitude is made up of a number of attributes and beliefs and a person's overall attitude toward an object is a function of the person's attitudes toward attributes believed to make up the object.

Using the entire sample population of 1359 respondents and the single dimension scale, the mean attitude toward yogurt was 5.2, slightly higher than mid point on the scale at somewhat healthy (4) and lower than the maximum value (7), indicating yogurt as very healthy. Older respondents felt yogurt was healthier than either younger or middle-aged respondents, as did female respondents compared to male respondents. Similar results were observed using the multi-attribute attitude score approach.

Two approaches were also used to measure changes in behaviour. The first approach was to ask respondents how much yogurt (in millilitres) had been purchased in the past few weeks. The second approach was to use a measure of intention to purchase yogurt. This latter approach assumes that a person's intention to perform a certain behaviour is highly correlated with a person's actual behaviour. Fishbein's behavioural intentions models are based on this assumption (Fishbein 1967) and have been used to predict consumer behaviour with a high degree of reliability (Teas and Perr 1989) in



brand purchases of toothpaste (Wilson et al 1975), laundry detergent (Lutz 1977) and choice of credit union (Ryan and Bonfield 1980).

Again using the entire sample population of 1359 respondents, actual consumption of yogurt was higher on average for the female respondents than for the male respondents as was consumption by middle aged respondents when compared to younger and older respondents. Actual consumption was also found to be higher in higher income households. Finally, over half the respondents stated that they intended to buy yogurt on their next shopping trip.

### **Group Comparisons**

The purpose of this study is to establish a relationship between exposure, attitude and behaviour. The first approach used to do this was to identify and compare the attitude and consumption patterns found in each experimental group to the control group. If significant differences in attitude and behaviour are found between the control group and the experimental groups, a conclusion can be drawn that these differences are the result of exposure to different nutritional information. This conclusion can be drawn because the experimental and control groups were randomly selected from like households.

Table 1 presents a comparison of the average overall attitude score found by type of exposure and level of retention. The first row is the average yogurt attitude score of those respondents that recalled the positive advertisement and negative article. The second row is the average yogurt attitude score of those respondents that only recognised the advertisement and article. The third row is the overall average attitude score for yogurt for the three experimental groups: those that were exposed to an advertisement, the control group, and those that were exposed to an article. Unfortunately, the recognition and recall rates of the experimental group that received both the advertisement and the article were too small to be included in the analysis.

For both groups, recall and recognition, the average overall attitude score was consistent with the type of exposure received. Consumers that were exposed to the positive advertisement felt yogurt was healthier than consumers that did not receive exposure to yogurt information. Likewise, consumers that had no exposure to yogurt information felt yogurt was healthier than those that were exposed to the negative article about yogurt (Table 1). This would suggest initially that both the positive advertisement and the negative article had their intended effect in changing readers' attitudes about the healthiness of yogurt.