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UNIVERSITY OF GUELPH

Family and Consumer Studies

AN EXPERIMENTAL STUDY OF THE RELATIONSHIP BETWEEN CONSUMER SATISFACTION AND LEVELS OF CHOICE

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HIGHLIGHT OF FINDINGS

The study was undertaken to evaluate the relationship between consumer satisfaction and level of choice. Governments are frequently faced with decisions which may restrict freedom of choice or the level of choice available in the marketplace for economic, safety or health reasons. The impact of such restrictions on the consumers' satisfaction levels should often be one very important input to the decision analysis. Otherwise governments may be confronted with consumer/voter backlash to measures taken presumably in the public's best interests.

This pilot study was a preliminary attempt to investigate the possible effects of choice restrictions on satisfaction with products. At the same time it monitored attitudes to overall levels of choice available in the marketplace for the product under study, to manufacturers of the product and to government restrictions on their production.

A total of 313 subjects participated. They were divided into seven groups. Three groups attended only one testing session, and the other four groups were asked to come to three more testing sessions at two-week intervals. During the first testing session, five of the six groups were given a list of cereal descriptors (either 2, 4, 6, 8 or 16 choices) and the subjects were asked to select a cereal to taste. Subjects in the sixth group were not given any choice. Each subject was given the same cereal in each treatment and rated it on two nine-point preference/acceptance scales. The questionnaire also included a list of fifteen attitude statements concerning cereals available on the market, cereal manufacturers, and government regulation of the food industry. Each statement was rated on a nine-point scale from "strongly disagree" to "strongly agree".

In the three subsequent testing sessions, one group's choice level was increased by 2 choices in each session. Two of the groups' choice levels were decreased by 2 choices in each session, but one was given a business rationale and told the decreased choice was due to the decision of the cereal manufacturers and the other was told that government regulations would likely eliminate some of the cereals from the market. The last group's choice level was reduced by half in the second session and remained the same over the succeeding testing sessions.

The findings of the study are as follows:

* Satisfaction with the test cereal varies with the level of choice. Choice level in a middle range of about 6 choices is preferred to either higher or lower choice levels.

* Decreasing choice levels are preferred to increasing choice levels, and also to choice which has remained the same over two testing sessions. However, the influence of an "ideal" choice level and of the reason given for decreasing choice may confound these results.

* Increasing choice is a better predictor of level of satisfaction with the cereal than is the actual level of choice.

* A government rationale for restricting choice is positively related to increased satisfaction.

* Subjects believe that the selection of cereals in supermarkets is adequate and perhaps there are too many brands to choose from.

* Any change in choice level, whether it is increased or decreased, results in a less strong though still positive view of the adequacy of the selection of cereals in the marketplace.

* Subjects place a high value on good nutrition in manufactured food products and approve government regulation in the food industry to assure wholesome food products. They have a neutral attitude toward the efforts of business to maintain good nutrition in food products.

* Small changes in levels of choice appear not to affect subjects' views on the necessity of government regulations. However, where choice is more severely restricted (decreased by half--from 8 to 4 choices), subjects have a less positive though still favourable view toward government regulations in the food industry.

The findings of this study indicate to manufacturers that either too much or too little product differentiation in the marketplace can result in lower satisfaction with their products. Changing choice levels over time can also have an effect on satisfaction with a product. Further research in the marketplace could determine optimum levels for different kinds of products and should study factors which might affect this optimum level, such as the type of product, its complexity, or its frequency of use.

This study also suggests to governments the need for care in imposing restrictions on the marketplace. Limitations of choice based on significant rationales which are well promulgated will likely meet strong support if the overall effect on the range of market offerings is not too disruptive. However, if, as a result, choice is severely restricted, consumer/voters may not be so receptive and complacent, especially if they do not perceive the restriction as in their own best interest.

This laboratory experiment has been useful in outlining the shape of the relationship between choice and satisfaction. In particular, it has established the concept of excessive choice resulting in decreased satisfaction. Further research can take at least two different directions. Firstly, it might focus on factors which determine "optimum" choice levels and investigate in particular the nature and existence of curvilinear relationships between choice level and satisfaction across different product lines. Secondly, examination of the phenomenon should be taken to the field. Consumer response in the marketplace is highly complex. A pattern of behaviour observed in isolation may be substantially modified by circumstances in the natural environment. The laboratory findings are, of course, still valid, but it is important to establish how other variables may suppress or augment the strength of these relationships.

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INTRODUCTION

The level of choice available to consumers in the marketplace is determined at the first level by the individual decisions of manufacturers as to what is a profitable product offering. The collective result of these individual decisions can lead to a market in which the consumer has only one product to choose from or to one where there is a very large number of slightly differentiated products to choose from. In the latter case it might sometimes even be suggested that the differences between the products is very slight and mainly in the minds of the manufacturers.

Consumers may be more or less satisfied with the particular product they choose from the range available. Satisfaction levels with the product chosen and the range of products to choose from are not necessarily related. A consumer may be satisfied with a particular brand of a product but generally feel confused and overwhelmed by the range of products available to him in the marketplace. There are a number of ways consumers may deal with this frustration. One way is simply to limit the range of alternatives actually considered.

Some studies have suggested that high levels of information supplied to consumers may lead to inefficient decision-making by consumers (4,6,7). The consumer may not select the alternative which maximizes his/her stated selection criteria. Each new brand can, of course, be considered to be a new piece of information which increases the information load consumers must handle. If such is the case, it might be suggested that the marketplace is operating inefficiently if choice levels are excessively high.

The question then arises as to what is an optimum level of choice and what factors, such as type of product, product complexity, frequency of use, might affect this level.

Proponents of product differentiation maintain that a multitude of choice actively contributes to consumers' feeling of satisfaction; furthermore, product differentiation, being a tool of business competition may be seen as a means of aiding the process of elimination of the least efficient suppliers from the economic scene. Opponents to product differentiation could raise the argument that there are limits beyond which increasing choice either no longer contributes to additional consumer satisfaction or even creates confusion with the effect of reducing consumer satisfaction. In addition, it may be safely assumed that the production of increasingly differentiated instead of more standardized products is usually more costly in terms of financial and/or natural resources and hence contributes to the escalation of price levels.

For governments, as elected guardians of the public welfare, the problem, therefore, arises as to whether to promote or retard the currently increasing trend to product differentiation. If it could be shown that increasing choice indeed contributes to further increasing consumer satisfaction, product differentiation would deserve a helping hand from public authorities. If, on the other hand, it could be demonstrated that there is a threshold beyond which satisfaction does not increase with increasing choice, and if our economy were approaching this threshold, it may be wise to discourage further differentiation of products through legislation or appropriately applied economic disincentives.

There is no information, however, as to the limits of any existing

positive correlation between increasing choice and increasing satisfaction. Neither is there any knowledge with regards to the effect of increasing choice on satisfaction beyond the possible limit of the mentioned correlation, i.e. whether increasing choice eventually approaches a zero-marginal increase of satisfaction or whether it will induce dissatisfaction rather than increasing satisfaction.

The present research is therefore aimed at determining the relationship between choice level and satisfaction. In particular, three possible alternative relationships suggest themselves:

1. Is there a linear relationship between increasing choice and increasing satisfaction? i.e., is the slope positive and constant?

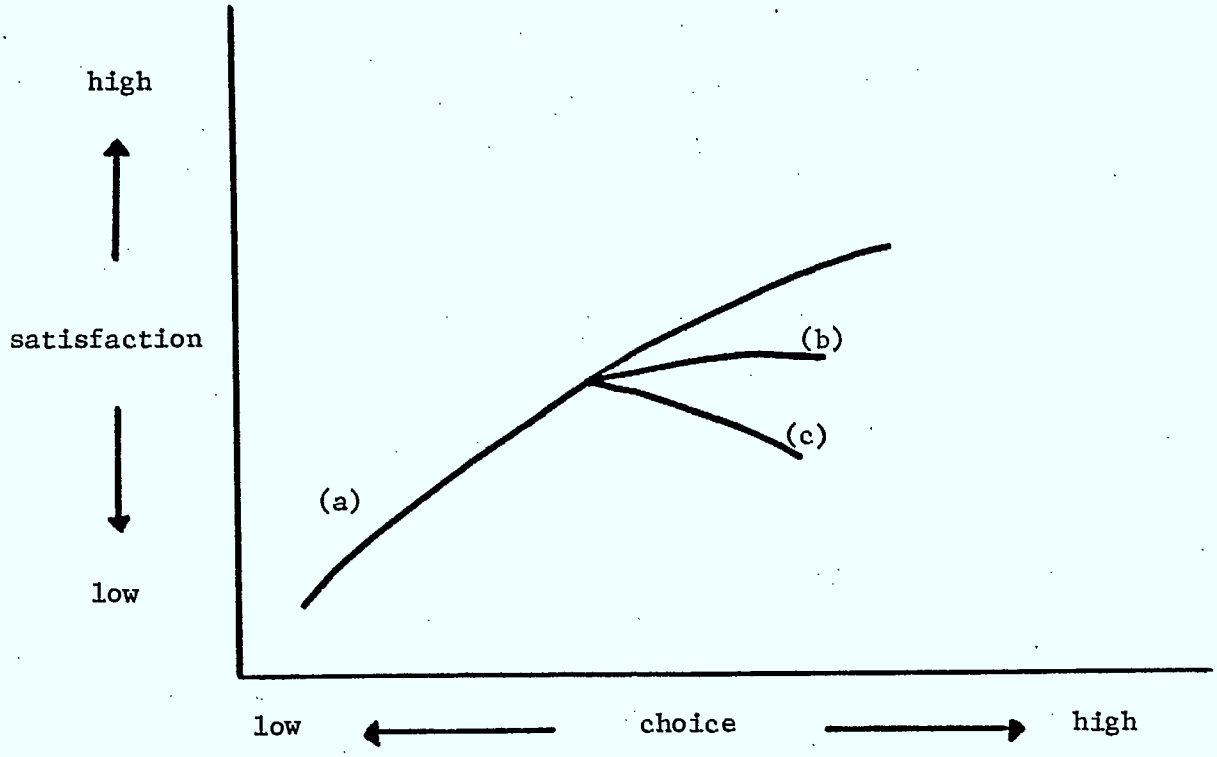
2. Is there a limit beyond which increasing choice no longer contributes to increasing satisfaction? i.e., is the slope of the relationship positive but decreases to zero?

3. Will increasing choice beyond the possible limit of the positive relationship between choice and satisfaction (3.1) merely leave satisfaction at its saturation level or (3.2) lower the level of satisfaction so that the slope is positive at low choice levels but negative at high choice levels.

In graphical form, the problem and objectives can be shown as illustrated below:

FIGURE 1

POSSIBLE RELATIONSHIP BETWEEN LEVELS OF CHOICE AND SATISFACTION



Question (1) as stated above refers to the slope of path (a).

Question (2) as stated above refers to the length of path (a).

Question (3.1) as stated above refers to the existence of path (b).

Question (3.2) as stated above refers to the existence and slope of path (c).

INTRODUCTION TO THE TESTING OF THE MODEL

Cereal As A Test Product

The product used in this study was breakfast cereals. Although there are relatively few ways of producing cereals, there are some fifty to sixty different brands on the market. In a study by Settle and Golden (1973) of twenty grocery products, respondents were asked their perceptions of how many brands of each product were available on the market and how many was an ideal number. Actual counts of brands available in local supermarkets were also carried out. A percent over-choice measure was calculated for ideal vs. actual choice and estimated vs. ideal choice. Among the twenty products, cereal was found to have the highest ideal number of brands desired (over 15) but also the highest overchoice level in comparing estimated to ideal levels of choice and second highest overchoice level comparing ideal to actual number of brands available. Also, of all the products tested cereals had the highest number of different brands available.

The high number of brands available on the market is probably attributable to two major factors. One is consumer desire for some variety in what might otherwise be an extremely monotonous meal. The second is the attempt by cereal manufacturers to increase overall market share. Each brand on the market tends to have a very low market share percentage, but for each of the few large manufacturers it is the total cereal market share which counts. Therefore, many brands are introduced by each manufacturer hoping to appeal to a different niche in the market. Also, a new cereal brand may draw consumers from other brands if for no other reason than because it is new.

However, concerns have been raised as well that the nutritional quality of many cereals may not justify the heavy reliance put on them by consumers. Many cereals are heavily sweetened, and even if vitamin fortified, do not provide much protein or dietary fibre. As a consequence of this wide use and heavy reliance on cereals but the limited nutritional value of many, there have been suggestions that restrictions should be placed on the kinds of cereals that are permitted to be marketed.

Several other factors contributed to the viability of cereals as the test product:

1. An actual post-consumption satisfaction measure could be readily obtained.

2. The product itself is highly standardized in its production and, therefore, does not vary across test conditions or subjects. Therefore, variations across subjects and across treatments in product rating would be due to individual and treatment differences and not the result of product variations or "failures".

3. The product itself is relatively simple to consume and evaluate.

4. The measure of product performance and the evaluation of this performance are both subjective, and therefore subject to distortion from experimental treatment effects.

The Laboratory Experiment

The fundamental goal of any controlled experiment is to simplify to its elementary form the conditions or factors under study and to hold constant all factors not under study. Since this is not usually totally achievable in the social sciences the experiment is randomized in order that any uncontrollable or uncontrolled factors will weigh equally in a probability sense on each level of the factors under study. Consequently this allows for unequivocal analysis and conclusions

concerning direction of causation and levels of effect.

For the purposes of this study the impacts of increasing and decreasing choice also had to be allowed for. Such a condition is hard to simulate in the short-run in the marketplace. It was decided that a laboratory study using the Sensory Evaluation Laboratory at the University of Guelph would best control the many interrelated interacting variables which might mask and distort impact in an infield experiment. Through such an experimental format the phenomenon itself could be isolated and its magnitude, its relationship to other factors and critical dimensions studied. The underlying reasons for the differences in liking of the cereal could be deduced. Also, the controlled laboratory study is the fastest, most economical route to gather information on subjects' satisfaction with the test cereal as it is influenced by levels of choice.

Standard procedures for conducting sensory panels have been developed in an effort to minimize or control the effect that physical conditions of the person or the environment can have on human judgment (1,2,3,5). A special testing area is used for sensory evaluation so that distractions can be minimized and conditions can be controlled. In the quiet, comfortable environment of the Panel Room in the Sensory Evaluation area there are controls over interruptions and distractions so that for each subject the situation will be constant across testing repetitions.

Several different sensory evaluation methods have been developed. For the purposes of this study, two preference/acceptance tests were used to evaluate subjects' acceptance of the cereal. Both were rating scale methods which provided the subjects with a scale showing several degrees of magnitude -- the adapted Hedonic Scale made an affective

statement (expressing subjects' feelings toward the test product), while the FACT Scale made an action statement (which expressed how often subjects would use the test product).

A. Adaptation of the Hedonic Scale Method

The adapted Hedonic Scale consists of a line marked off into nine segments. Direction, that is which end is "like extremely" and which is "dislike extremely" is indicated.

FIGURE 2

ADAPTED HEDONIC SCALE

How do you rate this cereal?

LIKE EXTREMELY ___:___:___:___:___:___:___:___:___ DISLIKE EXTREMELY

This scale is used as an affective measure. A dimension of evaluation, in this case "liking" of the test product, is specified by the respondent. This measurement can be used with the untrained subjects of the experiment because it requires a minimum level of verbal ability for adequate performance. The test cereal is presented and the subject's task is to assign a scale magnitude to reflect the intensity of his/her liking of the cereal.

B. Food Action Rating Scale (FACT) Method

The FACT Scale is a rating scale method of measuring the level of acceptance of food products by a population. The method relies on subjects' capacity to report, directly and reliably, their attitudes and predicted actions toward the food stimulus. It requires the individual to be very specific about what actions he would take in terms of the

number of times he would be interested in eating the cereal in a given period.

The scale is primarily designed to be used with untrained consumers, and again a minimum level of verbal facility is required by the subjects for adequate performance. The FACT Scale is presented and the subject decides which of the nine statements on the scale best represents his attitude toward the breakfast cereal.

FIGURE 3

FACT SCALE

Put an 'X' in the most appropriate space.

I WOULD EAT THIS CEREAL EVERY OPPORTUNITY I HAD	___
I WOULD EAT THIS CEREAL VERY OFTEN	___
I WOULD FREQUENTLY EAT THIS CEREAL	___
I LIKE THIS CEREAL AND WOULD EAT IT NOW AND THEN	___
I WOULD EAT THIS CEREAL IF AVAILABLE BUT WOULD NOT GO OUT OF MY WAY	___
I DON'T LIKE THIS CEREAL BUT WOULD EAT IT ON OCCASION	___
I WOULD HARDLY EVER EAT THIS CEREAL	___
I WOULD EAT THIS ONLY IF THERE WERE NO OTHER CEREAL CHOICES	___
I WOULD EAT THIS CEREAL ONLY IF I WERE FORCED TO	___

METHODOLOGY

Experimental Design

The effect of changes in choice levels on respondents' liking of a cereal was measured in seven different treatment groups, four of which measured changes in liking over time. Attitudes toward nutrition, cereal manufacturers, cereals available on the market, and government regulation of foods available were also measured.

Six choice levels were used as follows:

X_0 - no choice (only 1 cereal offered)

X_2 - 2 choices

X_4 - 4 choices

X_6 - 6 choices

X_8 - 8 choices

X_{16} - 16 choices

Seven treatment schedules were established as indicated in Table 1.

The same cereal was presented each time in order to prevent differences in responses due to differences in the cereal stimulus. The testing sessions were held two weeks apart to reduce possibilities of the subjects who attended more than one session recalling the taste of the cereal in the previous test period. The respondents were also informed that the cereals they would taste in the different weeks might vary only slightly in taste, and their response to these slight variations was important.

TABLE 1

TREATMENT SCHEDULES GIVEN IN STUDY

Group	Levels of Choice at Each Session			
	Week 1	Week 2	Week 3	Week 4
A (No choice - control)	X_0*			
B (Increasing choice)	X_2	X_4	X_6	X_8
C (4 choices)	X_4			
D (Decreasing choice)**	X_6	X_4	X_2	X_0
E (Decreasing choice)**	X_8	X_6	X_4	X_2
F (Reduced choice over time)	X_8	X_4	X_4	X_4
G (16 choices)	X_{16}			

* Subscript refers to the number of choices given in the treatment.

** D and E groups were exposed to decreasing choice but were given different rationales for the decrease in choice:

D -- business-related reasons
E -- government regulations reasons

Selection and Development of the Testing Procedure

The test product used was a dry, flaked, whole wheat cereal which was not pre-sweetened. It was a cereal which was well-established in the adult cereal market but had a relatively low market share. It's rather bland flavour and indistinct shape was felt to be desirable in that it would aid in preventing subjects from recognizing it as the same cereal over the four test periods and as a known cereal product currently on the market.

The Foods Laboratory and Sensory Evaluation Panel Room in the Family and Consumer Studies Building at the University of Guelph was chosen as the testing area for the in-lab experiment for the following reasons:

a) Inter-subject influence through respondents talking with each other during the test and seeing others' cereal could be eliminated.

b) Most of the respondents were unfamiliar with taste-testing procedures, and were therefore subject to the same experimental biases. Had the study been carried out in the field, for example, in a cafeteria which only some students regularly frequent, these subjects may have been more likely to respond to the request for participants than students who did not use the cafeteria.

c) No personal contact was made between the subjects and the person distributing the cereal, thereby eliminating "interviewer bias" in the evaluation of the liking of the cereal.

d) Subjects would be likely to think that the study dealt with nutrition and/or cereal preferences if carried out in the Foods Laboratory.

e) Distribution of the cereal and collection of the data was facilitated by the physical set-up of the area.

f) Results of a study under the controlled conditions of laboratory research are likely to be more acceptable to food researchers than the uncontrolled conditions of a real-life setting.

The descriptors of the cereal given to the subject to aid their

choice varied in the element of the cereal they stressed but were all somewhat vague. For example, one descriptor stressed the cereal's lightness, another its crispness, another its nutritional value, etc. (see Appendix A). In all cases the cereal given to the subject was the same cereal, although all measures were taken to suggest to the subject that the cereals were different.

To reduce selection biases the order of the cereal descriptors was randomly ordered across respondents as follows:

X_2 - 2 random orders of 2 descriptors

X_4 - 4 random orders of 4 descriptors

X_6 - 4 random orders of 6 descriptors

X_8 - 4 random orders of 8 descriptors

X_{16}- 4 random orders of 16 descriptors

The various orders of descriptors were assigned to the subjects sequentially, i.e. in a treatment situation of two choices, subject 201 received the first random order, 202 the second, 203 the first, and so on.

The cereal descriptors for each of the treatment schedules were also randomly selected from the list presented in Appendix A. The first six groups of subjects, however, chose from descriptors randomly selected from only the first eight descriptors. Only in the situation of 16 choices were the last eight descriptors also used in the testing session.

Each descriptor was randomly assigned a 3-digit number to prevent selection biases. A new list of 3-digit numbers was randomly assigned to the list of cereal descriptors during each test week to further guard against selection biases. For use in coding the subjects' cereal

choices, each descriptor was assigned a number (1 through 16) on a Master Sheet which actually served to identify the cereal chosen by each subject in the data analysis.

Sample Selection

A systematic random sampling of undergraduate students at the University of Guelph was sought. The Systems Section of the Registrar's Office at the University provided 1920 names and addresses of students selected by computer in a systematic random fashion. Only undergraduate students registered in the Winter 1978 semester were sampled. Every fifth name on the Registrar's list of students by Social Insurance Number was chosen.

Letters were mailed to the students selected requesting participants for a "taste testing panel for cereals" (see Appendix B). They were told that the cereals to be used were flaked in form and contained one or more of wheat, corn or rice. They were further told that preferences would be measured for cereals which would differ only slightly in formulation and that changes in their preferences over time would also be measured. They were offered a monetary incentive to participate, with payment only going to those who completed the full set of tests. To participate students had to eat breakfast cereals at least once a week.

Addressed return cards were enclosed to be filled in with name, address, phone number and favourite cereal brand and returned to the researcher if the student wished to participate in the study. In order to increase the likelihood that the study would appear to deal with taste testing and/or nutrition research the letter was signed by a faculty member involved in food research as well as the actual researcher

involved.

Respondents returning cards were randomly assigned to one of six groups through the use of a random number table. The required number of participants for six treatment groups was received within seven days of mailing the letters. Each of the participants was assigned a three-digit participant number. The first number (0 through 5) identified the test group, and the following two identified the participant's number within the group (01 through 60). The names of the respondents and their participant number were also recorded on Attendance Record sheets. Return cards in excess of the 360 initially required were held and grouped in order of their return date. It was later decided to assign 60 more respondents to a treatment group with 16 choices of cereal. These participants were selected from the next 60 return cards received after the initial 360 responses. In total, 605 or 31.5% of the initial sample responded to the letter requesting participants (see Table 2).

The sample size was determined on the basis of the number that would be needed to test the hypothesis with reasonable sensitivity and the number of different treatments desired, as well as the usual physical and monetary constraints encountered in all research. Hence, 60 persons were assigned to each of the seven treatment cells. It was felt that this number would allow for participants who would not attend the first session and for those who would not complete all the sessions, while retaining enough persons for adequate sensitivity in the analysis to small changes in response levels.

Letters were sent to the local mailing addresses of the respondents whose cards had been selected to schedule appointments (Appendix B). In

TABLE 2

PARTICIPATION RATE IN THE STUDY

	Number	%
Letters requesting participation	1920	100.0
Cards returned	605	31.5
Respondents selected for participation	420	100.0
Subjects who attended all sessions	296	70.5

order to best simulate a breakfast situation, the respondents were asked to come to the laboratory at any time between 7:30 a.m. and 10:00 a.m. on the day to which they were assigned. During the first test period, any participants who did not attend were not contacted again. In subsequent sessions, however, respondents who did not come at the scheduled time were contacted by telephone and rescheduled if possible. Of the 420 respondents selected to participate in the experiment, 70.5% completed all test sessions which they were asked to attend. Those respondents who were asked to come for four sessions understood that they would not be paid unless they completed all of these sessions. An additional reminder of this fact was handed out with the questionnaire which they completed at each session. This paper also indicated the date and time of the next session (See Appendix B).

At the end of the final test period, debriefing letters explaining the nature of the experiment (see Appendix B) were mailed to those persons who had participated in any of the sessions of the study.

Questionnaire Development

Four areas were covered in the subject's questionnaire (see Appendix C).

1) Information about the cereal chosen, including:
   - the cereal descriptors listed
   - the number of cereal choices given to the subject

2) The subject's rating of the cereal chosen and tasted on two 9-point scales:
   a) a Hedonic Scale which ranged from "like extremely" (scored '9') to "dislike extremely" (scored '1')
   b) a FACT Score (Food Action Rating Scale) which measured the subject's eating intention for the cereal

3) Information about the subject's use of cereal, including:
   - the most important criteria used when buying a cereal (price, nutritional value, etc.)

4) Attitude scores of subjects toward nutrition, cereal manufacturers, cereals available on the market, and government regulation of foods available. Subjects rated their opinion of 15 statements on these subjects on 9-point scales ranging from "strongly agree" (scored '9') to "strongly disagree" (scored '1').

The Pretest

The testing methodology and questionnaire were pretested with a group of six graduate students and faculty members of the College of Family and Consumer Studies. One member of the group was assigned to each of the following treatments: no choice, 2 choices, 4 choices and 8 choices and two members were assigned to the 6-choice treatment group. At the end of the test the pretest group completed a form asking for comments on the research technique and the questionnaire, if they had problems with any of the questions, and what they thought was the purpose of the research. All members of the group thought the research was about nutrition in cereals or about cereal preferences. No significant problems were noted in the understanding or use of the questionnaire. Hence it was decided to proceed with the test sessions using the questionnaire as it was.

The pretest group results also indicated that the test cereal was ideal for the purposes of the experiment. The group used both ends of the 9-point scales in rating the cereal. The average ratings for the cereal were 5.0 and 4.3 for the Hedonic and FACT scales respectively.

Physical Set-Up of the Research Area

Each subject met the receptionist in an open area that was relatively easy to find in the building in which the research was carried out. The subject identified himself/herself by presenting the paper received in the mail or at a previous tasting session which indicated his/her

participant number and the date on which he/she was to come for the cereal tasting (see Appendix B), and also his/her University Student Identification Card which had his/her photograph on it. On being checked in on the Attendance Record and given a questionnaire, the participant entered the panel room and took a seat at any one of the six booths.

A. The Taste-Testing Panel Room

Each of the six panel booths in the Panel Room contained a chair for the participant, a small writing/tasting area, and a sliding door through which the sample was received. A corresponding sliding door which the lab technician used to collect the questionnaire and issue the sample was connected to the participant's booth by a slot large enough to hold the sample tray.

Light switches were located on each side of the sliding doors. When the lab technician flipped her light switch on, a small red light would flash on in the panelist's booth indicating that the sample was ready for removal. When the panelist flipped his/her light switch up, a red light would flash on in the lab technician's room indicating that the booth required servicing.

B. The Sample

Each tray distributed to the subjects contained the same sample material. Each tray held a 10-ounce styrofoam bowl containing 25 grams of the test cereal, two 5-ounce Dixie cups (one for water and one containing 100 mls. of 2% milk), a 1½-ounce paper cup containing white granulated sugar, and a paper napkin and a plastic teaspoon. The lab technician wrote on the lid of the styrofoam cereal bowl the 3-digit

number corresponding to the cereal descriptor chosen by the individual before giving the tray to the respondent.

The Sequence of Events

Students selected for participation in the study from responses to the letter requesting participants were again contacted by letter. The information given indicated only that the study was about cereal tasting and in changes in preference of cereals over time. In this follow-up letter an appointment was set up for the person to come to the taste-testing panel room in the Foods Laboratory of the Department of Consumer Studies. The letter indicated whether the person was to come for one or four sessions and also his participant number. The respondent was reminded not to discuss the project with anyone to ensure that only his opinions would be expressed (see Appendix B).

On arriving at the tasting session the respondent was greeted by a receptionist who checked his/her University Identification Card, gave him/her the appropriate questionnaire with a participant number on the front page (see Appendix D) and checked his/her name on the Attendance Record. The receptionist then asked the participant to enter the panel room, take a seat at one of the six panel booths, and follow the instructions on the first page of the questionnaire.

The questionnaire requested the person to check the 3-digit number corresponding to the cereal described which he/she would like to taste (except in the case where no choice was given) (see Appendix D), put the questionnaire inside the panel booth door, and flip his/her light switch up to indicate to the lab technician that he/she was ready to receive the cereal. The lab technician removed the questionnaire, folded back the first page and placed it on the sample tray. The 3-

digit number corresponding to the cereal descriptor chosen was then written on the lid of the styrofoam bowl containing the cereal, and the sample tray was placed in the slot door of the panel booth. The lab technician then flipped her light switch up to indicate to the person that the sample was ready to be evaluated. Upon removal of the sample, the subject flipped the light switch down, tasted the cereal, evaluated it, and answered the remaining questions on the questionnaire. When the questionnaire was completed, the subject was instructed to put his/her participant number at the top of the paper clipped to the back of the questionnaire which indicated the date and time of the next tasting session and requested that he/she bring the paper in to the receptionist at the next test period.

The respondent was then requested to put his/her questionnaire inside the panel booth door from where it was collected by the lab technician, flip the light switch up to indicate to the lab technician that he/she had completed the test, and flip it down again when the red light in the booth flashed off. The participant was then free to leave.

Persons required for only one testing session were paid for their participation after leaving the panel room; persons participating in four sessions were paid at the end of the last session.

In the third testing period part of the questionnaire was omitted and only the two scales which measured the person's liking for the cereal were included. At this time the participants were also reminded that the cereals which they were to receive were only slightly different in formulation and that the study was measuring "preferences for cereal and changes in preference over time: (see Appendix B) in order to reduce suspicions over the similarity of the cereals tasted. For all other test

sessions the questionnaire was the same except for the list of cereal descriptors on the front page of the questionnaire.

RESULTS

Two nine-point preference/acceptance scales were used to assess subjects' satisfaction with the test cereal, an adapted Hedonic Scale and the FACT Scale. High satisfaction with the cereal on each scale was scored '9' while high dissatisfaction was scored '1'. Attitude scores were also assessed on nine-point scales, with strong agreement with a statement scored '9' and strong disagreement scored '1'.

Means for each treatment for the Hedonic and FACT Scores were calculated and graphed. Changes in evaluation of the test cereal over weeks between groups and differences within groups were assessed through the use of analysis of variance tests. The means for Attitude Scores were also calculated. Changes in Attitude Scores between weeks were assessed by the Wilcoxon Matched-Pairs Signed-Ranks Test, a non-parametric test which measured the relative magnitude as well as the direction of the differences considered.

Analysis of the Preference/Acceptance Scales

A. Means of Hedonic and FACT Scores for Each Treatment

The mean scores of the Hedonic and FACT Scales for each treatment are given in Table 3. Graphs of these scores over Weeks (Figures 4 and 5) indicated that similar scores and changes over time occurred for each of the Groups for the two scales. The relationships between scores within Weeks were subsequently analyzed.

B. Analysis of Variance Among Choice Levels in Week 1

The treatments given in Week 1 represented all the choice levels

TABLE 3

MEANS FOR HEDONIC SCORE AND FACT SCORE FOR EACH TREATMENT

Hedonic Score

Group and Treatment Schedule	Week 1	Week 2	Week 3	Week 4
A (No choice - control)	5.91 (45)			
B (Increasing choice - 2,4,6,8)	6.08 (40)	5.78 (41)	6.11 (38)	5.91 (34)
C (4 choices)	6.18 (44)			
D (Decreasing choice, business rationale - 6,4,2,0)	6.52 (48)	6.49 (45)	6.54 (46)	6.45 (40)
E (Decreasing choice, government rationale - 8,6,4,2)	6.36 (47)	6.44 (41)	6.48 (40)	6.50 (38)
F (Reduced choice over time - 8,4,4,4)	5.78 (45)	6.10 (40)	6.00 (40)	6.21 (34)
G (16 choices)	5.55 (40)			
N =	(309)	(167)	(164)	(146)

Total Cases = 819
Missing Cases = 33 or 4.0%

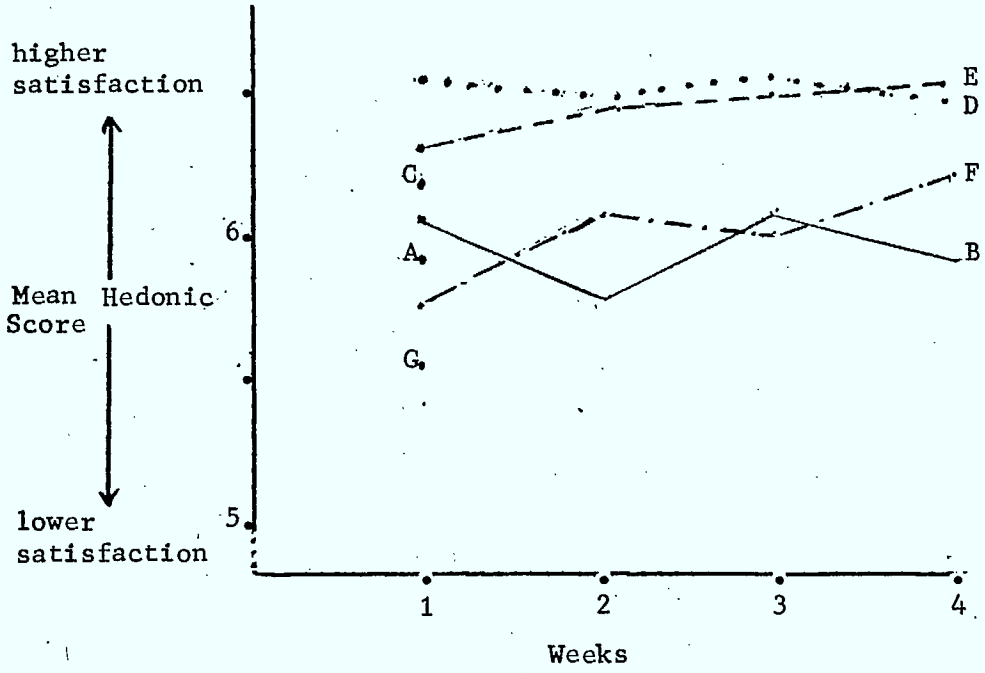
FACT Score

Group and Treatment Schedule	Week 1	Week 2	Week 3	Week 4
A (No choice - control)	5.69 (45)			
B (Increasing choice - 2,4,6,8)	5.74 (41)	5.59 (41)	5.85 (39)	5.69 (39)
C (4 choices)	5.93 (44)			
D (Decreasing choice, business rationale - 6,4,2,0)	6.27 (48)	5.94 (47)	6.28 (47)	6.11 (46)
E (Decreasing choice, government rationale - 8,6,4,2)	5.96 (47)	6.30 (43)	6.19 (43)	6.22 (46)
F (Reduced choice over time - 8,4,4,4)	5.60 (45)	5.80 (41)	5.83 (40)	5.94 (36)
G (16 choices)	5.44 (41)			
N =	(311)	(172)	(169)	(162)

Total Cases = 819
Missing Cases = 5 or 0.6%

FIGURE 4

MEANS FOR HEDONIC SCORE FOR ALL TREATMENTS

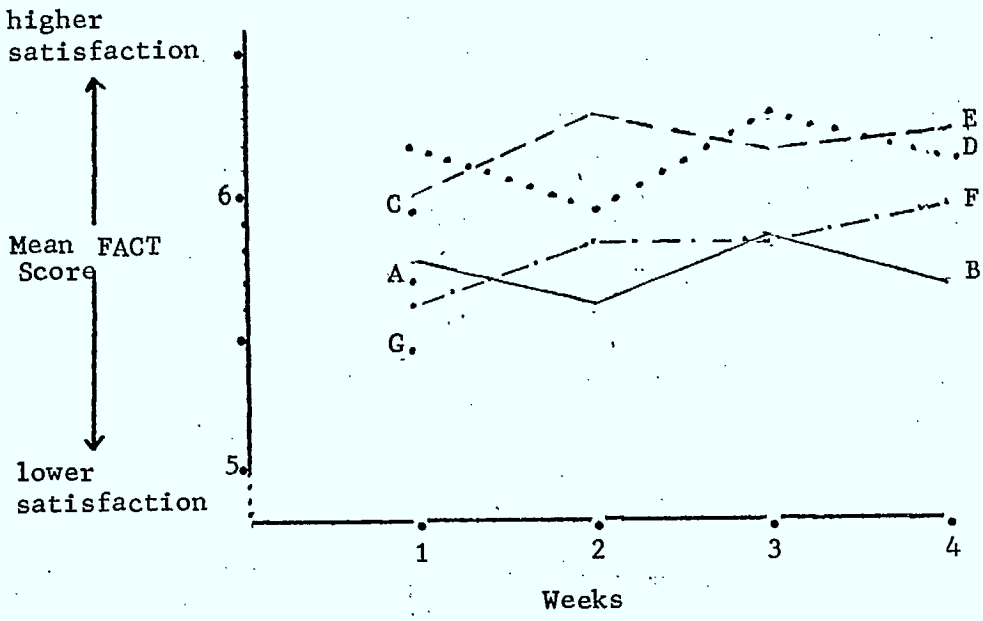


Choice Level Sequence

Group B	2,4,6,8 choices	———
Group D	6,4,2,0 choices	••••••
Group E	8,6,4,2 choices	- - - -
Group F	8,4,4,4 choices	- • - • -

FIGURE 5

MEANS FOR FACT SCORE FOR ALL TREATMENTS



Choice Level Sequence

Group B	2,4,6,8 choices	———
Group D	6,4,2,0 choices	••••••
Group E	8,6,4,2 choices	- - - -
Group F	8,4,4,4 choices	- • - • -

given in the experiment. A parametric One-Way Analysis of Variance of these choice levels (no choice, 2, 4, 6, 8 and 16 choices) indicated slightly significant differences for the FACT Scores ($p = .076$) but not for the Hedonic Scores (Table 4). The Kruskal-Wallis One-Way Analysis of Variance by Ranks, a nonparametric statistical test, also indicated that genuine population differences among choice levels occurred for the FACT Scores ($p = .058$), but not for the Hedonic Scores. It was concluded that even though the scorings used were not true interval measures the parametric tests were appropriate for testing differences among treatments for the experiment in which large sample sizes had been used. It should be noted here again that the FACT score is a measure of behavioral intention which might be considered to be a more important measure than the Hedonic score of general attitude toward the cereal.

The Scheffe Multiple Range Test, on a posteriori contrast test, was used to examine both pairwise comparisons among the choice levels and also all possible linear combinations of the means. The test did not indicate significant differences between any pairs of levels on either scale. The ordering of the means, however, indicated a trend. The cereal appeared to be liked less by the subjects when the choice level was either too high or too low, and liked most when choice level was in the middle range of about 6 choices (Figure 6).

The Oneway Analysis of Variance computer programme also performed tests for polynomial trends, with linear, quadratic and cubic components being extracted. The quadratic component was significant (Hedonic Score, $p = .028$, FACT Score, $p = .036$). Since the deviation from the quadratic was not significant, it was concluded that a quadratic

TABLE 4

ANALYSIS OF VARIANCE BY NUMBER OF CHOICES GIVEN IN WEEK 1 -
WITH QUADRATIC EQUATION AND KRUSKAL-WALLIS ONE-WAY ANALYSIS OF VARIANCE AND SCHEFFE TESTS

	I Hedonic Score				II FACT Score			
Source	d.f.	s.s.	m.s.	F	d.f.	s.s.	m.s.	F
Between Choice Levels	5	22.3	4.46	1.83 (.107)	5	17.4	3.49	2.02 (.076)
Linear Term	1	4.7	4.68	1.92 (n.s.)	1	2.2	2.20	1.28 (n.s.)
Dev. from Linear	4	17.6	4.40	1.81 (n.s.)	4	15.2	3.81	2.21 (.068)
Quad. Term	1	11.9	11.90	4.89 (.028)	1	7.7	7.67	4.45 (.036)
Dev. from Quad.	3	5.7	1.91	0.78 (n.s.)	3	7.6	2.52	1.46 (n.s
Within Groups	304	740.1	2.43		306	527.8	1.72	
Total	309	762.4			311	545.2		

Quadratic Relationship Between Score and Number of Choices

Hedonic Score = $.092x - .0074x^2 + 5.95$

FACT Score = $.073x - .0056x^2 + 5.70$

Kruskal-Wallis One-Way Analysis of Variance by Ranks

			Corrected for Ties					Corrected for Ties	
Cases	Chi-Square	Sig.	Chi-Square	Sig.	Cases	Chi-Square	Sig.	Chi-Square	Sig
310	8.00	.156	8.42	.135	312	9.99	.075	10.68	.058

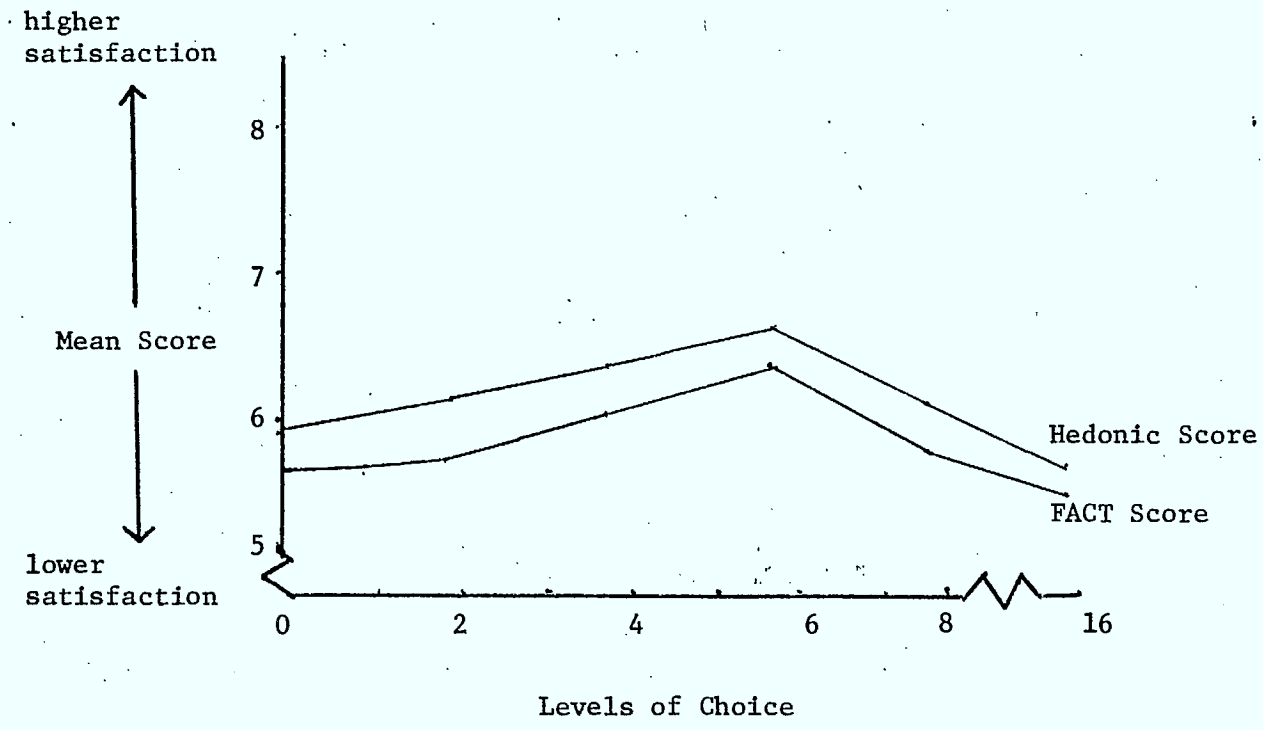
Multiple Range Test - Scheffe Procedure

No. of Choices	16	0	8	2	4	6	16	0	2	8	4	6
Means in increasing order	5.55	5.91	6.08	6.10	6.18	6.52	5.44	5.69	5.74	5.78	5.93	6.27

* p .10

FIGURE 6

MEANS FOR CHOICE LEVELS IN WEEK 1 FOR HEDONIC AND FACT SCORES



relationship is appropriate to describe the variation among groups given various choice levels of cereal descriptors, i.e. a higher polynomial would not be appreciably better than the quadratic. A regression of the Hedonic Score against the number of choices given to a Group and number of choices given squared, and a similar procedure with the FACT Score yielded the following quadratic equations:

$$\text{Hedonic Score} = .092x - .007x^2 + 5.95 ,$$

$$\text{FACT Score} = .073x - .0056x^2 + 5.70 ,$$

where x = level of choice.

These equations then suggest that there was a base score of liking for the cereal of about '6' on the two 9-point scales at the no choice level. Increasing the choice level by one increased the liking of the cereal by about 1% on the Hedonic Scale (.092) and by 3/4 of 1% on the FACT score. However, these increases were somewhat moderated by the negative x^2 term, so that the larger the increase in choice, the smaller was the increase in satisfaction.

Specific questions asked by the LSD (Least Significant Difference) Test for differences between the means of each treatment, demonstrated differences between some of the choice levels (Table 5). The No-choice level was significantly different from the 6-choice level (Hedonic Score, $p = .060$, FACT Score, $p = .033$); the No-choice Group rated the test cereal less acceptable than the 6-choice Group. The 2-choice level Group also rated the cereal significantly less acceptable than the 6-choice Group (Hedonic Score, p = n.s., FACT Score, $p = .056$), as did the 8-choice Group (Hedonic Score, p = n.s., FACT Score, $p = .036$) and the 16-choice Group (Hedonic Score, $p = .004$, FACT Score, $p = .003$). No differences were found between the No-choice, 2-choice, 4-choice and

TABLE 5

COMPARISONS BETWEEN MEANS FOR CHOICE LEVELS
USING THE LSD (LEAST SIGNIFICANT DIFFERENCE) TEST

	Hedonic Score					FACT Score				
Comparisons	Value	S. Error	T Value	d.f.	P-level	Value	S. Error	T Value	d.f.	P-level
No choice with 2 choices	0.17	0.34	0.57	303	.579	0.05	0.28	0.18	305	.861
No choice with 4 choices	-0.27	0.33	-0.82	303	.412	-0.24	0.28	-0.87	305	.383
No choice with 6 choices	0.61	0.32	1.89	303	.060*	0.58	0.27	2.14	305	.033**
No choice with 8 choices	0.16	0.28	0.56	303	.575	0.09	0.24	0.38	305	.70
No choice with 16 choices	0.36	0.34	1.07	303	.286	0.25	0.28	0.88	305	.378
2 choices with 4 choices	0.84	0.34	0.25	303	.803	0.19	0.28	0.69	305	.494
2 choices with 6 choices	-0.42	0.33	-1.28	303	.201	-0.53	0.28	-1.92	305	.056*
2 choices with 8 choices	-0.28	0.29	-0.10	303	.924	0.04	0.24	0.17	305	.868
4 choices with 6 choices	-0.34	0.32	-1.05	303	.297	-0.34	0.27	-1.24	305	.217
4 choices with 8 choices	-0.11	0.29	-0.39	303	.694	-0.15	0.24	-0.64	305	.525
4 choices with 16 choices	-0.63	0.34	-1.86	303	.064*	-0.49	0.28	-1.73	305	.085*
6 choices with 8 choices	-0.45	0.28	-1.63	303	.104	-0.49	0.23	-2.11	305	.03[illegible]**
6 choices with 16 choices	0.97	0.33	2.92	303	.004***	0.83	0.28	2.98	305	.003***
8 choices with 16 choices	0.52	0.29	1.76	303	.079*	0.34	0.25	1.38	305	.169

[t] The probability of observing a T value larger than the observed T value, assuming no differences in a specific comparison.

***p < .01
**p < .05
*p < .10

8-choice Groups. However, the 4-choice Group rated the cereal significantly higher than the 16-choice Group (Hedonic Score, $p = .064$, FACT Score, $p = .085$) while no differences were found between the 4-choice and 6-choice Groups. Also, no significant differences were found between the 16-choice Group and the No-choice, 2-choice and 8-choice Groups.

Thus, the 6-choice Group rated the cereal significantly higher than any of the other groups, except for the 4-choice Group. It appeared that the 6-choice level was rated differently from both high and low choice levels and that both high and low choice levels were less acceptable to the subjects. The 4-choice level appeared to be closer to this ideal choice level in this experiment than was the 8-choice level.

C. Analysis of Variance Taken Over Week 2, Week 3 and Week 4

Table 6 contains analyses of variance for Week 2, Week 3 and Week 4 for each of the four Groups which received four treatments. In Week 2, differences in acceptance of the cereal occurred among the Groups for both the Hedonic Score ($p = .099$) and the FACT Score ($p = .093$). A priori contrasts (contrasts made before an examination of the mean scores for the Groups) indicated that Group B, whose choice level had been increased from 2 to 4 choices, was less satisfied with the cereal than were Groups D, E and F whose choice level had decreased to 4, 6 and 4 choices respectively (Hedonic Score, $p = .034$, FACT Score, $p = .072$). No significant differences were found among the Groups whose choice level had been decreased. The data suggests that increasing choice is more important here than the effect of choice level. Since the analysis of Week 1 indicates that there is no difference between

TABLE 6

ANALYSIS OF VARIANCE FOR GROUPS B, D, E AND F FOR WEEKS 2, 3 AND 4
BY HEDONIC SCORE AND FACT SCORE, WITH CONTRASTS

WEEK 2

	I Hedonic Score				II FACT Score			
Source	d.f.	s.s.	m.s.	F	d.f.	s.s.	m.s.	F
Between Groups	3	13.7	4.57	2.13 (.099)	3	11.4	3.81	2.17 (.093)
Within Groups	163	350.0	2.15		168	294.3	1.75	
Total	166	363.7			171	305.7		

A Priori Contrasts Between Means for Groups B, D, E and F

		Value	S. Error	T Value	d.f.	T	Value	S. Error	T Value	d.f.	T.
Contrast 1	B with D, E, F	-1.69	0.79	-2.23	163	.034**	-1.29	0.71	-1.81	168	.072*
Contrast 2	F with D & E	-0.36	0.28	-1.30	163	.116	-0.31	0.25	-1.26	168	.209
Contrast 3	D with E	0.05	0.32	0.16	163	.875	-0.37	0.28	-1.31	168	.192

WEEK 3

	I Hedonic Score				II FACT Score			
Source	d.f.	s.s.	m.s.	F	d.f.	s.s.	m.s.	F
Between Groups	3	9.0	2.99	1.68 (n.s.)	3	6.9	2.28	1.58 (n.s.)
Within Groups	160	285.0	1.78		165	238.8	1.45	
Total	163	294.0			168	245.6		

A Priori Contrasts Between Means for Groups B, D, E and F

		Value	S. Error	T Value	d.f.	T	Value	S. Error	T Value	d.f.	T
Contrast 1	B with D & E	-0.40	0.26	-1.55	160	.122	-0.39	0.23	-1.67	165	.097*
Contrast 2	B with F	0.11	0.30	0.35	160	.728	0.02	0.27	0.08	165	.938
Contrast 3	D with E	0.07	0.29	0.24	160	.813	0.09	0.25	0.36	165	.722
Contrast 4	F with D & E	-0.51	0.26	-1.99	160	.048**	-0.41	0.23	-1.78	165	.077*

*p < .10 **p < .05

WEEK 4

	I Hedonic Score				II FACT Score			
Source	d.f.	s.s.	m.s.	F	d.f.	s.s.	m.s.	F
Between Groups	3	7.8	2.60	1.63 (n.s.)	3	6.3	2.11	1.49 (n.s.)
Within Groups	142	225.7	1.59		158	223.7	1.42	
Total	145	233.5			161	230.0		

A Priori Contrasts Between Means for Groups B, D, E and F

		Value	S. Error	T Value	d.f.	T	Value	S. Error	T Value	d.f.	T
Contrast 1	B with D & E	-0.56	0.26	-2.17	142	.031**	-0.47	0.23	-2.06	158	.041**
Contrast 2	B with F	-0.29	0.31	-0.96	142	.338	-0.25	0.28	-0.92	158	.361
Contrast 3	D with E	-0.05	0.29	-0.18	142	.861	-0.11	0.26	-0.43	158	.065
Contrast 4	F with D & E	-0.27	0.26	-1.04	142	.301	-0.22	0.24	-0.93	158	.353

**p < .05

*p < .10

the 4 and 6-choice levels, the difference between the Increasing-Choice Group and the Decreasing-Choice Groups can be attributed to the effect of the direction of change in choice level.

In Week 3, no significant differences were found among the Groups by the analysis of variance test. However, contrasts between specific groups suggested that Group B, whose choice level had been increased again, from 4 to 6 choices, was again less satisfied with the cereal than were Groups D and E for whom choice level had been decreased (Hedonic Score, p = n.s., FACT Score, $p = .097$). This finding was perhaps only marginally significant because the effect of the "ideal" choice level of 6 choices given the Increasing-Choice Group may have resulted in a higher mean for that Group, while the Decreasing-Choice Groups were given the 2 and 4-choice levels. However, the effect of increasing choice still somewhat cancelled out the effect of an "ideal" choice level. No differences were found between Group B (at the 6-choice level) and Group F (whose choice level had remained the same at 4 choices), although this finding may also have been confounded with the effect of the "ideal" choice level. The groups for whom choice level had decreased, Groups D and E, were again not significantly different. However, Group F at the 4-choice level rated the cereal significantly lower than the Decreasing-Choice Groups which were at the 2 and 4-choice levels (Hedonic Score, $p = .048$, FACT Score, $p = .077$). No differences had been detected in Week 1 between the 2 and 4-choice levels, so it can be assumed that reducing choice over time had the effect of lowering satisfaction with the test cereal. Thus, decreasing choice was again preferred to increasing choice, and decreasing choice was also preferred to choice that had been reduced and then held constant over time.

For Week 4, the analysis of variance test again indicated no significant differences among the Groups. A contrast between the means of Group B and Groups D and E again indicated that the Increasing-Choice Group (with choice level at 8 choices) rated the cereal lower than those Groups for whom choice level had decreased (Hedonic Score, $p = .031$. FACT Score, $p = .041$). In Week 4 the effect of ideal choice level was no longer present and so the effect of increasing choice was more significant, at the $p < .05$ level, than it had been in Week 3. Again, no differences were found between the Reduced-Choice-Over-Time Group and the Increased-Choice Group, nor between the two Groups for whom choice level had been decreased. Contrary to the finding of Week 3, no differences were found between the Reduced-Choice-Over-Time Group and the Decreased-Choice Groups. The choice levels of these three groups were now at 4 choices, no choice and 2 choices respectively. Since no differences were detected in these choice levels in Week 1, any differences found among them in Week 4 would have been due to the effect of reducing choice. Therefore, it can be concluded that reducing choice had no effect on satisfaction with the cereal in the final testing session.

From these results it appeared that subjects preferred decreasing choice levels to increasing choice levels, and that for Week 3, decreasing choice was preferred to choice levels that remained the same over time. Even though the "ideal" choice level for this experiment had been found to be about 6 choices, the effect of increasing choice was stronger than that of "ideal" choice level and resulted in lower satisfaction with the test cereal than the analysis of choice levels in Week 1 would indicate. Thus, increasing choice levels was

found to be more important than the effect of present choice level in predicting satisfaction with the test cereal.

D. Analysis of Variance Taken Over Group F (Reduced-Choice-Over-Time Group)

For Groups B, D and E the effect of Week on the Hedonic and FACT Scores was completely confounded with the effect of level of choice. However, Group F had been given only two choice levels, 8 choices and 4 choices, and so the two effects could be separated and a measure of the week to week variation in an individual's response, independent of the effects of level of choice, could be obtained. The Two-Way Interaction term in Table 7 indicated that the way an individual reacted to the level of choice given differed significantly from another's, i.e. some individuals preferred the higher choice level while some preferred the lower (Hedonic Score, $p = .093$, FACT Score, $p = .024$). However, the choice levels given to the Group did marginally affect satisfaction with the cereal (Hedonic Score, $p =$ n.s., FACT Score, $p = .082$). Since the difference in the 8 and 4-choice levels in the analysis of choice levels in Week 1 were not significantly different, but differences between levels was found after choice was reduced, support is lent to the hypothesis that reducing choice over time is important, and that reducing choice increased satisfaction with the test cereal.

E. Effects of Rationale for Choice Restriction

The two groups whose choice levels were decreased several times were given a reason for the decrease in their choice levels. One group was told that some companies had withdrawn from the study, the other was told that government regulations might not allow the missing cereals to be marketed. The effect of these rationales can be initially

TABLE 7

ANALYSIS OF VARIANCE FOR GROUP F (REDUCED CHOICE OVER TIME) OVER 4 TREATMENTS

	I Hedonic Score				II FACT Score			
Source	d.f.	s.s.	m.s.	F	d.f.	s.s.	m.s.	F
Main Effects	45	150.8	3.35	2.75 (.000)	45	143.7	3.19	5.13 (.000)
Individual	44	148.6	3.38	2.77 (.000)	44	141.4	3.21	5.16 (.000)
No. of Choices	1	1.2	1.17	0.96 (n.s.)	1	1.9	1.93	3.11 (.082)
2-Way Interactions	39	68.2	1.75	1.43 (.093)	39	41.7	1.07	1.72 (.024)
Individual x No. of Choices	39	68.2	1.75	1.43 (.093)	39	41.7	1.07	1.72 (.024)
Explained	84	219.0	2.61	2.14 (.000)	84	185.4	2.21	3.55 (.000)
Residual	72	87.8	1.22		72	44.8	0.62	
Total	156	306.8	1.97		156	230.3	1.48	

Total Cases = 163

Missing Cases = 6 or 3.7%

examined by submitting the groups to a regression analysis. At the same time it might be important to examine the relative impact on the respondent of having their own favourite cereal removed from the list.

It should be noted here that this is very preliminary data. Results concerning the impact of such variables in an experimental setting is very tentative. The most useful results from an experimental design such as this is yielded in the analysis of variance results. However, keeping these restrictions in mind the following results are presented.

Data from groups B, D and E for the last three weeks were submitted to a regression analysis. The number of choices and the number of choices squared were both included as predictor variables because the relationship between the satisfaction level scores and level of choice was known to be a quadratic nature. The other predictor variables were whether or not the rationale given for decreasing choice was due to government regulation and also whether or not their previously selected cereal was still on the list.

The results are indicated in Table 8. The Hedonic score equation was not significant but the government rationale for decreased choice was slightly significant and positively related to satisfaction level ($p < .10$). The FACT score equation was significant at the $p < .05$ level. In this case the government rationale was highly associated ($p < .001$) with increased satisfaction.

Although these findings can only be considered as very tentative, they do suggest that the reasons given to consumers for why their choices are reduced in the marketplace will be a major factor in determining how they will react to such restrictions.

TABLE 8

REGRESSION ANALYSIS WITH RATIONALE FOR DECREASED CHOICE

Dependent Variable	Hedonic Score		FACT Score	
Independent Variables				
	B	t-level	B	t-level
No. of choices	-0.149	0.498	0.246	1.605 ($p = .06$)
No. of choices squared	0.005	0.062	0.016	0.625
Cereal last chosen on list	0.166	0.710	0.219	1.449
Government rationale for decreased choice	0.221	1.737 ($p < .10$)	0.297	3.669 ($p < .001$)
Constant	6.655		6.512	
Overall F of equation	1.6874 (N.S.)		2.579 ($p < .05$)	

Analysis of Attitude Scores

A. Mean Scores of Attitude Statements

The average score for each treatment for each of the Attitude Statements analyzed are given in Table 9. Since a 9-point scale had been used to assess attitudes, an average score of '5' indicated a neutral feeling toward a statement.

Eight of the fifteen statements given on the questionnaire pertained to attitudes which were of interest in the analysis. These eight statements applied to attitudes in the following areas:

Nutrition - Statement 5 (See questionnaire, Appendix C)

Cereal Manufacturers - Statement 2

Cereals - Statements 3, 4 and 6

Government Regulation -Statements 1, 5, 7 and 8

Nutrition - Subjects agreed strongly that governments should require manufacturers to make cereals which are more nutritious (av. score + 7.28).

Cereal Manufacturers - Subjects agreed only slightly that manufacturers do too much advertising (av. score = 5.70).

Cereals - Subjects felt strongly that there was an adequate selection of cereals available in supermarkets (av. score = 7.18), and indeed there was a tendency to feel that there are too many cereal brands on the market (av. score = 5.72). They neither agreed nor disagreed with the statement that "Cereal manufacturers try to make wholesome products" (av. score = 4.94).

Government Regulation - Subjects did not feel that there are too many

TABLE 9

MEAN SCORES OF SUBJECTS' RESPONSE TO STATEMENTS ON ATTITUDES

1. Response to Statement: There are too many regulations restricting manufacturing.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	2.80			
B	3.55	3.54	3.28	
C	3.28			
D	3.04	3.57	3.26	
E	3.36	3.68	3.73	
F	3.44	3.78	3.97	
G	3.23			
Average Score =	3.29	3.64	3.54	3.42
N =	(308)	(173)	(162)	

Total Cases = 650
Missing Cases = 7 or 1.1%

2. Response to Statement: Cereal manufacturers do too much advertising.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	5.27			
B	5.38	5.89	6.15	
C	5.64			
D	5.60	5.74	5.41	
E	5.55	5.70	5.80	
F	5.78	6.02	5.95	
G	5.83			
Average Score =	5.58	5.83	5.81	5.70
N =	(311)	(173)	(162)	

Total Cases = 650
Missing Cases = 4 or .6%

3. Response to Statement: There are too many cereal brands on the market.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	5.49			
B	5.60	5.59	5.77	
C	5.44			
D	5.27	5.30	5.30	
E	5.87	5.93	5.76	
F	6.33	6.20	6.11	
G	6.03			
Average Score =	5.71	5.74	5.71	5.72
N =	(311)	(173)	(163)	

Total Cases = 650
Missing Cases = 3 or .5%

4. Response to Statement: There is adequate selection of cereals available in supermarkets.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	7.51			
B	7.57	7.10	6.87	
C	6.84			
D	7.53	6.72	6.50	
E	7.36	7.02	6.68	
F	7.71	7.34	7.49	
G	7.49			
Average Score =	7.43	7.03	6.86	7.18
N =	(310)	(173)	(163)	

Total Case = 650
Missing Cases = 4 or .6%

5. Response to Statement: Governments should require manufacturers to make cereals which are more nutritious.

Group >	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	7.70			
B	6.95	6.95	6.87	
C	7.36			
D	7.40	7.30	7.22	
E	7.66	7.59	7.56	
F	6.93	7.05	7.03	
G	7.59			
Average Score =	7.37	7.23	7.18	7.28
N =	(310)	(173)	(163)	

Total Cases = 650
Missing Cases = 4 or .6%

6. Response to Statement: Cereal manufacturers try to make wholesome products.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	4.68			
B	5.14	5.27	5.51	
C	4.16			
D	4.52	4.81	4.93	
E	5.26	5.32	5.54	
F	4.53	4.90	4.95	
G	4.69			
Average Score =	4.71	5.07	5.23	4.94
N =	(310)	(173)	(163)	

Total Cases = 650
Missing Cases = 4 or .6%

7. Response to Statement: There should be more efforts to ensure people eat a good diet.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	8.16			
B	7.50	7.37	7.15	
C	7.82			
D	7.92	7.64	7.59	
E	8.15	7.89	7.83	
F	7.64	7.41	7.54	
G	8.03			
Average Score =	7.89	7.58	7.53	7.72
N =	(309)	(173)	(163)	

Total Cases = 650
Missing Cases = 5 or .8%

8. Response to Statement: Government regulations are necessary to ensure wholesome food products.

Group	Mean Scores of Attitude			
	Week 1	Week 2	Week 4	
A	7.57			
B	7.14	7.07	6.90	
C	6.87			
D	7.15	7.11	6.96	
E	7.53	7.09	6.95	
F	7.33	6.51	6.89	
G	7.29			
Average Score =	7.27	6.95	6.93	7.10
N =	(309)	(173)	(162)	

Total Cases = 650
Missing Cases = 6 or .9%

regulations restricting food manufacturing (av. score = 3.42). They appeared to have favourable attitudes toward government regulation. They agreed that governments should require manufacturers to make cereals that are more nutritious (av. score = 7.28), and that there should be more efforts to ensure that people eat good diets (av. score = 7.72). They also agreed that government regulations are necessary to ensure wholesome food products (av. score = 7.10).

In summary, subjects believed that the selection of cereals in supermarkets was adequate and that perhaps there are too many brands to choose from. The subjects had favourable attitudes toward government regulation in the food industry and had less favourable attitudes toward the efforts of business. Nutrition was important to them and government efforts to ensure good nutrition in manufactured foods was approved.

B. Changes in Attitude Scores Between Treatments

The Wilcoxon Matched-Pairs Signed-Rank Test was used to evaluate changes in Attitude Scores between treatments (Table 10). The test was applied to the four groups which each attended four testing sessions to evaluate changes in attitude between Weeks 1 and 2 for all the Groups, and to evaluate changes between Weeks 1 and 4 for Group F whose choice was reduced over time.

No significant changes in Attitude Scores were found for the statements dealing with nutrition or cereal manufacturers. Attitudes toward the number of cereal brands on the market and cereal manufacturers' efforts to try to make wholesome products also did not change. However, changes occurred for the statement "There is an adequate

TABLE 10

WILCOXON MATCHED-PAIRS SIGNED-RANK TEST FOR ATTITUDE SCORE DIFFERENCES

1. There are too many regulations restricting food manufacturing.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	12	12.21	13	13.73	-0.43	0.667
Group D	45	9	15.28	21	15.60	-1.95	0.051*
Group E	44	13	17.31	20	16.80	-0.99	0.321
Group F	41	12	12.33	15	15.33	-0.99	0.325
Week 1 & 4							
Group F	37	10	12.60	14	12.43	-0.69	0.493

2. Cereal manufacturers do too much advertising.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	8	13.06	17	12.97	-1.56	0.119
Group D	46	11	17.27	18	13.61	-0.60	0.552
Group E	44	14	17.93	22	18.86	-1.29	0.198
Group F	41	12	17.36	19	16.74	-0.67	0.503
Week 1 & 4							
Group F	37	13	13.31	13	13.69	-0.06	0.949

3. There are too many cereal brands on the market.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	10	20.05	18	11.42	-0.06	0.955
Group D	47	17	17.21	17	17.79	-0.09	0.932
Group E	44	11	16.77	18	13.92	-0.71	0.475
Group F	41	14	10.93	8	12.50	-0.86	0.390
Week 1 & 4							
Group F	37	10	11.60	11	10.45	-0.02	0.986

4. There is an adequate selection of cereals available in supermarkets.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	16	11.94	6	10.33	-2.09	0.036**
Group D	46	21	17.33	10	13.20	-2.27	0.023**
Group E	44	18	13.28	8	14.00	-1.61	0.107
Group F	41	18	12.47	7	14.36	-1.67	0.095*
Week 1 & 4							
Group F	37	8	11.00	12	10.17	-0.64	0.526

5. Governments should require manufacturers to make cereals which are more nutritious.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	13	13.54	13	13.46	-0.01	0.990
Group D	47	13	11.69	10	12.40	-0.43	0.670
Group E	44	10	12.65	13	11.50	-0.35	0.727
Group F	41	6	12.17	14	9.79	-1.20	0.232
Week 1 & 4							
Group F	37	13	9.31	8	13.75	-0.19	0.848

6. Cereal manufacturers try to make wholesome products.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	15	16.40	17	16.59	-0.34	0.736
Group D	47	15	17.87	19	17.21	-0.50	0.614
Group E	44	17	16.47	17	18.53	-0.30	0.765
Group F	41	12	18.50	21	16.14	-1.05	0.296
Week 1 & 4							
Group F	37	11	12.09	12	11.92	-0.15	0.879

7. There should be more efforts to ensure people eat a good diet.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	13	13.08	11	11.82	-0.57	0.568
Group D	47	12	10.13	7	9.79	-1.07	0.286
Group E	43	11	10.64	7	7.71	-1.37	0.170
Group F	41	12	11.08	9	10.89	-0.61	0.543
Week 1 & 4							
Group F	37	4	12.75	13	7.85	-1.21	0.227

8. Government regulations are necessary to ensure wholesome food products.

	Cases	-Ranks	Mean	+Ranks	Mean	Z	2-Tailed P-level
Week 1 & 2							
Group B	41	13	11.65	9	11.28	-0.81	0.417
Group D	47	15	14.20	13	14.85	-0.23	0.820
Group E	44	19	16.26	11	14.18	-1.57	0.116
Group F	41	19	14.18	6	9.25	-2.88	0.004***
Week 1 & 4							
Group F	37	10	13.20	15	12.87	-0.82	0.412

***$p < .01$
**$p < .05$
*$p < .10$

selection of cereals available in supermarkets". Between Weeks 1 and 2 three of the four groups tested showed a significant change in attitude, Groups B ($p = .036$), D ($p = .023$) and F ($p = .095$). Each group agreed with this statement in both Weeks 1 (av. score = 7.54) and 2 (av. score = 7.03), but their agreement with this statement was less strong after their choice level had either been increased, in the case of Group B, or decreased, in the case of Groups D and F. Group E whose choice had been more drastically decreased than Groups D or F, from 8 to 4 choices, demonstrated a similar trend toward attitude change but the change was not quite significant ($p = .107$).

Two of the statements which dealt with attitudes toward government regulation demonstrated significant attitude changes for some of the groups. The statement "There are too many regulations restricting food manufacturing" demonstrated a significant change in attitude for Group D which had been given a business rationale for decreasing choice, namely that "Some cereal manufacturers originally involved in this study have withdrawn from the project. Therefore we have only the following cereals for you to choose from." Group D disagreed with the Attitude Statement in both Week 1 (av. score = 3.36) and Week 2 (av. score = 3.78), but disagreement with the statement was significantly less in Week 2 ($p = .051$).

Group E which had been given the rationale that government regulation would likely eliminate some of their choices, also was less positive toward restrictive regulation although the change was not significant. The same finding was true for Group F which experienced a drop from 8 to 4 choices. Group B which experienced increasing choice did not express less positive feelings towards

government restrictions, and in fact by Week 4 felt even more positive about such regulations, although again these changes were not significant.

Group F, whose choice level was halved in Week 2, was also significantly less positive about the need for government regulations to ensure wholesome food products.

SUMMARY AND CONCLUSIONS

Study results indicated that satisfaction with the test cereal varied with the level of choice. There appeared to be a limit beyond which increasing choice no longer contributed to increasing satisfaction, and that satisfaction levels decreased as choice was further increased. The relationship found between level of choice and satisfaction with the test cereal seemed to be curvilinear, with satisfaction rising to a peak at around 4 to 6 choices then decreasing again, and perhaps appearing to slow its decline at around 16 choices. Both too much and too little choice seemed to be less desirable than some optimal level. Groups given the two lowest choice levels in the experiment of no choice and 2 choices and those given the highest choice levels of 8 and 16 choices demonstrated no differences in their satisfaction levels.

Subjects preferred decreasing to increasing choice levels even when the group which was given increased choice had the optimal choice level (6 choices) and the decreased choice groups had choice levels which were found to be less satisfactory than this optimum level in the control testing sessions. Thus, changes in choice level are more important than ideal choice level in predicting satisfaction with the cereal. Reducing choice over time (from 8 to 4 choices) increased satisfaction with the cereal, but this effect could have been due to the effect of ideal choice level. There were also some indications that reducing choice and keeping it at the same level over two testing sessions results in a lower satisfaction with the cereal than consecutive decreases in choice over time. A preliminary investigation suggested that a government imposed restriction might

be seen positively and result in greater satisfaction with the choices available. However, such a conclusion is highly tentative requiring much more substantive research directed specifically at this issue.

Subjects placed high value on good nutrition in manufactured food products. They had favourable attitudes toward government regulation in the food industry, and a less favourable and neutral view of the efforts of business. Furthermore, they believed that the selection of cereals in supermarkets is adequate and that perhaps there are too many brands to choose from. Since decreasing choice levels were shown to result in higher satisfaction with the test product than increasing levels and some evidence exists that subjects preferred fewer cereals to choose from, consumers would perhaps be more satisfied with the cereal they buy if the number of brands on supermarkets' shelves were reduced rather than increased which is the trend in the present manufacturers' policy of more and more product differentiation. However, the study indicated also that any change in choice level in the experimental condition, whether it was increased or decreased, resulted in a less strong, though still positive view of the adequacy of the selection of cereals in the marketplace. Other factors undoubtedly exist other than level of choice which affect satisfaction with brands available in a product range.

There were some few significant changes in attitudes toward the necessity of government regulations when choice level was either slightly increased or slightly decreased. However, when choice level was more drastically reduced, from 8 to 4 choices, and no rationale was given for the decrease in choice, subjects had a less favourable though still positive view towards the need for government

regulation. This finding may indicate that reducing choice too drastically may result in an alienation of consumers to whatever agency they feel may be responsible for a large decrease in choice available.

In conclusion, it appears that for cereals in this experimental condition there was a threshold beyond which satisfaction did not increase with increasing choice. Further research is required to see if other products follow the same trend, and how consumer satisfaction is affected by the level of product choice in the marketplace.

The findings of this study indicate to manufacturers that either too much or too little product differentiation in the marketplace may result in lower satisfaction with their products. A particular industry may be confronted with a situation in which government controls over the kinds of products it produces are supported by consumers who are frustrated with the overall level of choice available. The products themselves may be quite adequate, but the marketplace is found to be too restrictive or overly confusing. Overall evaluation of the products depends on the environment in which it is purchased as well as the product itself. Also consumers may feel some of the products should be eliminated, although market support still exists to sustain these questionable alternatives.

Governments need to proceed with caution. Severe restriction of choice does result in less favourable attitudes to government regulation. However, the effect of the rationale given for such restrictions is unclear as yet. In some cases, consumers might welcome restrictions which make the marketplace more orderly.

Government restrictions have traditionally been associated with efforts to make the product mix safer and are therefore favourably received. Such an effect may perhaps be seen in this study. However, governments may not always meet with positive response to these efforts.

Even the effect of the methods used to promulgate the information on new regulations restricting freedom in the marketplace is of great interest. Some government regulators have been surprised in recent years by the existence and intensity of the consumer "backlash" following the imposition of such marketplace controls (e.g., the highly negative feelings concerning the removal of certain kinds of artificially sweetened foods). The ultimate level of choice will no doubt be a factor determining how consumers react. However, the information provided by government on the need for such restrictions may be a strong determinant of consumer acceptance.

Restricted choice in the marketplace may arise, not only from efforts to remove unsuitable alternatives but from the economic consequences of time and distance. For some populations, particularly those in less populated regions of the country, limited choice is a very real fact of life. They do not have the cornucopia of choice available to the majority of the population of Canada living in large or extended metropolitan areas. Nevertheless the media exposes them to the tantalizing range of alternatives available in larger centres. Even those living in ghetto areas may be effectively blocked from full participation in the broad spectrum of choices which seems to be easily accessible to them. Such restrictions may arise out of language or custom barriers or need for high risk credit

which ties them to very localized retail options. Increasing demands for what is viewed as reasonable choice in these markets may be at the other end of the scale for consideration by governments in managing choice levels for the population.

APPENDICES

Cereal Descriptors Given to Subjects

1 a vitamin-enriched cereal

2 a crispy cereal

3 a full-flavoured cereal

4 a light cereal

5 a crunchy cereal

6 a high-energy cereal

7 a hearty cereal

8 a whole-grain cereal

9 a natural cereal

10 a wholesome cereal

11 a low-sugar cereal

12 a country-fresh cereal

13 an adult cereal

14 an iron-fortified cereal

15 a lightly-toasted cereal

16 a high-fibre cereal

University of Guelph

COLLEGE OF FAMILY AND CONSUMER STUDIES
DEPARTMENT OF CONSUMER STUDIES

18th January 1978

Dear Student:

We are seeking people to participate in a taste testing panel for cereals. The cereals to be used in the study will be flaked in form and contain one or more of wheat, corn or rice. We are attempting to measure preferences for the cereals which may differ only slightly in formulation and changes that might occur in preferences over time.

Panel members will be paid for their participation. Most panelists will be required for four separate tasting sessions held during the winter semester. Participation at all four sessions is required to receive payment of $12. Those participants requested to come for only one tasting session will receive $5. Payment will be made at the last tasting session that the participant is asked to attend.

If you agree to participate in the panel, you will be sent further instructions as to when you will be asked to attend the tasting sessions which will be held in the College of Family and Consumer Studies.

We need a very large sample size for accuracy of results so, if you meet the following qualifications please fill out the enclosed card and drop it in the campus mail:

1) do eat breakfast cereals at least once a week.

2) will attend up to four sessions lasting about 15 minutes each.

3) will agree not to discuss the experiment with others during the test period to ensure we get only your own opinions.

If you have any questions please contact our research assistant, Rita Klassen, at Ext. 3039. Thank you for your help.

Yours truly

Eileen Dobbs

Louise A. Heslop

Eileen Dobbs

Louise A. Heslop

Dept. of Consumer Studies

Return Card Enclosed with Letter

I would like to participate in the cereal testing research project.

I understand I can withdraw from the project at any time but will only be paid for participation if I complete the number of sessions (1 or 4) designated by the researcher.

Signature_____

Name (please print) _____

Post Office Box No. _____ Telephone No. _____

Favourite Cereal Brand _____

CEREAL RESEARCH PROJECT

Participant Number: _____

Dear Participant:

Thank you for agreeing to participate on the Cereal Research Project Panel.

You are requested to come for ____ tasting session(s) for which you will be paid $_____. You must complete all ____ session(s) to receive any payment.

The first/only session will take place in the Family & Consumer Studies Building, Room 204 on _____, _____. You may come at any time between 7:30 and 10:00 a.m. to taste a cereal and fill out a questionnaire. Each session should take about 15 minutes.

Please note your Participant Number at the top of this page. This number will identify your responses throughout the test period. You are requested to present this letter at the tasting session, and also your Student I.D. Card.

Do not discuss the experiment with others during the test period to ensure that we get only your opinions.

If you have any questions, please contact Rita Klassen at Ext. 3039.

Thank you for your help.

Yours truly,

Eileen Dobbs

Eileen Dobbs

Louise A. Heslop

Louise Heslop

COLLEGE OF FAMILY AND CONSUMER STUDIES
DEPARTMENT OF CONSUMER STUDIES

UNIVERSITY OF GUELPH · GUELPH · ONTARIO · CANADA
N1G 2W1

AREA CODE 519 · 824-4120

February 23, 1978

Dear Student:

Thank you for agreeing to participate in the Cereal Research Project.

We had a tremendous response to our request for participants, and therefore could not use everyone who responded.

Thank you for your reply and your willingness to assist us, but we will not need your participation in this study.

We hope you will continue to be so generous in responding to such requests for assistance in the future.

Yours truly,

Eileen Dobbs

Louise Heslop

CEREAL RESEARCH PROJECT

Your Participant Number _____

This is your identification for your next tasting session. Retain this slip in your purse or wallet to present to the monitor at your next tasting session.

Your next session will be in the Family and Consumer Studies Building, Room 204 on _____, _____ between 7:30 and 10:00 a.m. during which about 15 minutes of your time will be required.

You have now earned $_____. To receive this payment and to collect your full $_____, you must attend the ____ remaining tasting sessions.

Yours truly,

Eileen Dobbs

Louise Heslop

Reminder to Subjects of the Nature of the Experiment - Given in Week 3

Thank you for your continuing cooperation in carrying out this study.

As you may recall from the original letter we sent you, we are interested in your preferences for cereals which may differ only slightly in formulation and changes that might occur in preferences over time.

University of Guelph

COLLEGE OF FAMILY AND CONSUMER STUDIES
DEPARTMENT OF CONSUMER STUDIES

23rd March 1978

Dear Participant in the Cereal
Research Project:

Debriefing Information

Thank you for your co-operation and participation in the cereal research project. Because of the nature of some of the variables under investigation, the full intentions and purposes of the research could not be revealed to you until all the data had been collected.

As was mentioned in the introductory letter to you, one of the important variables under study was your preference for the cereals and how this changed over time. The important factor that was being investigated was the influence of the number of cereal choices you were given. Theory and research in non-consumer choice situations have suggested that people will be more satisfied if they have a great deal of choice, but possibly only up to a certain level, and then satisfaction may level off or even decrease. Also, if the level of choice is decreased, the chooser is likely to be less satisfied with the same product.

So in this experiment, some of you were exposed to higher numbers of cereals to choose from than others and for some the level of choice was changed during the experiment. However, you always received the same cereal. The impact of the variables under study on your attitude toward the cereal, as well as toward the cereal industry and government or industry restriction of choice in this market will be assessed.

This study is an exploratory research project and will be followed by others in non-laboratory situations. Answers from such studies have applications to decisions by government and business concerning restricting the availability of products which may be harmful to personal health or to the environment.

Again, thank you for your valuable assistance. If you have any questions, please feel free to contact me.

Yours truly

Louise A. Heslop

Louise A. Heslop
Dept. of Consumer Studies

LAH:kem

The Questionnaire Participant No. _____

Cereal Research Project

QUESTIONNAIRE

Flip the light switch down.

Put your Participant No. in the space provided at the top of each page of the questionnaire.

You may eat as much or as little of the cereal as you would like, but use milk and sugar as you normally would and taste it.

Taste the cereal and then please answer the following questions (9)

1. Put an 'X' in the space on the line below which best indicates how you feel about this cereal.

   For example, if you like it extremely, you would put your 'X' like this:

   like extremely X:_:_:_:_:_:_:_ dislike extremely

   Or, if you dislike it extremely, you would put your 'X' like this:

   like extremely _:_:_:_:_:_:_:X dislike extremely

   Or, you may put your 'X' somewhere in between, depending on how you feel about it.

   How do you rate this cereal?

   LIKE EXTREMELY __:__:__:__:__:__:__:__ DISLIKE EXTREMELY

2. Put an 'X' in the most appropriate space. (10)

   I WOULD EAT THIS CEREAL EVERY OPPORTUNITY I HAD ___

   I WOULD EAT THIS CEREAL VERY OFTEN ___

   I WOULD FREQUENTLY EAT THIS CEREAL ___

   I LIKE THIS CEREAL AND WOULD EAT IT NOW AND THEN ___

   I WOULD EAT THIS CEREAL IF AVAILABLE BUT WOULD NOT GO OUT OF MY WAY ___

   I DON'T LIKE THIS CEREAL BUT WOULD EAT IT ON OCCASION ___

   I WOULD HARDLY EVER EAT THIS CEREAL ___

   I WOULD EAT THIS ONLY IF THERE WERE NO OTHER CEREAL CHOICES ___

   I WOULD EAT THIS CEREAL ONLY IF I WERE FORCED TO ___

3. What usually is the most important factor to you when choosing a breakfast cereal at the store? (12)

___ Flavour

___ Texture

___ Price

___ Appearance (eg. flaked, puffed, etc.)

___ Nutritional Value

___ Other, please specify _____

4. What is your favourite cereal brand? (By brand we mean the actual name of the cereal, for example, "Sugar Pops".) (13)

_____

5. On the average, about how often per week do you eat cereal? (14)

_____ times

6. We would like to know how you as a cereal eater feel about the products on the market today, and the companies which produce them.

Put an 'X' in the space which indicates the way you feel about each of the following statements:

a. People should eat more cereal.

STRONGLY AGREE __:__:__:__:__:__:__:__:__ STRONGLY DISAGREE (16)

b. Cereals are convenient to use.

STRONGLY AGREE __:__:__:__:__:__:__:__:__ STRONGLY DISAGREE (17)

c. There are too many regulations restricting food manufacturing. (18)

STRONGLY AGREE __:__:__:__:__:__:__:__:__ STRONGLY DISAGREE

d. Cereal manufacturers do too much advertising. (19)

STRONGLY AGREE __:__:__:__:__:__:__:__:__ STRONGLY DISAGREE

e. Cereals are a basic part of a good breakfast. (20)

STRONGLY AGREE __:__:__:__:__:__:__:__:__ STRONGLY DISAGREE

f. There are too many cereal brands on the market. (21)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

g. There is an adequate selection of cereals available in supermarkets (22)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

h. Governments should require manufacturers to make cereals which are more nutritious. (23)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

i. Cereal manufacturers try to make wholesome products (24)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

j. Cereals are reasonably priced. (25)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

k. Some cereals contain too much sugar. (26)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

l. There should be more efforts to ensure people eat a good diet. (27)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

m. Most cereals are nutritious. (28)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

n. Government regulations are necessary to ensure wholesome food products (29)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

o. Cereals are a good snack food. (30)

STRONGLY AGREE __:__:__:__:__:__:__:__ STRONGLY DISAGREE

p. Do you have any other comments:

Thank you very much for tasting the cereal and answering these questions. Do not discuss this research with anyone. We want only your opinions. Complete and retain the following instruction sheet.

Put your completed questionnaire on the tray, and put the tray in the slot door. Close the door and flip your light switch up. When your red light goes off, flip your light switch down. Then you are free to leave.

Sample Variation of Front Sheet of Questionnaire

Participa No._____ (1-3)

Week No. _____ (4)

CEREAL RESEARCH PROJECT

Please read all instructions

Do not turn this page.

When you are ready to receive the cereal sample, lift the door on the wall and insert this questionnaire. Close the slot door. Flip the light switch up.

When your red light goes on, you may remove the cereal and complete the questionnaire.

Participant No. _____ (1-3)

Week No. _____ (4)

CEREAL RESEARCH PROJECT

Please read all instructions.

Complete only this page before tasting the cereal.

Circle the number next to the description of the cereal you would most like to sample. (7) (8)

100 a vitamin-enriched cereal

375 a crispy cereal

When you are ready to receive the cereal sample, lift the door on the wall and insert this questionnaire. Close the slot door. Flip the light switch up.

When your red light goes on, you may remove the cereal you have chosen to taste, and complete the questionnaire.

Participant No. _____ 71 (1-3)

Week No. _____ (4)

CEREAL RESEARCH PROJECT

Please read all instructions:

Complete only this page before tasting the cereal.

Circle the number next to the description of the cereal you would most like to sample. (7) (8)

Some cereal manufacturers originally involved in this study have withdrawn from the project. Therefore we have only the following cereals for you to choose from.

985 a full-flavoured cereal

886 a high-energy cereal

834 a crunchy cereal

737 a crispy cereal

When you are ready to receive the cereal sample, lift the door on the wall and insert this questionnaire. Close the slot door. Flip the light switch up.

When your red light goes on, you may remove the cereal you have chosen to taste, and complete the questionnaire.

Participant No. _____ (1-3)

Week No. _____ (4)

CEREAL RESEARCH PROJECT

Please read all instructions:

Complete only this page before tasting the cereal.

Circle the number next to the description of the cereal you would most like to sample. (7)

(8)

Some of the cereals previously offered are not likely to meet proposed government standards and so have been removed from the study. Therefore we have only the following cereals for you to choose from.

995 a hearty cereal

985 a full-flavoured cereal

118 a light cereal

654 a whole-grain cereal

886 a high-energy cereal

834 a crunchy cereal

When you are ready to receive the cereal sample, lift the door on the wall and insert this questionnaire. Close the slot door. Flip the light switch up.

When your red light goes on, you may remove the cereal you have chosen to taste, and complete the questionnaire.

Participant No. _____ (1-3)

Week No. _____ (4)

CEREAL RESEARCH PROJECT

Please read all instructions.

Complete only this page before tasting the cereal.

Circle the number next to the description of the cereal you would most like to sample. (7) (8)

990 a light cereal

660 a high-energy cereal

310 a hearty cereal

375 a crispy cereal

100 a vitamin-enriched cereal

084 a full-flavoured cereal

852 a whole-grain cereal

128 a crunchy cereal

When you are ready to receive the cereal sample, lift the door on the wall and insert this questionnaire. Close the slot door. Flip the light switch up.

When your red light goes on, you may remove the cereal you have chosen to taste, and complete the questionnaire.

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