INFORMATION TO USERS

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.

2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.

3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again – beginning below the first row and continuing on until complete.

4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.

5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

University Microfilms International
300 North Zeeb Road
Ann Arbor, Michigan 48106 USA
St. John's Road, Tyler's Green
High Wycombe, Bucks, England HP10 8HR

Downloaded from SHAREOK. Persistent Handle URL: https://hdl.handle.net/11244/4271

77-21,372

FREIDEN, Jon Barry, 1943-
NUTRITION LABEL INFORMATION: AN ASSESSMENT OF CONSUMER REACTION.

The University of Oklahoma, Ph.D., 1977
Business Administration

Xerox University Microfilms, Ann Arbor, Michigan 48106

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

NUTRITION LABEL INFORMATION: AN ASSESSMENT OF CONSUMER REACTION

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

ir partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

JON BARRY FREIDEN

Norman, Oklahoma

1977

NUTRITION LABEL INFORMATION:

AN ASSESSMENT OF CONSUMER REACTION

APPROVED BY

Rodney E. Evans

Dr. Rodney E. Evans, Chairman

Robert L. Bryson, Jr.

Dr. Robert L. Bryson

James E. Hibdon

Dr. James E. Hibdon

Marion C. Phillips

Dr. Marion C. Phillips

Burt K. Scanlan

Dr. Burt K. Scanlan

DISSERTATION COMMITTEE

TABLE OF CONTENTS

Page

DEDICATION vi

ACKNOWLEDGEMENTS vii

LIST OF TABLES viii

LIST OF FIGURES x

LIST OF APPENDICES xi

CHAPTER

1. INTRODUCTION 1

General Background 1
Paternalism 6
The Right to be Informed 9
Nutrition Labeling Program 13
The Problem 19
Research Questions 21
Descriptive Definitions 22
Significance of the Research 24
Outline of the Thesis 25

2. REVIEW OF THE LITERATURE 26

Consumer Information Processing 26
Bettman Model 28
Hughes Model 30
Information Overload 33
Summary 38
Product Information Research 39
Product Information Preferences 39
Consumer Reaction to Beef Grading 41
Price Information Research 42
Unit Pricing and the Low Income Consumer 42
Unit Price List 44
Price Information Adoption 45
Unit Price Benefits 48
Truth-in-Lending 50
Summary 51

CHAPTER Page

Nutrition Labeling Research 52
Nutrition Labeling on Canned Foods 53
Nutrition as a Food Purchase Motivator. 54
Government Sponsored Research 56
Survey of Nutrition Knowledge and Attitudes . . 56
Nutrition Labeling Format and Usage Research. . 58
Cornell Research 61
Swift Research 65
Summary 67
Gaps in the Research 68

3. HYPOTHESES AND DEFINITIONS 73

The Hypotheses Statements 73
Main Hypothesis 1 74
Main Hypothesis 2 74
Main Hypothesis 3 75
Main Hypothesis 4 76
Main Hypothesis 5 76
Main Hypothesis 6 77
Operational Definitions 78
Overall Impression 78
Attitude Toward Nutrition 78
Buying Interest 79
Product Types 79
Message Levels 79
Nutrition Information Levels 80
Attitude Change 80

4. METHODOLOGY 82

Research Methodology 82
Laboratory Experiment 83
Statistical Research Design 86
Specification of the Variables 87
Experimental Variables 87
Dependent Variables 89
Sampling Procedures 91
Selection of the Population 91
Determination of Sample Size 93
Sample Methodology 96
Development of Experimental Stimuli 103
Nutrition Advertising Stimuli 103
Product Class Selection 105
Nutrition Label Stimuli 107

CHAPTER Page

Questionnaire Development and Testing Procedures . . 112
Advertising Portfolio Text 113
Product Test 114
Product Stimulus Questions 116
Food Attribute Importance Questions 119
Life Style and Psychographic Questions 120
Demographic and Usage Questions 121
Statistical Methods 122
Analysis of Variance 122
Convariance Analysis 126
Limitations of the Research 128

5. ANALYSIS AND FINDINGS 131

Preliminary Steps 131
Description of the Data 133
Analysis of the Data 137
Test for Homogeneity of Variance 141
Analysis for the Highly Nutritious Product 142
Analysis for the Moderately Nutritious Product . . 151
Analysis for the Marginally Nutritious Product . . 156
Test of the Hypothesis Program 165
Discussion of the Findings 169

6. SUMMARY AND CONCLUSIONS 171

Summary of the Research 171
Research Questions and Hypotheses 171
Research Design 174
Summary of the Findings 176
Conclusions and Implications 178
Suggestions for Future Research 182

APPENDICES 183

BIBLIOGRAPHY 218

DEDICATION

This dissertation is dedicated to the man and women in my life:

Gilbert

Susan

Jaymi

Beverly

Joy

ACKNOWLEDGEMENTS

Many individuals helped in the development of this dissertation. First, I would like to acknowledge the valuable guidance and encouragement of Dr. Rodney E. Evans of The University of Oklahoma. Several others on the marketing faculty of The University of Oklahoma helped me shape the initial idea for this research while I was in residence. I would also like to acknowledge the support of Dr. Marion C. Phillips throughout my doctoral program. As many before me have found, it is much more difficult to complete a dissertation away from campus. I was fortunate to find an extremely capable marketing academician and researcher nearby - special thanks go to Dr. Donald M. Messmer of The College of William and Mary.

It would have been difficult to conduct this research without the support of the faculty and staff of Christopher Newport College. The help of my colleagues in the Division of Business and Economics and the financial support of the administration is deeply appreciated. I also wish to thank the many individuals at The Food and Drug Administration, The J. Walter Thompson Company, and The Daily Press - Times Herald Newspaper for helping me with the development of the visual materials. Finally, I am grateful to the American Marketing Association for their support of this dissertation, which was selected for a grant in the 1975-6 national competition.

Jon B. Freiden
Newport News, Va.
March, 1977

LIST OF TABLES

TABLE		Page
1-1.	Recent Consumer Legislation	8
1-2.	Recent, Proposed Information Requirements	11
2-1.	List of Literature Reviewed	27
2-2.	Jacoby, et al.	35
4-1.	Demographic Comparisons	94
4-2.	Results of t-Tests	102
4-3.	Portfolio Composition	106
4-4.	Product Pilot Test	108
4-5.	Nutrition Information on Package Labels	110
5-1.	Highly Nutritious Product - Dependent Variables	134
5-2.	Moderately Nutritious Product - Dependent Variables	135
5-3.	Marginally Nutritious Product - Dependent Variables	136
5-4.	Highly Nutritious Product - Covariates	138
5-5.	Moderately Nutritious Product - Covariates	139
5-6.	Marginally Nutritious Product - Covariates	140
5-7.	Homogeneity of Variance Tests	143
5-8.	ANOVA Highly Nutritious Product - Overall Rating	146
5-9.	ANOVA Highly Nutritious Product - Nutrition Value	147
5-10.	ANOVA Highly Nutrition Product - Purchase Probability	148
5-11.	Covariance Analysis - Highly Nutritious Product	150
5-12.	ANOVA Moderately Nutritious Product - Overall Rating	152

TABLE Page

5-13. ANOVA Moderately Nutritious Product - Nutrition Value . . 153

5-14. ANOVA Moderately Nutritious Product - Purchase Probability 154

5-15. Covariance Analysis - Moderately Nutritious Product . . . 155

5-16. ANOVA Marginally Nutritious Product - Overall Rating . . 157

5-17. ANOVA Marginally Nutritious Product - Nutrition Value . . 158

5-18. ANOVA Marginally Nutritious Product - Purchase Probability 159

5-19. Covariance Analysis - Marginally Nutritious Product . . . 164

5-20. Hypotheses Statements 166

LIST OF FIGURES

FIGURE		Page
2-1.	Jacoby, et al.	36
4-1.	Schematic of the Research Design	90
5-1.	Marginally Nutritious Product - Overall Rating	161
5-2.	Marginally Nutritious Product - Nutrition Value	162
5-3.	Marginally Nutritious Product - Purchase Probability . .	163

LIST OF APPENDICES

APPENDIX		Page
A.	Nutritional Labeling Status	186
B.	Nutrition Promotional Material	192
C.	Mailing Materials	193
D.	Intercept Letter	195
E.	Television Storyboards	196
F.	Stimulated Newspaper Advertisements	198
G.	Product Label Treatments	201
H.	Advertising Questionnaires	209
I.	Product Questionnaire	212

CHAPTER 1

INTRODUCTION

The research presented in this dissertation attempts to assess the impact of a new form of consumer product information (nutrition labeling) upon consumer behavior. The project utilized a laboratory experiment to investigate the effects of two independent variables, both involving nutrition information. The research was repeated for different classes of food products. This introductory chapter is intended to provide an overview of the problem and demonstrate the importance of the research to public policy officials as well as the marketing community. An outline of the thesis is provided at the end of the chapter.

General Background

As our nation progressed from an industrial economy (of the late 1800's and early 1900's) to a mass consumption society (of the 1950's and 1960's), the nature of the buyer-seller relationship changed substantially. One change was reflected in the risk-bearing relationship between a buyer and a seller. In the early industrial era the relationship could be described as one of "caveat emptor" or, let the buyer beware. Under this arrangement, the buyer could not be certain he was getting an honest product for his money. An operational example is provided by Kerr and Littlefield:

> Caveat emptor, let the buyer beware, was a law of the marketplace prior to the twentieth century. In some parts of the world it is as important to observe this warning today as it was in time past. In some rather primitive societies it is desirable to buy one's grain in whole form and grind it at home for it is much more difficult to adulterate grain than flour. A dishonest merchant can rather easily add a much less expensive chalklike substance to wheat or rice flour and the purchaser will not know it until she starts to bake with the flour or even until she starts to eat the baked goods.[1]

In more recent times the influence of government and consumerism has shifted the buyer-seller relationship toward one of "caveat vendor" or, let the seller beware. Under this arrangement a seller must tell the truth, fulfill his contracts, and stand behind his product. In describing the concept of "caveat vendor", McCarthy suggests that "vigorous competition in the marketplace will protect consumers as long as they are wary."[2] In other words, today the seller must assume the responsibility for providing satisfactory goods and services which are honestly presented and safe to use. Clearly many sellers have not yet adapted to this new type of environment. However, foot-dragging does not usually serve the long run interest of the firm. As Kerr and Littlefield note, "There is little doubt that in the long run firms will realize that it is in their best interest to reject short-run profits, to build for a better future for their customers, their employees, and themselves."[3]

When carried to extremes, the notion of "caveat vendor" can cause considerable anxiety among producers of goods and services. The problem is

---

[1]John R. Kerr and James E. Littlefield, Marketing, An Environmental Approach (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1974), p. 167.

[2]E. Jerome McCarthy, Basic Marketing: A Managerial Approach, 5th ed. (Homewood, Illinois: Richard D. Irwin, Inc., 1975), p. 94.

[3]Kerr and Littlefield, p. 179.

evident in some recent legal cases involving product liability. Manufacturers, for example, must anticipate a wide variety of misuses of their products and take appropriate preventive steps before marketing their products -- otherwise they may be held liable.[1] One vivid example is provided by Trombetta and Wilson:

> What about a situation where the consumer admits he or she never read the label or warning? A 1962 case, Spruill v. Boyle-Midway, Inc., raises the question of whether the sufficiency of the warning is obviated by a mother's admission that she never read the warning label. A child died from drinking the defendant's furniture polish. The defendent company claimed that the mother did not make use of whatever warning did exist; therefore, how could the mother recover on the basis of absence of a more detailed or explanatory warning? The court reasoned that an inadequate warning is equivalent to no warning at all. If the warning (or advertisement) had been strong enough to attract the mother's attention the fatality might have been prevented. In fact, the mother might not have bought the product at all! In any case, the weak warning was certainly not commensurate with the danger that occurred. Spruill goes beyond intended use and holds the supplier to a duty to expand his scope of foreseeability.[2]

What factors have been instrumental in fostering the change in market philosophy from one of "caveat emptor" to "caveat vendor"? According to Herrmann, the change can be traced to three general problems:

> The movement has arisen as a reaction to three persisting problem areas (1) ill-considered applications of new technology which result in dangerous

---

[1] William L. Trombetta and Timothy L. Wilson, "Foreseeability of Misuse and Abnormal Use of Products by the Consumer," Journal of Marketing, Vol. 39, July 1975, pp. 48-49.

[2] Ibid., p. 50.

> or unreliable products, (2) changing conceptions of the social responsibilities of business and (3) the operations of a dishonest fringe and the occasional lapses of others in the business community.[1]

From the very beginning of industrialization in this country, a new set of significant national problems started to appear. Urban poverty, tenement housing, immigrant ghettos, hazardous working conditions, child labor and a variety of other social and economic problems faced the American people. Initial attempts to deal with these problems were performed by a number of local reform groups. Herrmann describes a few of these groups and their activities:

> A variety of local reform organizations concerned with social problems and political reform appeared between 1890 and 1900...The first Consumers' League, formed in New York City in 1891, began its work by preparing a "white list" of shops which paid minimum fair wages, had reasonable hours and decent sanitary conditions. In 1898, the local groups joined in a national federation, the National Consumers' League, the first national consumers organization. By 1903, the national organization had grown to 64 branches in 20 states.[2]

The late 1800's and early 1900's also saw a variety of reforms attempted by government. For example, the Meat Inspection Act of 1906 provided for the enforcement of sanitary regulations in meat packing establishments and for federal inspection of those companies selling meat in interstate commerce. The Federal Food and Drug Act of 1906 forbade

---

[1] Robert O. Herrmann, "The Consumer Movement in Historical Perspective," in David A. Aaker and George S. Day, Consumerism Search for the Consumer Interest (New York: The Free Press, 1974), p. 17.

[2] Ibid., p. 10.

the manufacture, sale or transport of adulterated or fraudently labeled foods and drugs in interstate commerce.[1]

Many of the initial government steps were taken as a result of irresponsible business practices within some industries. One industry noted for its irresponsibility was the meat packing business. Deep concern over unethical and deceptive business practices prompted one American, Upton Sinclair, to speak out. The vehicle was Sinclair's famous novel, The Jungle, which was an effective medium for arousing public awareness of fraudulent business practices in the meat packing industry.[2] Although the book was fiction, it inspired President Theodore Roosevelt to order an investigation of the industry which led to the passage of the Meat Inspection Act of 1906.[3]

Although government legislation has helped to curb many deceptive business practices, it would be difficult, at best, to control or police all industries at all times. In other words, one does not have to look to far to discover isolated incidences of fraud or deception:

> Mail order merchandising of wearing apparel may involve unfair debt collection practices as well as deceptive sales techniques.
>
> The original complaint in this case alleged that the New Process Company (a pioneer and national leader in mail order sales of men's shirts and other types of apparel) substituted, without the consent of the customer, merchandise which was substantially different from that described by the firm and ordered by the consumer...[4]

---

[1]Philip Kotler, Marketing Management (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., Third Edition, 1976), p.40.

[2]Herrmann, p. 11.

[3]Ben M. Enis, Marketing Principles (Pacific Palisades, California: Goodyear Publishing Company, 1974), p. 135.

[4]"Legal Developments in Marketing," Journal of Marketing, Vol. 40, October, 1976, p. 111.

Paternalism

Along with increased levels of public awareness and mistrust came increased government involvement. The government soon began to assume the role of "arbitrator" or "watchdog" between consumers and big business. The concept of increased government involvement in the affairs of consumers has been called "paternalism".[1] The dictionary defines paternalism as "a policy or practice of treating or governing people in a fatherly manner, especially by providing for their needs without giving them responsibility."[2]

Federal legislation designed to protect the consumer has increased sharply over the last several years. Various government agencies and institutions (federal, state and sometimes local) have been examining nearly every facet of marketing activity from product development to promotional strategy, to price policy and even to distribution methods. As evidence, attention is directed to one small news item that appeared in a recent issue of Advertising Age:

> Washington - With more court action yet to come over health warnings on cigarette ads, six tobacco companies last week lost a final effort to win protection from possible fines that could run into millions of dollars.
>
> The U.S. Supreme Court refused to consider protecting the cigarette makers from fines that may result from charges that they violated a 1972

---

[1] Warren A. French and Leila O. Schroeder, "Packaging Information Legislation: Trends and Viewpoints," MSU Business Topics, Summer 1972, p. 40.

[2] The American Heritage Dictionary of the English Language (New York: Houghton Mifflin Company, 1970), p. 960.

> Federal Trade Commission consent order requiring health warning labels on print ads and point of sale materials.
>
> If the companies are found to have violated the 1972 order, a federal judge could fine them up to $10,000 for each individual violation. FTC has asked that this money be used to finance an anti-smoking advertising effort.[1]

The list of significant new legislation designed to protect consumers is extremely long. Several examples of key measures which have been developed in the 1970's are described in Table 1-1. Many of these regulations have strategic implications for marketing planning-especially in the area of product development (e.g. safety requirements for lawn mowers) and promotion (e.g. substantiation of advertising claims via empirical evidence). The continued growth of such legislation prompted the editors of the Journal of Marketing to include a regular section entitled "Legal Developments in Marketing" in their quarterly publication.

Several marketing and advertising people have recently become quite critical of excessive paternalism. They question the utility of increased government regulation in consumer affairs. For example, French and Shroeder warn, "Paternalism, as a legal phenomenon, can result in protection which neither has been requested or desired by the majority of the populace."[2] Similar sentiments were voiced by Mary Wells Lawrence before President Ford's 1974 Economic Summit in Washington, D.C.:

> ...A lot of government controls are created in the name of the consumer. They may be noble in intent, but I've watched government controlling big business on

---

[1]"High Court Denies Cigaret Makers' Bid for Fines Protection," Advertising Age, June 7, 1976, p. 6.

[2]French and Shroeder, p. 42.

Table 1-1

Recent Consumer Legislation

Year	Act	Description
1970	Public Health Smoking Act	Bans cigarette advertising on radio and television and revised the caution on cigarette package lables to read: "Warning: The Surgeon General has determined that cigarette smoking is dangerous to your health." An amendment in 1973 extended the ban on broadcast advertising to "little cigars."
1970	Poison Prevention Labeling Act	Requires safety packaging for products that may be injurious to children.
1970	Federal Deposit Insurance Amendment	Prohibits the issuance of unsolicited credit cards, limits a consumer's liability to $50, regulates credit bureaus, and provides consumers with access to their credit files.
1972	Drug Listing Act	Provides FDA with access to wide information on drug manufacturers.
1972	Consumer Product Safety Act	Created the machinery for government-enforced quality control and is designed (1) to protect the public against unreasonable risks of injury from consumer products, (2) to assist consumers in evaluating the safety of consumer products, and (3) to develop uniform safety standards for consumer products and to promote research and investigation into the causes and prevention of product-related injuries and deaths.
1975	Consumer Product Warranty and Federal Trade Commision Improvements Acts	Establishes minimum disclosure standards for written consumer product warranties and defines federal content standards for those warranties. In addition, the Act extends the consumer protection authority of the Federal Trade Commission when deceptive consumer warranties and other unfair acts and practices are found to exist.

Source: Gwiner, et al. Marketing (New York: West Publishing, 1977),p.367.

> an everyday working level. And a lot of regulations deal with trivia. A lot are confusing. A lot are impossible. And the waste of time and energies is enormous.[1]

The Right to be Informed

In keeping with the concept of paternalism, President Kennedy enumerated the Consumer Bill of Rights in 1962 which consisted of four basic principles: 1) the right to safety, 2) the right to choose, 3) the right to be heard, and 4) the right to be informed. At least one authority has suggested that this was the real beginning of consumerism as we know it today.[2] The "right to safety" implies protection against the marketing of goods which are hazardous to health. The "right to choose" emphasizes the ideal of protecting competition by maintaining or increasing the number of competitors in the marketplace. The "right to be heard" principle centers on the notion that consumer interests should be considered in the formulation of public policy and during regulatory proceedings. The "right to be informed" is of special significance to the present investigation. The concept goes far beyond the idea of merely avoiding deception. According to Aaker and Day, "It involves providing the consumer with sufficient information for him to make wise purchase decisions."[3]

---

[1]"Too Much Regulation? Mary Socks it to 'em at Economic Summit," Mary Wells Lawrence, Advertising Age, November 11, 1974, p. 44.

[2]Burton Marcus, Modern Marketing (New York: Random House, Inc., 1975), p. 38.

[3]David A. Aaker and George S. Day, "Introduction: A Guide to Consumerism," in David A. Aaker and George S. Day Consumerism Search for the Consumer Interest (New York: The Free Press, 1974), pp. xvii-xxviii.

Issues centering on the consumer's "right to be informed" have been receiving considerable emphasis in Washington. According to Day, "The pressure for additional information shows no signs of abating, although the focus of the pressure is certainly changing."[1] While past information programs have typically centered on ingredient, price and safety information, future measures will likely center on efficiency and comparative performance information.[2] Day developed an overview of significant product information acts and proposals (it is reproduced in Table 1-2).

To specifically demonstrate the active role of government in generating new consumer information programs, attention is directed to the news item below. It is significant in that it coincides precisely with the "right to be informed" philosophy:

> Washington - The Federal Reserve Board has announced proposed rules to carry out the Consumer Leasing Act of 1976, which became law March 23.
>
> Under the law, ads for leasing deals for consumer items such as autos, furniture and sick room equipment must disclose sufficient information so that consumers can compare leasing and purchase costs.
>
> To carry out the law, the proposed rules require that ads disclose: 1. the fact that the transaction is a lease; 2. the amount of security deposit; 3. the number, dates and amounts of payments and the total; 4. whether there is an option to buy and, if so, at what price and time, and 5. a statement of the method of determining the amount of liability facing the lessee at the end of term.[3]

Consumerists have argued that, when provided, label or contract information can be an effective means of aiding the consumer in the decision making process. The implication is that consumers will be in-

---

[1]George S. Day, "Assessing the Effects of Information Disclosure Requirements," Journal of Marketing, Vol. 40, April 1976, p. 42.

[2]Ibid.

[3]"U.S. Rules Set for Consumer Leasing Ads," July 12, 1976, p. 118.

Table 1-2

Recent or Prospective Information Disclosure Requirements

Type of Disclosure	Implemented in Past Five Years	Probable in the Future
Comparative prices	Truth in lending Unit pricing Automobile list prices	Prescription prices Truth in life insurance Costs of operation of appliances and automobiles
Comparative performance and efficiency	Nutrition labeling of food products Lumen and life data for light bulbs Stereo amplifier power output Octane labeling	Automobile gas mileage Appliance energy consumption and comparative efficiency Appliance performance Tire mileage, stopping ability, and high speed resistance to heat
Ingredients (including additives)	Cosmetics Food Liquor Phosphate content of detergents	Labeling of fat content in food Presence of pesticides Pigment content of paint Labeling to explain purpose of food ingredients and additives
Life/perishability	Open dating of foods	Appliance durability and life Expiration dates for drug potency
Warnings/clarifications	Cigarette health hazards Lack of efficacy of vitamins Flammability (children's sleepwear)	Flammability of cellular plastic insulation
Form and usage of product/terms of contract and warranties	Size standards (i.e., TV screens and refrigerators) Truth in warranties and service contracts Tire construction and load rating	Standards specifying amount of product to use (i.e., detergents) Care labeling for clothing Terms of land sales contracts Truth in imports (country of origin)

Source: George S. Day, "Assessing the Effects of Information Disclosure Requirements," Journal of Marketing, Vol. 40, April 1976, p. 43.

clined to make wiser purchases when they are armed with comparative data. However, as French and Shroeder point out, in reality the outcome may be much different; "While the consuming populace is becoming more educated, its formal education rarely is sufficient to prepare them for the product evaluation process."[1]

A discussion of product information and the "right to be informed" would be incomplete without reference to the Fair Packaging and Labeling Act of 1967. According to French and Shroeder, it was this particular act which served to "set the stage" for a variety of information programs.[2]

The act required that labels and packages declare sufficient information regarding product ingredients and composition in order to preserve fair competition between competitive products by enabling consumers to make rationale comparisons with respect to the information provided.[3] More importantly the act helped establish the principle of full disclosure of information. French and Shroeder describe the essence of this important concept:

> ...Full disclosure may mean many things: disclosure of the dangerous nature of a product, disclosure of its component ingredients and disclosure of its performance characteristics. Legislation, while covering the first two points, does not require the latter, but if this becomes essential in making true value comparisons, it may. Congress declared its policy in the first section of the Fair Packaging and Labeling

---

[1]Ibid., p. 39.

[2]Ibid., pp. 39-40.

[3]Ibid., p. 40.

> Act as: "Informed consumers are essential to the fair and efficient functioning of a free market economy. Packages and their labels should enable consumers to obtain accurate information as to the quality of the contents and should facilitate value comparisons. Therefore, it is hereby declared to be the policy of the Congress to assist consumers and manufacturers in reaching these goals in the marketing of consumer goods."[1]

Nutrition Labeling Program[2]

In order to facilitate value comparisons by shoppers of food products, and to advance the concept of full disclosure, a number of government officials, home economists and consumerists recently proposed that packaged food manufacturers/processors declare the nutritional content in terms of vitamins, proteins, carbohydrates, etc. of their products. This information, they argued, should be provided in addition to the present label information about weight, grade, and ingredients.[3] In testifying before Senate select sub-committee on nutrition, Helen D. Ulbrich, editor of the Journal of Nutritional Education, stressed the need for nutrition information:

> ...Obviously, the choices of food that people make are costing this country unnecessary dollars in medical bills, loss of time at work and leisure.

---

[1]Ibid.

[2]For a more elaborate discussion of the nutrition labeling program, the reader is referred to Appendix A , in which Dunning provides an overview of the regulation. For additional details about the law, the reader should consult the Federal Register for January 19, 1973, March 14, 1973 and August 2, 1973 (see sections entitled "Food Labeling.").

[3]Warren A. French and Hiram C. Barksdale, "Food Labeling Regulators: Efforts Toward Full Disclosure," Journal of Marketing, Vol. 38, July 1974, pp. 14-19.

> This must mean, that people are either making uninformed choices or the influences which motivate food choices are in some cases irresponsible. When you have 8,000 items to choose from in a supermarket, instinct will not guarantee a wise choice.[1]

Earlier concern over nutrition was voiced at the 1969 White House Conference on Food Nutrition and Health. Many of the nation's leading nutritionists, food industry spokesmen, consumer interest leaders, and economists participated in the Conference which addressed itself to malnutrition in America. Among the Conference's recommendations was the following: "A basic way to help people improve their eating habits would be to develop a system of labeling packaged foods with their nutritional qualities."[2] That specific conclusion prompted FDA Commissioner Charles Edwards to work toward the development of a comprehensive nutritional labeling program.[3]

Early in 1973 Commissioner Edwards unveiled the proposed regulatory program aimed at insuring full disclosure of information concerning the nutritional content of processed foods. According to the FDA Consumer, "the nutrition labeling program is one of the most ambitious programs ever undertaken by the FDA."[4] The regulation became fully effective on June 30, 1975.

---

[1]"Ad Role in Teaching Nutrition," Advertising Age, June 24, 1974, p. 3.

[2]Robert Rossner, "Nutrition Labeling," Chain Store Age, October, 1974, p. 45.

[3]French and Barksdale, p. 17.

[4]Arletta Beloian, "Nutrition Labels: A Great Leap Forward," FDA Consumer, September 1973, p. 1.

In essence, the new regulation requires a manufacturer to state, on the package label, a product's nutritional contents if any nutrient is added to the food or if some nutritional claim is made on the label or in advertising (or other forms of promotion).[1] What's more, even if nutrients are added to a product to replace some lost in food processing, the product's label must have full nutritional labeling.[2] An example in which nutrition labeling would be required is provided by the FDA:

> For example, if the label or an ad makes any reference to protein, fat, carbohydrate, calories, vitamins, minerals, or use in dieting, the label must contain complete nutrition information. Examples of products that are normally sold as "enriched" or "fortified" and thus would require full nutrition labeling are enriched bread or flour, fortified milk, fortified fruit juices, and diet foods.[3]

Otherwise, the use of nutrition information is optional; however, if such information is provided it must conform with the standard nutritional format as otherwise required:

> In brief, the nutrition panel on a food package will list how many calories and how much protein, carbohydrates, and fat a serving of that food will provide. It will also show what percentage of the U.S. Recommended Daily Allowance (U.S. R.D.A.) of protein and seven essential vitamins and minerals a serving will provide. The label may also list how much unsaturated and saturated fat, cholesterol, and sodium the food contains, and may give the percentage of the U.S. R.D.A. for another dozen vitamins and minerals.[4]

---

[1] French and Barksdale, p. 14.

[2] Facts from FDA, U.S. Department of Health, Education, and Welfare, DHEW Publication No. (FDA) 73-2036, p. 1.

[3] Ibid.

[4] Beloian, p. 1.

The nutrition labeling program was designed to help consumers make value comparisons between brands since the nutrition data format would be consistent from item to item.[1] The standard format would enable consumers to compare the nutritional advantages of competitive foods and it would also enable shoppers to compare the nutritional content of new food products to those more familiar.[2] While some food manufacturers showed resistance to the idea, others viewed it as an opportunity to gain consumer acceptance by supplying such information long before the June 30, 1975 deadline. For example, Del Monte started providing nutrition information in 1973. Del Monte recognized nutrition labeling as "the next great frontier in the consumer's drive for more and better product information, a natural extension of other labeling advances such as open dating and unit pricing."[3]

The underlying assumption among nutrition labeling proponents was that the availability of nutrition information on the package label would help consumers to make sounder purchase decisions.[4] In theory, the information would serve to shift demand from brands offering little nutritional value to brands offering greater nutritional advantages. However, it is quite likely that the benefits may not be realized by all market segments. For instance, as French and Barksdale argue, the market segment in most need of nutrition information will likely be least inclined to use it:

---

[1]French and Barksdale, p. 17.

[2]Ibid.

[3]"Del Monte Living with New Labeling Rules," Business Week, February 3, 1973, p. 42.

[4]French and Barksdale, p. 16.

> ...The lower socioeconomic classes,with their correspondingly low education levels, will probably find it difficult, if not impossible to use the information. The likelihood that additional label information will be used by the more educated and affluent market segments is more promising, but perhaps less rewarding, since the numbers in affluent groups are smaller and many already have some awareness of nutritional values.[1]

Evidence suggests an analogous situation may exist in the area of unit pricing. Several authorities, armed with empirical data, have shown that unit pricing has not been particularly effective among low income consumers -- the group that hopefully would benefit the most from unit pricing information. In one study, Kilbourne set up an experiment to specifically measure the impact of unit pricing on low income consumers.[2] Kilbourne concluded, "The availability of unit pricing did not result in a statistically significant reduction of the cost of a selected set of grocery products for low income consumers."[3] Kilbourne also made some interesting observations about the usefulness of unit pricing information in a highly complex and competitive buying environment such as the typical supermarket:

> ...The grocery shopping environment,in fact has many characteristics which would lead to a low saliency of price as a purchase criterion. Since the addition of unit pricing information represents a rather small modification of the environment, it seems unlikely that consumers would immediately incorporate it into

---

[1]French and Barksdale, p. 16.

[2]William E. Kilbourne, "A Factorial Experiment on the Impact of Unit Pricing on Low Income Consumers," Journal of Marketing Research, November 1974, p. 455.

[3]Ibid.

> their behavior patterns. Such changes in behavior are likely to occur only after the proper conditions for raising the saliency of price as a purchase criterion have been affected...[1]

It would seem reasonable to expect that nutrition label information would also have to work extremely hard in the same type of environment to be effective. Apparently FDA officials considered this problem when they designed the nutrition labeling program. Consequently, as a part of the program, the FDA embarked upon an educational campaign designed to raise the consumers' level of consciousness regarding nutritional characteristics and benefits of food products.[2] Hopefully, this measure would serve to increase the probability of success of the program.

The FDA selected The J. Walter Thompson Company, New York, to prepare advertisements and other promotional material.[3] The campaign was targeted at housewives, young adults, minority groups and low income older people.[4] In commenting on the assignment, an FDA spokesman explained, "The educational radio and television spots will try to demonstrate how the average shoppers can use nutrition information."[5]

---

[1]Kilbourne, p. 455.

[2]J. Walter Thompson Company, Food and Drug Administration, U.S. Department of Health, Education, and Welfare, Nutrition Labeling, Unpublished Document, December 6, 1974, p. 2.

[3]"FDA Picks JWT, Kaufman for Labeling, Drug Ad Campaigns," Advertising Age, October 1, 1973, p. 70.

[4]J. Walter Thompson Company, pp. 1-3.

[5]Advertising Age, October 1, 1973, p. 70.

The agency developed a major copy theme, "Read the Label, Set a Better Table", to tell the FDA story about nutrition information. The theme was used in all communications. The agency prepared radio and television commercials, news film clips, press announcements and various brochures and posters to help launch the program.[1] Some examples of the promctional material are provided in Appendix B.

The Problem

Proposals for new types of consumer product information continue to mount. For example, the FTC is considering extending the concept of nutrition information to food product advertising. Advertisers that make a nutrition claim in their promotion or that supplement or fortify their products would have to provide nutrition information in their advertisements.[2] Ingredient listing by percent of volume is also under consideration for packaged food products. The FTC is also working on information disclosure systems for detergents and vacuum cleaners.[3]

Those in favor of more information disclosure continue to rely on the notion that "more information is better." However, is there a point at which the consumer has enough information to aid him in the decision making process? If such a point does in fact exist perhaps officials

---

[1]J. Walter Thompson Company, pp. 1-3

[2]"FTC Won't Kill Food Ad Rule Proposal," Advertising Age, June 7, 1976, p. 1.

[3]"Info Disclosure Systems Near for Detergents," Advertising Age, July 5, 1976, p. 2.

should concentrate their efforts on setting priorities for a limited amount of useful information rather than drawing up new information programs (which may ultimately not be used). In other words, before moving forward with new information programs, it would be useful to stop and objectively assess the value of current information programs to consumers. Similar sentiments are expressed by Day:

> ...A curious feature of the growing demand for more information is the paucity of concrete evidence that past disclosures have made significant differences in consumer or market behavior. And if the future is like the past, there will be little or no programmatic research available to help decision makers forecast the impact of new disclosure requirements.[1]

Obviously, without an objective assessment of current information (based on empirical data) it would be difficult to make any conclusions about effectiveness. A few years ago the problem could be "explained away" by simply citing the newness of the programs. Today, consumers have had considerable time to become familiar with product information.

Other than a very few investigations (which will be reviewed in the following chapter), the literature reveals relatively little research designed to objectively measure consumer response to product information. What's more, Day suggests that within the existing body of research there has been an overemphasis on intermediate effects.[2] According to Stokes, no one has taken the necessary time to objectively study the impact of nutrition labeling upon consumers.[3] This general situation prompted the present investigation.

---

[1]Day, p. 42.

[2]Ibid., p. 444.

[3]Interview with Raymond C. Stokes, Director of Consumer Research, FDA, August 9, 1976, Memphis, Tennessee.

Research Questions

On the basis of what has been discussed pertaining to consumer rights and product information, the author formulated several research questions. To recap, the buyer-seller relationship has shifted from one of "caveat emptor" to one of "caveat vendor" over the years. Consumer reaction to deceptive business practice and the resulting government regulations have been instrumental in fostering this change in market philosophy. One has only to look at the list of laws and proposals designed to protect the consumer to understand the importance of the problem. Among the regulations are several which deal specifically with product information. While one can hardly argue with the intent of these measures, the author believes that there has been insufficient effort placed on evaluating the impact of the measure (e.g. product information) upon consumer behavior.

Obviously, it would be difficult to deal with all of the issues which have been raised within one investigation. On the other hand, it might be possible to gain some insight into consumer reaction to product information via one specific product information program. Thus, the present research deals with consumer reaction to one type of product information, nutrition labeling.

Consumer activists have persistently argued for more and more product information. Government has responded by requiring marketers to place more information at the point of sale (often on the product label). This raises one important research question -- do consumers react more favorable to products that carry higher levels of product information? In order

to deal with requests for more information, this type of data is needed. Perhaps consumers are not responsive to product information, or perhaps they feel that they already have enough information.

Earlier it was suggested that consumers may not adopt product information because it represents only a minor cue in a complex store environment and purchase task. Recognition of this problem led the FDA to develop a promotional campaign to help establish the nutrition labeling program. This raises another important research question. Will consumers have more favorable attitudes toward products with certain product information, if they are exposed to messages (e.g. advertisements) about the new information? If government agencies are to extend the promotion concept to other product information programs, this question is of strategic importance.

Finally, the author is concerned with general statements about "effectiveness" of various product information programs. That is, can consumer data pertaining to one single item (which must carry product information) be projected to the entire population of items which may include thousands of other products? More specifically, can the data pertaining to the two former research questions be projected to all food products or is product information and promotion important for some classes of food products and not for others? This research question is also addressed in the present investigation.

Descriptive Definitions

Before preceding further, it would be useful to establish a few descriptive definitions pertaining to the research questions (operational definitions are provided in Chapter 4). This research investigates the

impact of nutrition information on consumer attitudes via an experimental design. Two experimental factors were manipulated (at three treatment levels) - the amount of nutrition information provided on a package label and the level of exposure to nutrition educational messages. The experiment was conducted on three different types of food products. Consumer reactions were measured via several attitudinal questions.

The most difficult element of the experiment to describe formally or informally, pertains to consumer attitudes. The dependent variables, opinions of a product stimulus with nutrition label information, are attitudinal in nature. After subjects saw the product stimulus, a series of attitudinal measures were taken. Simply stated, an attitude denotes how an individual feels about something.[1] The essence of the idea is captured by Walters:

> ...For our purposes, an attitude is the relatively lasting manner whereby the perceptions and notions of consumers are organized toward certain market objects, events or situations. Thus, said simply, consumer preference or predispositions to act toward some specific market-oriented goal is that individual's consumer attitude.[2]

The other essential elements of the research deal with the experimental variables. Nutrition label information refers to a special panel on the side of a food package which lists nutritional characteristics such as calories, protein, carbohydrates, vitamins and so on. Packaged food products refers to those grocery products which are packed in boxes, jars, or cans by food manufacturers or processors (it does not refer to meat, produce, and other perishable foods). Finally, nutrition

---

[1]C. Glenn Walters, Consumer Behavior (Homewood, Illinois: Richard D. Irwin, Inc., 1974), p. 160.

[2]Walters, p. 160.

educational messages refers to exposure of announcements (advertisements) which deal with the subject of nutrition.

Significance of the Research

The call for more product information has been made in a vacuum. Those who advocate full disclosure have not taken the necessary steps to objectively assess the effectiveness of existing forms of product information upon consumer behavior. Day is quite critical of the situation:

> Proposals for new information disclosure requirements continue to emerge as the buyer's "right to know" takes on new meaning. Many such proposals have been or will be implemented for this reason alone, in the absence of relevant research on actual or possible effects on consumer, producer, or retailer behavior.[1]

The present investigation was designed to help bridge the gap. This type of research should be valuable to consumer leaders and government officials in assessing the effectiveness of one important form of product information. Food and beverage manufacturers should also benefit from this research as it should provide additional insight into consumer behavior, especially within a highly competitive environment. Likewise, Gallay recognizes the need for such research:

> The need for research into the area of nutritional labeling is clear. Pressure from medical and nutritional professionals as well as consumer groups have prompted regulatory action by the F.D.A. which calls for almost immediate compliance on the part of food processors to indicate on food packages, the nutritional value of the contents they contain. No one is objecting to the direction the legislation has taken in view of the possible benefits that will result to the consumer. At issue, however, is the fact that very little is known regarding the attitudes that consumers have about nutrition and the effects such nutritional labeling might have on food purchase behavior.[2]

---

[1]Day, p. 51.

[2]Ralph Gallay, unpublished doctoral dissertation, "An Experimental Study to Investigate the Role of Nutrition as a Food Purchase Motivator," New York University, 1975, p. 20.

Outline of the Thesis

This dissertation is presented in six chapters, including the present one. Chapter 2 provides a review of the literature on selected concepts in information processing and various research findings pertaining to product information. Thus, Chapter 2 provides the conceptual framework and rationale for the present investigation.

Chapter 3 presents the statements of hypotheses. The hypotheses reflect various deductions made from the literature search. The hypotheses also relate specifically to the research questions raised in this chapter. Operational definitions of the various concepts are also provided in Chapter 3.

A full description of the research design and methodology is presented in Chapter 4. Major topics include research design, sampling procedures, experimental stimuli development, questionnaire development and statistical methods. In other words, Chapter 4 spells out the "mechanical aspects" of the study in detail.

Chapter 5 presents results of the data analysis and the hypotheses testing program. Finally, in Chapter 6 specific conclusions and implications for public policy making are drawn. Chapter 6 also makes a number of suggestions for future research endeavors in the area of consumer product information.

CHAPTER 2

REVIEW OF THE LITERATURE

A survey of the literature revealed several theories and investigations which relate to the research questions formulated in the previous chapter. This chapter contains a review of the body of literature. For convenience, the chapter is divided into four major sections. The first section reviews a number of ideas pertaining to information processing in general. The second section reviews several investigations dealing with consumer reactions to various types of product information. Early research specifically pertaining to consumer reaction to nutrition labeling is described in the third section. The fourth section draws upon the literature review to identify specific gaps in the research, this providing the rationale for the present investigation.

A schematic which depicts the organization of the chapter and lists the literature to be reviewed is provided in Table 2-1. Additionally, a summary of the cited research is provided at the end of each section (p.38, p.51, and p.67).

Consumer Information Processing

A review of the literature on consumer reaction to product information would be incomplete without reference to the more general concept of information processing. In this section two theoretical models

Table 2-1

List of Literature Reviewed

Subject	Authors
Information Processing:	
Models	Bettman
	Hughes
Information Overload	Jacoby, et al. (197)
	Jacoby, et al. (197)
	Wilkie
	Summers
Product Information:	
Consumer Wants	Darden and French
Beef Grading	Miller, et al.
Unit Pricing:	
Among Low Income Groups	Kilbourne
Unit Price List	Russo, et al.
Adoption	Winter
Benefits	Monroe and LaPlaca
Truth in Lending	Day and Brandt
Nutrition Labeling:	
Canned Foods	Asam and Bucklin
Nutrition as a Purchase Motivator	Gallay
Survey of Attitudes	Dunning, et al.
Format and Usage Research	Stokes
Cornell Research	Lenahan, et al.
Awareness and Usage Survey	Klinger

of information processing are reviewed -- one by Bettman, the other by Hughes. They represent two popular models and the author believes that they incorporate many of the important ideas which have recently been advanced. Research by Jacoby, Speller, and Kohn, which deals with the notion of information overload is also reviewed in this section. The Jacoby, et al. research is especially important to the present investigation as it deals with consumers' ability to process various amounts of information effectively. A summary of the major ideas presented in this section can be found on p. 38.

Bettman Model

Bettman proposes that information processing can be divided into three major activities: attention, memory functioning and parameters, and processing of alternatives.[1] First, attention can be viewed as a cognitive phenomenon -- taking possession of the mind for some moment of time. Two important features of attention are intensity and selectivity. Intensity is related to a level of arousal. As Kahneman suggests, "the intensive aspect of attention corresponds to effort rather than mere wakefulness."[2] Selectivity, on the other hand, refers to the idea that some stimuli are singled out for processing while others are ignored.[3] Bettman singles out the work of Kahneman and Norman as being especially relevant to the understanding of attention as a part of information processing:

---

[1]James R. Bettman, "Issues in Designing Consumer Information Environments," Journal of Consumer Research, Vol. 2, December 1975, pp. 169-77.

[2]Daniel Kahneman, Attention and Effort, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973), p. 4.

[3]Bettman, p. 170.

> ...Kahneman considers attention to be synonymous with a fixed capacity to perform mental work. He then considers issues relating to how this capacity is allocated in performing cognitive activities, particularily memory and processing. Norman, in the context of models of memory, suggests that attention in memory tasks may be equated to rehearsal of material...[1]

Second, Bettman suggests that memory models have three basic parts: (1) a short-term memory where some information enters and decays rapidly; (2) a short-term memory where some proportion of input is transferred; and (3) a long-term memory where information is transferred from short-term memory.[2] At least one researcher has suggested that the size of short-term memory is limited. After investigating the limits of short-term memory, Miller introduced the concept of a "chunk of information".[3] In essence, a "chunk" is an organized cognitive structure that can grow as relevant information is added to it.[4] Miller found short-term memory could accomodate a maximum of seven chunks. In order to increase the amount of material stored in short-term memory, large chunks have to be formed.[5]

Finally, let us examine the last part of Bettman's conceptualization of information processing -- processing of alternatives. Much of the research in this area has investigated how humans simplify choice tasks facing them. Several projects have been undertaken to test Simon's hypothesis

---

[1]Bettman, p. 170.

[2]Ibid.

[3]George A. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on our Capacity for Processing Information," The Psychological Review, Vol. 63, No. 2, March 1956, pp. 81-97.

[4]Bettman, p. 170.

[5]Miller, p. 83.

that humans tend to "satisfice", or find an alternative that is good enough, rather than maximize.[1] The available research suggests that for most people the choice task is simplified when processing is done on an attribute-by-attribute basis. In other words, it is easier for people to compare alternatives on one attribute then move to the next attribute, and so on. Why is it that consumers prefer to process information on a within-attribute basis? Tversky suggests that intradimensional evaluations are easier than interdimensional evaluations because the alternatives can be compared using the same units, thus simplifying the task. Tversky also suggests that individuals may be able to deal more effectively with selected important dimensions and eliminate dimensions that are deemed unimportant.[2]

Hughes Model

Hughes proposes that consumer information processing can be divided into three parts -- information search, initial processing and central processing.[3] A few major developments within each area are described in this section.

First, information search is concerned with how consumers go about gathering information. Three types of theoretical models have been proposed to help explain this pheneomenon -- econometric models, decision nets and programs of rules.[4] In this case, econometric models are mathematical formulations of complex processes involving allocation of scarce resources (i.e.,

---

[1]Bettman, p. 171.

[2]Ibid.

[3]G. David Hughes, "Buyer/Consumer Information Processing: An Overview of Where Researchers Have Been and Where They Should Be Going" in G. David Hughes and Michael L. Ray, Buyer/Consumer Information Processing, (Chapel Hill, N.C.: University of North Carolina Press, 1974), pp. 3-11.

[4]Ibid.

time and money). Dominguez argues that econometric models can be applied to information processing because, "consumer decisions are part of an organized process through which individuals seek to clarify goals and alternatives and achieve desired levels of satisfaction."[1] The econometric models hold that consumer information handling and decision making processes can be reduced to a set of mathematical relationships which can be solved analytically or a least simulated. These models have been sharply criticized for their lack of agreement on the variables that should be included.[2]

In contrast, decision net models trace the rules used by a decision maker as he manipulates data to arrive at a choice. These models are more concerned with individual patterns of information processing and thus may yield somewhat greater insight. However, according to Hughes, "Their weaknesses are their inability to generalize across individuals and situations and their inability to yield normative solutions."[3] Stiles developed a "program of rules approach" to studying industrial purchasing behavior.[4] The research was based on the Schroder, Driver, and Streufert model of information processing which "views processing as a series of levels in which each level draws on combinations of attributes in lower levels."[5] Stiles suggests that information processing is a function of task complex-

---

[1]Luis V. Dominguez, "Econometric Analysis of Consumer Information Processing", in Hughes and Ray, p. 24.

[2]Ibid., G. David Hughes article, p. 4.

[3]Ibid.

[4]Gerald W. Stiles, "Determinants of the Industrial Buyer's Level of Information Processing", in Hughes and Ray, p. 116-35.

[5]Ibid., G. David Hughes article, p. 6.

ity, the individual buyer's conceptual world (individual factors), and workload and communication (organization variables).

Second, initial processing, deals with the cognitive processes that take place after the acquisition of information. According to Ray, "Over the long term, initial processing can affect basic attitude structures, but it has its main effect in terms of short-term communication responses."[1] Included in this area are numerous models of awareness, learning and attitude formation. For example, Sawyer was concerned with how frequency of exposure to relevant information would affect initial processing.[2] Sawyer's model suggests that repetition has a positive effect on arousal and stimulus recall and it can result in more favorable attitudes toward the stimuli. In addition, Sawyer found repetition affects brand evaluation and purchase intentions more than behavior.[3] Silk and Vavra, on the other hand, were interested in how the persuasiveness of an advertisement would be influenced by attitudes toward the stimuli.[4] Silk and Vavra cite two theories which describe how effectiveness and liking are related. One suggests a curvilinear relationship -- the most effective situations occur when the stimuli are either very irritating or very pleasant. The other suggests a monotonic relationship -- effectiveness increases as the pleasantness of the stimuli increases.[5]

---

[1]Michael L. Ray, "Consumer Initial Processing", in Hughes and Ray, pp. 145-56.

[2]Alan G. Sawyer, "The Effects of Repetition: Conclusion and Suggestions about Experimental Laboratory Research", in Hughes and Ray, pp. 190-219.

[3]Ibid., G. David Hughes article, p. 7.

[4]Alvin J. Silk and Terry G. Vavra, "The Influence of Advertising's Affective Qualities on Consumer Response", in Hughes and Ray, pp. 157-86.

[5]Ibid., G. David Hughes article, p. 7.

Finally, let us review a few ideas from the last part of the Hughes model - central processing. Central processing refers to individual processes leading to consumer choice.[2] The major thrust here has been toward multi-attribute models such as the Fishbain expectancy-value model. Multi-attribute models assume that people do not buy products but bundles of attributes to meet their needs.[2] "This approach", claims Hughes, "seems to be consistent with the approaches taken by those sciences that have been able to develop general models and theories."[3]

Information Overload

Articles dealing with the notion information overload have recently appeared in a few of the marketing journals. This research seeks to discover what happens to choice patterns as consumers are given more and more pieces of information to process. Initial efforts in this area were made by Jacoby, Speller and Kohn in an experiment dealing with laundry detergents.[4]

Jacoby, et al. set out to explore the proposition advanced by many consumer advocates and government officials that "more product information is better." The researchers wondered if a point of diminishing returns was reached when consumers were given too much information. The issue has significant implications for public policy decision making pertaining to full disclosure of information as emphasized by Jacoby, et al.:

---

[1]Ibid, G. David Hughes article, p. 3.

[2]G. David Hughes, "Trends in the Development of Multi-Attribute Models of Central Information Processing", in Hughes and Ray, p. 277.

[3]Ibid., pp. 285-86.

[4]Jacob Jacoby, Donald E. Speller and Carol A. Kohn, "Brand Choice Behavior as a Function of Information Load," Journal of Marketing Research Vol. XI, February 1974, pp. 63-69.

> If there is indeed a point beyond which additional information produces dysfunctional consequences, the ramifications for marketers, legislators, and other public policy makers would be substantial. Perhaps most importantly, it would generate greater attention to issues regarding 'how much?' and 'just which?' information should be retained and, once retained, how this package information could best be organized and presented so as to minimize the dysfunctional consequences...[1]

The research was conducted among college students and utilized a 3x3 factorial experiment with laundry detergents as the product stimulus. The first factor dealt with the number of detergent brands a subject received (4, 8, or 12 bogus brands). The second factor introduced the number of information items per brand (2, 4, or 6 items) and included such information as price, bleach content, enzyme content, fabric softener content, phosphate content, and quantity required per wash load. Subjects were asked to choose the "best brand" from a series of brands presented to them. Information was also gathered on the subjects' ideal brand for comparison purposes.

Jacoby, et al. arrived at two important conclusions concerning the impact of information overload. First, increased information resulted in dysfunctional consequences (i.e., confusion occurred with too much information resulting in less than optimal choices).[2] The researchers also concluded that more information resulted in beneficial effects upon satisfaction and confidence of selection among the subjects. In summarizing the two findings Jacoby, et al. state, "subjects felt better with more information but actually made poorer purchase decisions."[3]

---

[1]Ibid., p. 63.

[2]Ibid., p. 67

[3]Ibid.

The experiment was later replicated and extended by Jacoby, et al.[1] Commenting on the need for the new study, the researchers stated, "Because of the substantial implications that these findings have for public policy decisions, replication attempts using different subjects, products and improved methods are necessary."[2] The experiment differed from the original experiment in four respects: (1) housewives were used instead of students, (2) two products were utilized -- rice and prepared dinners, (3) product information was of a dichotomous nature, and (4) the maximum information load was increased from 72 to 256 items. The general conclusions reached by Jacoby, et al. were the same -- increased levels of package information resulted in less than optimal purchase decisions:

> The results obtained with the subjective state variables confirm the findings of Jacoby, Speller, and Kohn (1974). Subjects feel more satisfied, more certain, less confused, and desire less additional information as the total-amount-of-information they have increases even though they make poorer purchase decisions....[3]

Several researchers have been critical of the Jacoby, et al. research. The criticism centers on the concept of information load. Jacoby, et al. treat information load as a function of the number of information items times the number of brands. Two exhibits taken from the report on the first experiment help to identify the problem. Figure 2-1 shows the number of correct choices as a function of information load. The figure is developed from Table 2-2 which identifies the number of subjects correctly choosing the "best brand" under different treatment conditions.

---

[1]Jacob Jacoby, Donald E. Speller, and Carol K. Berning, "Brand Choice Behavior as a Function of Information Load: Replication and Extension," Journal of Consumer Research, Vol. 1, June 1974, pp. 33-42.

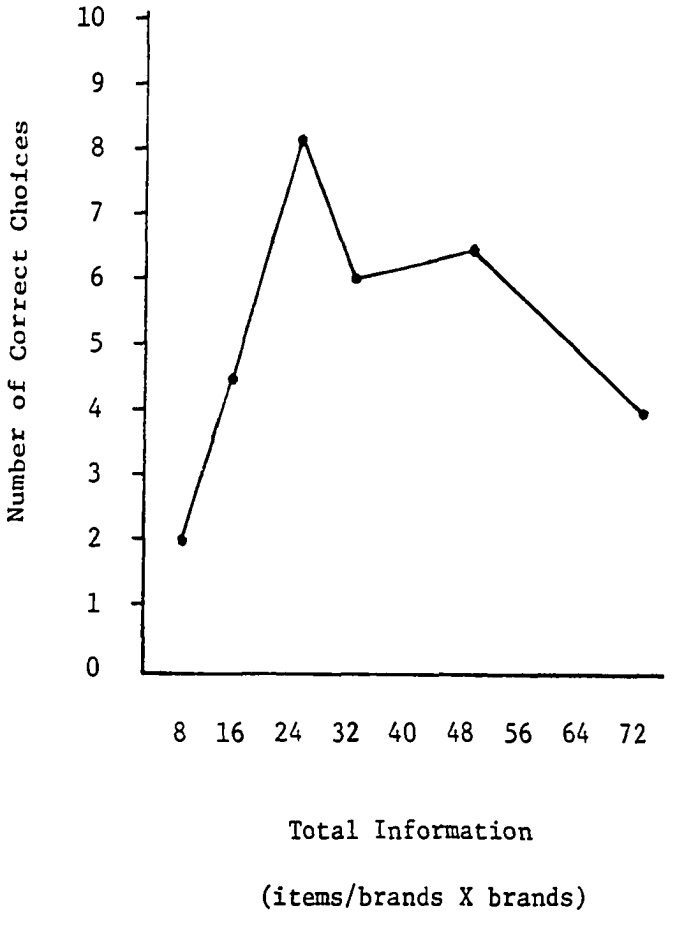
[2]Ibid., p. 34.

[3]Ibid.

Figure 2-1

Performance Accuracy as a Function of

Information Load



Source: Jacoby, Speller and Kohn, p. 66.

Table 2-2

Number of Subjects (out of 17) Correctly Choosing The "Best Brand" Under Varying Information Load

Number of Items/Brand	Number of Brands 4	8	12	Total
2	2	3	5	10
4	6	6	5	17
6	11	8	4	23
Total	19	17	14	

Source: Jacoby, Speller, and Kohn, p. 65.

Wilkie argues that the number of brands and the number of items per brand should not be combined.[1] Wilkie's main objection is with Table 2-2. According to Wilkie, "it is not clear that the information processing activities involved in the comparison of 4 brands, each with 6 pieces of information, and 12 brands, each with 2, are at all similar."[2] Wilkie also points out that according to Table 2-2 more pieces of information within each number of brands condition generally increased correct choices (except for the 12 brand treatment). Identical objections were raised by Summers:

> In the context of more information about individual brands, the study's results tend to support the opposite of the conclusions that more information leads to poorer purchase decisions. The results also indicate that the concept of 'information load' is not a useful independent variable since the response (number of 'correct decisions') to this variable depends on how a given level of 'information load' is obtained.[3]

Summary

An initial understanding of human information processing is needed if we are to understand the dynamics of consumer reaction to new forms of product information. Several important ideas pertaining to information processing were presented in this section. Bettman suggests that information processing can be divided into three major activities - attention, memory mechanics, and processing of alternatives.[4] Miller's concept of a

---

[1]William L. Wilkie, "Analysis of Effects of Information Load," Journal of Marketing Research, Vol. XI, November 1974, pp. 462-66.

[2]Ibid., p. 464.

[3]John O. Summers, "Less Information is Better?", Journal of Marketing Research, Vol XI, November 1974, pp. 467-68.

[4]Bettman, pp. 169-77.

"chunk of information" is notable in the area of memory mechanics. Simon's theory about processing of alternatives suggests that humans are "satisficers" (i.e. they are not "maximizers").

Hughes proposes a more specific model involving information search, initial processing and central processing.[1] Information search is concerned with how individuals gather information. Initial processing is a cognitive phenomenon which takes place after information awareness. Central processing refers to individual processes which lead to choice. Jacoby, Speller, and Kohn were concerned with the ability of consumers to process large amounts of information effectively.[2] Their experiment suggested that too much information may become dysfunctional in terms of consumer choice processes.

Product Information Research

A number of projects aimed at measuring the effectiveness of various product information programs have been reported. This section reviews several of the investigations (research pertaining specifically to nutrition labeling is presented in the next section). Specifically, consumer reaction to beef grading, unit pricing, and truth-in-lending information is reviewed in this section. A summary of the major ideas presented in this section can be found on p.31.

Product Information Preferences

In 1971 Darden and French presented results of a study which explored the salient dimensions of product label information in terms of

---

[1]Ibid., G. David Hughes article, pp. 3-11.

[2]Jacoby, Speller, and Kohn, pp. 63-69.

consumer preferences.[1] The researchers emphasized the importance of product information at the point of purchase, especially with the popularity of self-service retailing. Specifically, Darden and French attempted to determine what label information consumers desired and whether or not it was consistent with what was being provided by manufacturers. The research was conducted among two different groups - business executives and housewives.

Three major conclusions emerged from the Darden and French research. First, consumers perceived product label information on three dimensions -- product description importance, image importance, and price importance. Second, the importance of various label items was independent of social class. Third, consumers and business executives did not agree on the relative importance of different label items. For example, five of the information items (number servings, percent of solids versus liquids, unit price, ingredients listed by percentage, and perishable dating) were viewed as more important by consumers than by executives.[2] While the findings may have supported the need for more types of product information, the researchers indicated that, "if all consumers are to be provided with the information they deem important, supplementary methods of communication (whether formal or informal) must be considered."[3]

While Darden and French made an important contribution by rank ordering the importance of various types of product information, today one

---

[1]William R. Darden and Warren A. French, "Product Label Information: Dimensions of Meaning and Evaluation of Importance," Proceedings of American Marketing Association, Fall Conference 1971, pp. 647-52.

[2]Ibid., p. 647.

[3]Ibid., pp. 648-52.

might challenge the findings (e.g. more types of product information are available and consumerists are calling for new forms of product information). The research also utilized direct questioning to gather the data. A more indirect approach might have revealed a different pattern.

Consumer Reaction to Beef Grading

Miller, Topel and Rust attempted to assess the impact of beef grading upon consumer attitudes and behavior.[1] Their research was unique in that it dealt with product information that had been available to consumers for a considerable period of time. Specifically, the researchers set out to explore three major questions: 1) to what extent are homemakers familiar with the existence of the beef labeling system?; 2) to what extent do consumers benefit from the grade distinction?; and 3) to what extent do shoppers' preferences conform to the grading system?[2] The researchers combined a consumer mail survey with an in-home experiment, in seeking answers to the research questions. Mail panel participants were asked to list the top three USDA beef grades in order of quality. The in-home experiment measured the extent to which consumers preferred a particular beef grade on the basis of 1) a visual examination, and 2) a blind taste test.

Miller, et al. found that 40% of the mail panel participants could correctly recall the three top grades in proper order (prime, choice, good). In the visual test the researchers found that the beef grading system did not conform with consumer preferences.[3] Prime was the least popular

---

[1]John A. Miller, David G. Topel and Robert E. Rust, "USDA Beef Grading: A Failure in Consumer Information?" Journal of Marketing, Vol. 40, January 1976, pp. 25-31.

[2]Ibid., p. 26

[3]Ibid., p. 27-28.

steak, choice was the most popular and good was second most popular. In the blind taste-test of choice and good steaks, subjects showed no significant preference for one grade over the other. Thus, the authors question the usefulness of this type of product information to consumers:

> In view of the choices of the homemakers in the laboratory situation, which was set up to resemble the supermarket shopping experience, it appears that the grading standards are not of direct benefit to the consumer in selecting one cut of beef over another. She either cannot, or simply does not, use the grading hierarchy in her selection.[1]

Are we likely to find a similar non-use situation with nutrition labeling information? The present investigation attempts to delve into this important issue.

Price Information Research

Several studies have been reported pertaining to consumer response to price information. Unit pricing research has been an especially popular topic in this area. This section reviews four investigations dealing with price information adoption, and attitudes and usage of unit pricing by consumers.

Unit Pricing and the Low Income Consumer. Kilbourne conducted an experiment designed to assess the impact of unit pricing on low income consumers.[2] Kilbourne hypothesized, "The availability of unit pricing information will not have an effect upon the average unit price paid by low income consumers for a selected set of grocery prodcts."[3] Kilbourne set up an ex-

---

[1]Ibid., p. 29

[2]William E. Kilbourne, "A Factorial Experiment on The Impact of Unit Pricing on Low-Income Consumers," Journal of Marketing Research, Vol. XI, November 1974, pp. 453-55.

[3]Ibid., p. 453.

periment with low income subjects and dichotomized three factors: 1) race (black, white); 2) food shopping experience (high--housewife, low--students); and 3) price group (test-unit pricing, control-no unit pricing). Respondents were instructed to select one brand from different food categories which were represented by photographs which included price and quantity information.

Kilbourne found unit pricing to be generally ineffective in causing changes in brand choice. As Kilbourne explained, "it must be concluded that, in this experiment, the availability of unit pricing did not result in a statistically significant reduction of the cost of a selected set of grocery products for low income consumers."[1] Kilbourne made some important observations pertaining to the concept of full disclosure information in a highly competitive marketing environment (such as a food store):

> ...The grocery shopping environment, in fact, has many characteristics which would lead to a low saliency of price as a purchase criterion. Since the addition of unit pricing information represents a rather small modification of the environment, it seems unlikely that consumers would immediately incorporate it into their behavior patterns. Such changes in behavior are likely to occur only after the proper conditions for raising the saliency of price as a purchase criterion have been effected...[2]

Thus, it can be argued that simply providing product information on a label is not enough. Conscious efforts (e.g. education, promotion) may be needed to successfully launch new information programs. The FDA promotional campaign for nutrition labeling would seem to be a step in the right direction, according to that philosophy.

---

[1]Ibid., p. 455.

[2]Ibid., p. 455.

Unit Price Lists. Russo, Krieser and Miyashita approached the subject of unit pricing from a different perspective.[1] Russo, et al. did not question the value of unit price information, rather, they were concerned with the present format of unit price information and whether or not it presented any information processing problems for consumers in a complex environment:

> ...For the consumer, the specific task is to choose his most preferred package (i.e., brand size combination) from those offered on the supermarket shelf. The task environment usually consists of package facings and price tags for about 10 items, although this number may be more than 20 for some products, for example, breakfast cereal, dog food, and laundry detergent. Thus, the amount of information available to the consumer is large, and processing all of it is both nearly impossible and unlikely to be worth the effort.[2]

Russo, et al. argued that mere availability of price information may not be enough, "Before consumers can effectively use unit price information, a convenient, processable display of that information is necessary."[3] The authors developed an alternative to posting unit price data on shelves. Based upon research dealing with information processing of alternatives, the researchers proposed a "unit price list" to facilitate price comparisons. Russo, et al. hypothesized that "the unit price lists would lead to an increased use of price information and, therefore, to fewer purchases of the higher unit priced packages and more purchases of the cheaper packages."[4]

---

[1]J. Edward Russo, Gene Krieser, and Sally Miyashita, "An Effective Display of Unit Price Information," Journal of Marketing, Vol. 39, April 1975, pp. 11-19.

[2]Ibid., p. 11.

[3]Ibid., p. 12.

[4]Ibid., p. 13.

A before-after experimental design (store test) was set up in which the before condition represented unit prices on shelf tags (as typically found) and the after condition employed the "unit price list". Three product categories were studied: dishwashing liquid, canned dog food and facial tissue. A three-week before measurement and a two-week after measurement were taken on market shares. Presumably, differences would be attributable to the introduction of the "unit price list". While the design may suffer from a lack of control (extraneous factors operating in a before-after design) and a small sample (one store for five weeks) the main hypothesis was not rejected. According to the authors, "The unit price lists were therefore a significant factor in switching purchases toward the lower unit priced packages."[1] Within each of the three product categories lower priced products exhibited share increases, as long as the items were homogeneous.

While this research has important implications for competitive price information, it may be difficult to generalize the results to other kinds of product information. Unit pricing is a unidimensional phenomena. Nutrition information, on the other hand, is a multidimensional phenomena (protein, carbohydrates, fats, vitamins, etc. are listed). Thus, it would seem reasonable to expect the information processing task to be more difficult for consumers dealing with multidimensional data.

Price Information Adoption. Winter was also interested in the responsiveness of consumers to price information.[2] Winter wondered why

---

[1]Ibid., p. 15.

[2]Frederick W. Winter, "Laboratory Measurement of Response to Consumer Information," Journal of Marketing Research, Vol. XII, November 1975, pp. 390-401.

consumers were slow to adopt such information:

> Despite documented evidence of consumer attention to unit pricing, nutritional labeling information, and other informational material, many consumers ignore the information available to them. A possible explanation of this is that the information provided is not relevant to most consumer decisions; nevertheless, it is hard to believe that the average supermarket shopper is not concerned with nutrition and prices. A more compelling argument is that information is not available in a form that is immediately useful for purchase decisions, and the context in which information is provided (imagine the time and difficulty of comparing the prices and ingredients of every item in a busy supermarket) similarly defeats the purpose for which information is intended.[1]

Winter reasoned that consumers behave much like managers regarding the purchase of information for decision making purposes (a Bayesian-type approach). Winter suggests that in order for information to be valuable to the consumer three conditions are necessary; "1) the decision must be of some consequence; 2) the decision must depend on known information and; 3) information which will lead to a decision other than the decision resulting from no information has a reasonably high probability of occurring."[2]

To study the above proposition, Winter set up an elaborate experiment to measure consumer adoption of supermarket price information under varying conditions. Subjects were tested on their ability to recall the store with the least expensive merchandise for 25 items. Respondents were given one of two previews of price information (manipulation of perceived savings -- large versus small price variation between stores -- Factor I).

---

[1]Ibid., p. 390.

[2]Ibid., p. 391.

This was followed by one of two treatment levels of price information (unprocessed or raw prices versus aggregated price index information -- Factor II), under conditions where subjects chose to allocate time between reading the information and what they expected to be an alternative task (unattractive alternative use of time versus attractive alternative use of time -- Factor III).[1]

Winter concluded that "the experimental manipulations of individual, informational, and environmental variables played a significant role in consumer adoption of supermarket price information."[2] Winter found that unattractive alternative uses of time increased information usage, as anticipated. While the aggregate price information had a positive effect on information adoption the information lost by aggregation often mislead consumers. Accordingly, Winter suggested the concept of "sub-aggregated indices" as a possible solution (i.e., a "beef price index" instead of a "meat price index").[3] Finally, it was found that information adoption was not facilitated when consumers were conditioned to expect great savings. Based on the research, Winter made several important observations about information adoption:

> Results suggest that information adoption is facilitated when consumers are persuaded that information exists which is contrary to their expectations, and that information is available to allow confirmation or rejection by the consumer. Simplified information increases comprehension only if information lost during simplification is not large. Because information processing does involve a time cost (other costs such as

---

[1]Ibid., p. 392.

[2]Ibid., p. 399.

[3]Ibid.

> purchase dollars or psychological costs are important but were not considered in this research), providers of information should insure that information reaches their targets when the utility of time is low...[1]

What implications does Winter's research have for nutrition information adoption? As with price information, it may be advantageous to provide consumers with nutrition information at a time when it can be studied and digested -- when other uses of time are unattractive. People may not be receptive to nutrition information in an out-of-the-home environment when there are usually attractive alternative uses of time. Additionally, perhaps a "sub-aggregated index" could be developed for nutrition data to facilitate information adoption.

Unit Price Benefits. A survey of the literature pertaining to unit price information would be incomplete without reference to the research by Monroe and La Placa.[2] In 1972, Monroe and La Placa reported the findings from a wide variety of unit pricing field studies sponsored by various supermarket chains. Most of the research was conducted in 1970 and 1971 after unit pricing laws were enacted in Massachusetts, Connecticut, Maryland, Rhode Island and New York City.

Monroe and La Placa reviewed eight studies dealing with unit pricing. The findings pertaining to cost versus benefit of the program were sometimes in conflict. As Monroe and La Placa indicated, "on a few occasions, the proponents of unit pricing presented only supporting positive data while the opponents presented only negative information."[3]

---

[1]Ibid., p. 400.

[2]Kent B. Monroe and Peter J. La Placa, "What Are the Benefits of Unit Pricing," Journal of Marketing, Vol. 36, July 1972, pp. 16-22.

[3]Ibid., p. 19.

On the other hand, some of the conflict can be explained by differences in research methodologies. For example, the mode of displaying unit prices sometimes varied from study to study. In some of the field tests, labels were attached to shelf facings while in others unit price information was presented on placards or computer wheels. Monroe and La Placa provide a concise summary of the eight investigations:

> Jewel and Kroger looked at aggregate warehouse movements and found no major shifts to lower unit priced products, although King Soopers detected some shift to private labels. Yet, consumer response surveys indicate that Stop and Shop, Safeway, Kroger, and King Soopers patrons using unit-pricing information had switched brands and/or sizes. In addition, use of unit pricing varied from 7.4% in the Jewel's respondents to 65.1% of King Sooper's respondents. In the Jewel, Stop and Shop, Kroger and King Sooper's studies, unit-price information was used more often by the more educated, professional, and higher income respondents; yet in the Safeway study, inner-city respondents used unit pricing more than suburban respondents...[1]

Because of the methodological differences the researchers were hard pressed to accurately assess the benefit of unit pricing. Nevertheless, in their concluding remarks, Monroe and La Placa suggested that unit pricing may benefit both consumers and retailers in the long-run. In terms of usage, the authors feel that "operational problems are gradually being solved, and unit pricing is becoming more useful to the consumer for determining the relative cost of alternative brands and size.[2] In commenting on the benefits to the retailer, Monroe and La Placa state that "retail chains now using unit price systems claim they have found unit pricing to be beneficial to their merchandise operations."[3]

---

[1]Ibid., p. 19.

[2]Ibid., p. 22.

[3]Ibid.

Truth in Lending

Day and Brandt were interested in assessing the impact and benefit of Truth-in-Lending (TIL) information to consumers.[1] TIL legislation was designed to 1) help consumers shop for credit on a comparison basis as they would for other products and services, by using annual percentage rates (APR), 2) induce some consumers to use cash instead of credit, choose less expensive products or postpone the purchase after seeing the finance charges and APR, and 3) institute price competition among credit sources since consumers would be more knowledgeable about the cost of credit.[2] The Day and Brandt research was designed to investigate the success of TIL in meeting the first two objectives. The research was also designed to evaluate the impact of TIL information among various socio-economic groups.

An after-only research design was selected since the TIL laws were enacted several years earlier (July 1, 1969). Personal interviews were conducted in 1970 in which information was gathered on consumers' knowledge of credit and credit sources, credit experience and credit problems. A second survey was taken one year later to study possible changes in credit knowledge and usage which may have occurred over time.

As found in various other consumer product information studies, Day and Brandt discovered fairly low usage of TIL information. Based upon the data, the researchers argue that, "improved knowledge of credit rates

---

[1]George S. Day and William K. Brandt, "Consumer Research and the Evaluation of Information Disclosure Requirements: The Case of Truth in Lending," Journal of Consumer Research, Vol. 1, June 1974, pp. 21-32.

[2]Ibid., p. 21.

and changes that could reasonably be attributed to TIL has relatively little effect on credit search and usage behavior."[1] Day and Brandt suggest that credit related decisions are often made by default once the retailer is selected. The research also showed that significant numbers of consumers did not understand the meaning of APR and that most people tended to overstate the finance charges. Day and Brandt state that "in spite of the dramatic improvement in consumer knowledge of interest rates, the majority of consumers remain uninformed; and that the least gains have been among the less affluent and poorly educated segments."[2] The authors made some significant observations regarding the need to educate consumers about the nature and value of information programs:

> The lack of apparent impact of TIL still does not constitute evidence of failure. It is possible that the small minority who understand and use the information to make credit decisions are sufficient to police the market. Such a determination is beyond the scope of this study. What is clear, however, is that it is not enough to simply provide consumers with more information. That is simply the first step in a major educational task of getting consumers to understand the information, and persuading them to use it. Consumer researchers can make a significant contribution to both these tasks.[3]

The impact of such educational efforts upon consumer behavior is a major area of inquiry in this dissertation.

Summary

The body of research on consumer reactions to various types of product information may provide some clues about how consumers react to

---

[1]Ibid., p. 31.

[2]Ibid., p. 31.

[3]Ibid.

new information programs. The bulk of the evidence suggests that consumers are slow to adopt product information. Miller, et al. found beef grading to be of little benefit to consumers.[1] Kilbourne found that unit pricing information had low usage penetration among low income consumers.[2] Russo, et al. demonstrated that unit pricing information usage can be increased with the introduction of a "unit price list."[3] Winter demonstrated that information adoption tends to be low when consumers have attractive alternate uses of time.[4] Day and Brandt found truth-in-lending information usage to be quite low.[5] As several of these researchers have suggested, if consumer product information programs are to be successful (i.e. used by consumers), supplemental communications (other than at the point of sale) may be necessary.

Nutrition Labeling Research

Research dealing specifically with consumer reaction to nutrition labeling was found with less frequency. For example, a search of recent marketing journals revealed only one investigation which specifically pertained to nutrition labeling. Some amount of research in the area has been done by federal agencies (i.e. the FDA). An unpublished doctoral dissertation which deals directly with nutrition labeling has also been produced. A few isolated instances of industry sponsored research in nutrition labeling have also been reported. Several of these investigations are

---

[1]Miller, et al., pp. 25-31.

[2]Kilbourne, pp. 453-55.

[3]Russo, et al., pp. 11-19.

[4]Winter, pp. 390-401.

[5]Day and Brandt, pp. 21-32.

reviewed in this section. A summary of the major ideas presented in this section can be found on p. 67.

Nutrition Labeling on Canned Foods

Asam and Bucklin reported a product information study which specifically involved nutrition labeling.[1] Based upon Cardozo's theory, "marketers may be able to maximize customers' evaluation of their products by communicating the proper amount of information," Asam and Bucklin hypothesized that, "if consumers perceive nutrition labels as useful in marketing purchase decisions, they will rate brands carrying such information more favorable than brands that do not provide this information."[2] In their experiment, Asam and Bucklin varied the type of nutritional information on the label for canned peas and then studied a number of dependent variables. The dependent variables represented consumer attitudes toward various product attributes such as taste, and wholesomeness.

Asam and Bucklin came to four major conclusions on the basis of the experimental data:

1. Vague nutrition labels which state the presence of elements in loose terms such as high and low, are not apt to have any effect upon consumer choice patterns.

2. More detailed nutrition labels containing average industry values may be used by some consumers and may affect their perception of product quality and the ordering of preferred items.

3. Promotional terms used by canners such as "sweet and succulent," will provide some consumers with

---

[1]Edward H. Asam and Louis P. Bucklin, "Nutrition Labeling for Canned Goods: A Study of Consumer Response," Journal of Marketing, Vol. 37, April 1973, pp. 32-37.

[2]Ibid., p. 33.

a feeling of quality assurance comparable to that of more detailed nutrition labels.

4. Despite the fact that some consumers might use the labels, promotional efforts by canners are likely to obscure the effect of this use of either industry or individual canner sales volume.[1]

Asam and Bucklin observed that, "at least some consumer interests would be served by the provision of a labeling program with detailed information and that it be federally mandated to insure complete compliance."[2] However, the research raises a number of additional questions. For example, can the findings be projected to a wider range of food products? What's more, a new dimension has been added to this information program -- the introduction of nutrition educational messages. How would this factor have affected the findings? The present experiment attempts to deal with these issues.

Nutrition as a Food Purchase Motivator

An inquiry into the role of nutrition as a food purchase motivator was recently conducted by Gallay.[3] Gallay addressed two major questions in his research; "What are some of the general attitudes that consumers have toward the subject of nutrition and nutrition labeling of foods?", and "What is the importance of nutrition relative to other food purchase motivators across different food categories?"[4] The first issue was approached via traditional survey research. The second issue required changing nutri-

---

[1] Ibid., pp. 36-37

[2] Ibid., p. 37.

[3] Ralph Gallay, "An Experimental Study to Investigate the Role of Nutrition as a Food Purchase Motivator," Unpublished Doctoral Dissertation, New York University, 1975.

[4] Ibid., p. 21.

tion and price information and measuring preference taste and overall preference in an experimental situation. Data pertaining to both research questions were gathered among adult students in central location tests. Gallay explains the necessity of the two-pronged research approach:

> Primary data will be obtained from two basic techniques, employing the questionnaire and experimental observation methods. The first group of hypotheses to be tested dealing with attitudes toward nutrition lend themselves to data collection by the questionnaire method. Because of the nature of the variables being monitored, however, specifically perceived taste, it is felt that those research questions dealing with the role of nutrition as a food-purchase motivator, can best be investigated via actual food tasting procedures...[1]

In the food tasting experiment Gallay manipulated price at three levels and nutrition at three levels. Additionally, two different products were utilized in this portion of the study: powered milk and orange juice. The findings pertaining to the experimental phase (taste testing) rather than the survey phase (state of nutrition knowledge) are more relevant to the present investigation. Accordingly, four of Gallay's findings are worth noting:

> The most important single factor in product preference is perceived taste, and the main contributor to this in turn is the subject's general attitude of how desirable the product class is relative to some of his other favorite products.
>
> Price increases do have significant impact on perceived taste, considerably enchancing the taste of the 'more desirable' orange juice product, but having a negative effect linked to income and attitude toward the product in the case of the 'less desirable' powdered milk...

---

[1]Ibid., p. 53.

> Nutrition does not have a highly significant impact on perceived taste; it does however, significantly enhance the purchase preference rating.
>
> Demographic variables, specifically income and sex, seem to play a role in the perceived taste of powered milk as previously described. With respect to orange juice, however, no such factors are apparent...[1]

Gallay concludes that nutrition plays an important role as a food purchase motivator, but it is not nearly as important as taste. Thus, Gallay argues, "While considerably less influential than taste on product preference, having about one-half its impact, nutrition itself seems to enhance perceived taste slightly, or at least does not detract from it."[2]

As with the research of Asam and Bucklin, Gallay provides considerable insight into how consumers react to nutrition information. However, Gallay did not consider the role of nutrition educational messages in his experiment. It may also be difficult to generalize the findings to other food categories. Gallay's product class selections, orange juice and powered milk seem too closely related - both are beverages which offer nutrition and health benefits.

Government Sponsored Research

The federal government, primarily through the FDA, sponsored several consumer research investigations, both before and after the introduction of the nutrition labeling program. Three of the studies are reviewed here.

Survey of Nutrition Knowledge and Attitudes. A general survey concerning nutrition knowledge and attitudes of consumers was conducted by the FDA in 1973. According to Dunning, "The purpose of the study was to

---

[1]Ibid., pp. 94-95.

[2]Ibid., pp. 140-41.

determine how much nutrition education the consumers need, who needs it and how to get it to them."[1] A national probability sample of 1500 families was drawn -- respondents were those persons primarily responsible for food purchases in their households. While the nutrition survey demonstrated that people have a "working knowledge" of nutrition, their attitudes toward nutrition could be described as passive. Several of the findings pertaining to consumers and their nutrition knowledge were reported by Fusillo and Dunning:

> Forty percent of those interviewed believed that if a person knows little about nutrition but simply eats a variety of foods, he will be well-nourished...
>
> Over half of those surveyed believed that food prepared from "scratch" is more nutritious than the same food bought canned or frozen...[2]
>
> The survey showed that food shoppers today have a working knowledge of nutrition. Younger shoppers and those with a college education were most likely to know more about nutrition.
>
> About 40 percent of the participants believed Government makes sure food is good and nutritious. But, again, 85 percent feel the Government should be doing more in this area.[3]

Participants were also shown a sample nutrition label, after which their reactions were measured via direct questioning. Results of this portion of the research were reported by Stevan.[4] According to Stevan, subjects were quite receptive to nutrition label information:

---

[1]H. Neal Dunning, "What Do Consumers Know About Nutrition?" FDA Consumer, June 1974, pp. 12-14.

[2]Alice Fusillo, "Food Shoppers' Beliefs: Myths and Realities," FDA Consumer, October 1974, pp. 13-15.

[3]Dunning, p. 12.

[4]Mary Ann Stevan, "What Shoppers Are Concerned About," FDA Consumer, September 1974, pp. 13-17.

> Consumers thought it important to have information about nutrients on food packages. In fact, six in 10 would rather have nutrition labeling than label information on how to make a balanced meal using the product. Eight in ten preferred nutrition labeling to recipes on the label.
>
> One way in which almost three-quarters of the shoppers said they would use nutrition labeling was as a means to decide whether to buy a new brand of a product.
>
> ...Almost half of the food shoppers said they understood everything on it. Another 46 percent found one or more aspects of the label unclear, and 5 percent said they didn't understand the label at all.
>
> ...Almost half of those interviewed are willing to have 50 cents added to their overall weekly food bill if necessary to pay for this information. Seven in ten would pay an extra 30 cents or more but almost 20 percent think it's not worth a dime.[1]

While these findings appear encouraging, actual consumer attitudes and usage of nutrition label information could be much different. It would seem reasonable to expect considerable overstatement of attitudes and anticipated usage of nutrition information by consumers as a result of direct questioning. A more indirect means of measuring consumer reaction would be desirable.

Nutrition Labeling Format and Usage Research. In 1972 the FDA commissioned the Consumer Research Institute, an independent research firm, to gather consumer information to help the FDA develop guidelines for the nutrition labeling program.[2] According to Stokes, the main objective of the study was, "to determine whether consumers could understand and there-

---

[1]Ibid., p. 16.

[2]Raymond C. Stokes, Interim Report of the First Two Phases of the CRI/FDA Nutritional Labeling Research Program, Unpublished Document, August 1972.

use any one of the nutritional labeling format alternatives being prepared by the FDA better than they could use the others."[1] More specifically, the FDA was interested in finding answers to three fundamental questions:

1. Should nutrient information regarding the amount of the Recommended Daily Allowance (RDA) for each of several key nutrients be presented through a numerical system, a verbal system or a pictorial system?

2. Should the RDA information be presented on all key nutrients whether or not they present in the product, or should the list only contain those nutrients actually present in the product?

3. In terms of consumer untilization of information, is there any benefit to listing the percent composition of fat, carbohydrates and protein contained in food products?[2]

Beyond these questions, the FDA wanted to determine whether or not consumers would actually use nutrition information to alter purchase habits in accordance with personal nutritional needs. A purchase behavior experiment was designed to delve into this extremely important issue.

To gather data pertaining to the first three research questions, a two-part investigation (personal interviews and mail surveys) was conducted among lower socio-economic groups. The first part of the research utilized a factorial experiment. The factors represented; 1) presentation of nutrient information using numerical, verbal and pictorial formats; 2) product pair comparisons in which two, four and eight nutrients were displayed; and 3) product pair comparisons in which the difference in nutrients was small (5%), moderate (15%-20%), or large (30%-60%). The

---

[1]Ibid., p. 6.

[2]Ibid.

second part of the investigation introduced a fourth factor -- product pair comparisons in which all key nutrients were listed regardless of their presence in the product versus comparison where only nutrients actually present in the products were presented.[1]

The behavioral issue was approached from a different perspective. The research focused on the key question, "Will the consumer be more able and willing to use nutritional information when it is presented under any one of the formats being considered by the FDA?"[2] To help answer the question, a factorial experiment was conducted which utilized the Homarket, Inc. testing facility. Homarket maintains a panel of families in several cities who agree to purchase selected grocery items by means of a catalog. Food orders are placed by telephone and are delivered to the participating families the next day. As Stokes explains, in this test, nutrition information for selected food products was added to the Homarket catalog:

> Normally, the only information included in the food catalog is the brand, weight and price of the food item. Therefore, by modifying the catalog to include nutritional information displayed in the three formats, their effects on consumer purchase behavior could be assessed.[3]

Four factors were manipulated in the Homarket experiment, 1) listing or non-listing of protein, fat and carbohydrates, 2) inclusion of all nutrients versus only those nutrients contained in the product, 3) nutrition format (numerical, verbal or pictorial), and 4) time (four week

---

[1]Ibid., pp. 8-11.

[2]Ibid., p. 11.

[3]Ibid., p. 12.

base period and two four-week test periods).

Stokes reported that most consumers were quick to grasp the nutrition information and that the numerical presentation format was preferred over the other two format alternatives:

> Results indicate that a large majority of all consumers surveyed coped well with nutritional information regardless of the method used (including consumer representatives of underprivileged minority groups). While the performance of all three alternative systems was encouragingly high, the verbal system consistently performed at a slightly lower level than did the numerical percentages or the pictures.
>
> When considering personal preference, the study found that consumer reaction to nutrient information is more favorable when the information is presented in terms of numerical percentages rather than in terms of words or pictures. It appears that consumers expect this information to be precise, and feel that words are too vague in serving this purpose...
>
> Within the context of situations in which consumers must decide which of two products is the best nutritional choice, there seems to be an advantage to listing only those nutrients actually present in the product, although the actual differences in performance are not large...[1]

Cornell Research. Cornell University, under an FDA grant, conducted an investigation pertaining to consumer reaction to nutrition information on food product labels.[2] The research, under the direction of Lenahan, et al. had three major objectives, 1) to discover the labeling format most acceptable in conveying basic nutrition information, 2) to identify the rate of perception, understanding and usage of nutrition label information by consumers, and 3) to assess the nature and importance of non-use benefits as perceived by consumers.

---

[1]Ibid., p. 2.

[2]R. J. Lenahan, J. A. Thomas, D. A. Taylor, D. L. Call and D. I. Padberg, "Consumer Reaction to Nutrition Information on Food Product Labels," Search-Agriculture, Vol. 2, No. 15, September 1972, pp. 1-27.

Data were collected via consumer surveys in a two-part research program. First, a national sample of consumers was shown three alternative nutrition formats. Subjects were asked to indicate their preference after which they were questioned about anticipated usage of the information and perceived non-use benefits. The survey employed direct questioning of subjects in each of the areas of inquiry. As discussed earlier, overstatement of attitudes and intentions may occur with direct questions.

The first label format expressed the nutrient content by a system of units in which a unit represented 10 percent of the recommended daily allowance (RDA) for each of eight nutrients. The second label format was much different -- it employed a system of adjectives with each adjective indicating a specified percentage of the RDA. The third label format presented the nutrient content in terms of percentage of RDA, with only those amounts of five percent or more listed. Linahan, et al. reported that respondents generally preferred the third format, a finding consistent with the Consumer Research Institute study. The Cornell research also reported wide anticipated usage of nutrition label information by consumers.[1] Two other findings pertaining to non-use benefits and anticipated usage by lower socio-economic groups are worth noting:

> Agreement concerning the non-use benefits of the program was strong. The fact that the consumers consider the labels to be a means of learning more about nutrition may enhance their value as an educational tool. Non-use benefits of the program as viewed by the consumer may have implications for consumer education.

---

[1]Ibid., p. 7.

> It appears that some of the target groups that have been mentioned as needing dietary improvement--the aged and those with low incomes, for example--would make less use of the labels than the younger consumers or those with higher incomes. This may have implications for emphasis in promotion, education, or other related activities.[1]

Part two of the Cornell research, while considerably more elaborate than part one, also relied on direct questioning of consumers. The research was conducted in food stores after various nutrition information label formats were introduced on selected food products. Consumers had an opportunity to become familiar with the label data in a "real-world" environment. Four labeling formats were tested in this manner.

The first format, which used percentage of RDA only for those nutrients in the product, was introduced on seven private label canned foods by Jewel Food Stores in September 1971. Consumer interviews were conducted two months later. The second format, which presented the proportion of nutrients by numbers rather than percentages, was introduced on 58 different food products by Giant Food in September 1971. Consumer surveys were conducted in two waves -- two months after introduction and four months after introduction (to study changes over time). A benchmark survey was also administered at Giant Foods one week before the new labels were introduced. The third type of label, which used adjectives to describe the amount of nutrition, was displayed on a number of private label foods offered by First National Stores in February 1972. Promotional activities were also used to create awareness of nutrition labeling in the First National study. The fourth type of label, nearly identical to

---

[1]Ibid., p. 8.

the one used in the First National Stores, was introduced on several other food products by the Kroger Company in January 1973. Consumer surveys were conducted two months later.[1]

The consumer surveys explored awareness, understanding and usage of the label information. Consumers were also questioned about potential non-use benefits and willingness to pay for the information. Since test conditions were not constant between store tests, it was difficult for the researchers to draw many hard and fast conclusions about the best label format. As Lenahan, et al. state, "Although the label format differed between tests, differences in numbers of products labeled and intensity of promotion precludes drawing useful inferences about label format."[2] Nevertheless, the researchers made several other important observations. For example, Lenahan, et al. reported that both perception and usage of nutrition information by shoppers was fairly low, but showed some improvement over time:

> Although in the supermarket tests the total number of respondents who perceived the labels (about 25%) and the number who understood them (about 15%) was rather low, it is encouraging that both perception and understanding of the labels increased with the length of time the program was in effect.
>
> Actual use of the labels was low -- about 10 percent of the total respondents used them -- but, like perception and understanding, use increased with the duration of the program. Use of the labels by those who had perceived and understood them was substantial (59%).[3]

---

[1]Ibid., pp. 8-9.

[2]Ibid., p. 8.

[3]Ibid., p. 20.

The Cornell research (especially part two) was significant in that it attempted to measure the impact of nutrition labeling under realistic conditions. Consequently, wide differences between anticipated usage (as reported via direct questioning before introduction of nutrition labels) and actual usage (as reported after introduction of nutrition labels) were discovered. The present investigation also attempts to appraise the value of such information in an objective manner.

Swift Research

Occasionally industry spokesman share results of their research in trade publications and industrial conferences. Swift & Company has made available some of their research on nutrition labeling.[1] Under the direction of Klinger, Swift & Company conducted a small scale survey in 1972 among a variety of organizations thought to be interested in the concept of nutrition labeling. Klinger contacted several consumer organizations, government agencies, food manufacturers and food retailers and asked them if they would "share the results of any consumer studies which they have conducted to show interest, awareness and utilization of nutrient labeling."[2] On the basis of the survey responses, Klinger concluded that "the consumer is interested in nutrient labeling, food ingredient information, open dating and many other of these issues."[3] Several of the findings which lead to Klinger's conclusion are reported below:

---

[1]Lawrence E. Klinger, "Update on Nutrient Labeling: Consumer Awareness, Use and Attitudes," Food Product Development, June 1974, pp. 30-40.

[2]Ibid., p. 32.

[3]Ibid.

> The Office of Consumer Affairs reported that nine percent of the food packaging and labeling complaint cases in a six-month period referred to either the absence of nutrient information on labels or lack on consumer understanding of the information available.
>
> Of the food retailers contacted, only one has conducted a small, informal survey prior to the Cornell study. One additional chain is planning an evaluation of consumer awareness, understanding, and use of this data in the future...
>
> Only one food manufacturer in this survey reported having conducted any consumer research. This firm found:
>
> a. Interest: strong, would like to see nutrition information on labels.
> b. Use: low; do not really understand and feel that they are satisfying the nutritional needs of their families with the variety of foods they serve each day.
> c. Would pay more for nutrition information: no.
> d. Would switch brands to get nutrition information: no; unless dissatisfied with the quality of their present brand.
> e. Which element (s) in the nutrition information table were of most interest: calories.[1]

A survey among housewives to determine consumer awareness and usage of nutrition labeling was conducted by Klinger in 1974.[2] The data were gathered after several large food manufacturers and processors (Del Monte, Kellogg, Green Giant, Armour, and Pillsbury) had introduced nutrition labels on many of their packaged food products. Awareness of nutrition labeling was found to be fairly low, especially on an unaided basis. Most women indicated that they "would not be willing to pay more for a product to get nutrient labeling."[3] Other findings reported by Klinger centered on non-use benefits:

---

[1]Ibid.

[2]Ibid., p. 34.

[3]Ibid.

> Most homemakers agree by putting this information on the package the manufacturer shows he really cares about the consumer, but he should have a program to explain what the information means.
>
> Most women agreed there was a need for this information, that it would be helpful, and would be an assurance that they were providing nutritious meals to their families. On the other hand, almost one-half of the homemakers agreed that most women can serve nutritious meals without all the nutrition detail; they don't have time to read labels and they wouldn't pay attention to the information anyway.[1]

Summary

Several investigations dealing specifically with nutrition labeling have been conducted which provide some indication of consumer response. By way of a laboratory experiment, Asam and Bucklin reported that consumers would benefit from nutrition labeling if it were presented with a fair amount of detailed information.[2] Gallay found that nutrition was a distant second to taste in terms of importance to consumers.[3] Research conducted by the Consumer Research Institute indicated that consumers were receptive to the concept of nutrition labeling and that they preferred a format which presented the information in numerical percentages rather than descriptive phrases or pictures.[4] Researchers from Cornell University discovered relatively low perception and usage of nutrition label information in a series of store tests.[5] Research by Klinger indicated that women

---

[1]Ibid., p. 39.

[2]Asam and Bucklin, pp. 32-37.

[3]Gallay, pp. 140-41.

[4]Stokes, pp. 1-3.

[5]Lenahan, et al., pp. 1-27.

were "lukewarm" to the idea of nutrtion information labeling - while they expressed verbal interest, they were not willing to pay extra for such information.[1] This author expects a significant amount of overstatement of positive consumer attitudes toward nutrition labeling as a result of direct questioning which was employed in several of these investigations.

Gaps in the Research

As demonstrated, the information processing and consumer product information literature is quite extensive and diverse. Collectively, the theories and investigations may help us understand how people handle and react to product information. This section summarizes and draws some conclusions from the literature review. More importantly, major gaps in the research are identified, thus providing the rationale for the present investigation.

The literature on human information processing provides many valuable clues as to how consumers handle information. Especially notable was the work of Miller who argued that people are capable of processing only a small amount of information at one time (up to seven chunks of information).[2] Several investigations demonstrated that people tend to simplify an information task by processing data on an attribute-by-attribute basis, which lends support to Tversky's hypothesis.[3] Difficulties which may arise from trying to process too much information were demon-

---

[1]Klinger, pp. 30-40

[2]Miller, pp. 81-97.

[3]Bettman, p. 171.

strated in the marketing experiments of Jacoby, Speller and Kohn.[1] Jacoby, et al. concluded that the consumer's ability to successfully process information was curvilinear. After a point, the ability to make "correct" choices went down as the information levels went up. Although the Jacoby, et al. research has been sharply criticized it does seem to support Miller's notion of limited size of short term memory. A large number of consumer information processing models have been developed. According to Hughes, the central processing models, which focus on factors leading to consumer choice, show the most promise for understanding and predicting consumer behavior.[2]

Several product information studies were reported, ranging from beef grading to truth-in-lending. This body of research sheds some light on how consumers react to and use product information in their choice processes. However, it may be difficult to build a general model from the research since the product information topics have been so different, as have the research methodologies.

On balance, the research evidence suggests that consumers are interested in product information. Whether they use it or not, however, is another matter. Many investigations have indicated that only a small proportion of consumers may consciously use product information in their brand choice processes. For example, Day and Brandt concluded that while

---

[1]Jacoby, Speller and Kohn, pp. 63-69.

[2]Ibid., G. David Hughes article, pp. 285-86

truth-in-lending legislation may have improved consumers' knowledge of interest rates, it has had little effect on credit search and usage behavior.[1] Winter showed that consumers are more apt to use product information cues when there is no attractive alternative use of their time.[2] In an advanced society it might be expected that people have other attractive uses for their time (e.g. currently 40% of married women are formally in the U.S. labor force[3]).

The literature most relevant to this thesis is, of course, that dealing specifically with nutrition labeling. The available research suggests that the intended benefits of the program have not been realized. For example, Gallay found nutrition to be a distant second to taste as a food purchase motivator.[4] Researchers from Cornell University attempted to assess the degree of consumer usage of nutrition label information shortly after the program had been launched by a number of food chains on selected food products.[5] Although some methodological problems were cited, the Cornell research showed low conscious usage of nutrition information while non-use benefits (e.g., it makes me feel food manufacturers are honest) were more widely recognized. Consumer research by Swift & Company concluded that while women welcomed nutrition information, most felt they could serve nutritious meals without all the nutrition detail. What's more, nearly one-half of the women in the Swift survey suggested that people do not have time to read and study product label information.[6]

---

[1]Day and Brandt, p. 31.

[2]Winter, pp. 390-401.

[3]The Conference Board, "Characteristics of Job Seekers," Road Maps of Industry, No. 1785, June 1976, pp. 1-2.

[4]Gallay, pp. 140-41.

[5]Lenahan, et al., pp. 1-27.

[6]Klinger, pp. 30-40.

While our understanding of consumer behavior and information processing is enhanced by this body of research, there is considerable room for other types of meaningful research. For instance, one research opportunity is to study the impact of various product information programs when they are preceded or accompanied by consumer education (e.g. advertising designed to promote the meaning and benefit of the information). Nutrition labeling provides a proper background for such research since a nutrition educational campaign has been developed by the FDA. This type of research will become more important if educational steps are to be taken with future consumer information programs.

Many of the investigations cited in this chapter considered one level of one type of product information. What happens to consumer attitudes if more and more information pertaining to a certain dimension such as nutrition is provided? This question has also been overlooked. Jacoby, et al. increased both the numbers of dimensions and the number of brands simultaneously, thus taking a "macro" approach.

Other than the work of Gallay, the literature reveals few attempts to assess the impact of product information across more than one product class. Can findings pertaining to a single food item be generalized to all food product classes that may be affected by the information disclosure requirements? Gallay made a small contribution in this area by including two products (orange juice and powdered milk) in his experiment.[1] However, it is felt that the two products did not represent a wide enough range of food products.

---

[1]Gallay, p. 21.

Finally, it should also be recalled that a substantial amount of product information research was accomplished via direct questioning of consumers. That is, subjects were often asked directly about their attitudes and usage of certain kinds of product information. It has been consistently demonstrated that when consumers are put in the role of a respondent, they often overstate their attitudes and behavioral intentions in order to please the investigator.[1] The present study was designed to overcome such bias by employing unobtrusive measures. Questions pertaining to consumers attitudes toward nutrition label information were disguised within a battery of other attitudinal, demographic, and life style questions. In conclusion, it is felt that the present investigation will go considerably beyond existing research to provide a better understanding of consumer reaction to product information.

These are but a few of the gaps which exist in the literature. The present research was designed to help fill part of the void. Undoubtedly there are many other avenues open for fruitful research. The author makes several suggestions for additional research at the end of Chapter six, after the present investigation has been reviewed.

---

[1]Michael L. Ray, "Unobtrusive Marketing Research Techniques," in Gerald Zaltman and Philip C. Burger, Marketing Research: Fundamentals and Dynamics, (Hinsdale, Illinois: The Dryden Press, 1975), pp. 366-67.

CHAPTER 3

HYPOTHESES AND DEFINITIONS

In the preceding chapter several conclusions were drawn from the review of the literature. In Chapter 1 several problems associated with full disclosure of information and nutrition labeling requirements were cited. The purpose of this chapter is to pull many of the ideas together and express them as formal statements of hypotheses. Operational definitions of the various concepts are also provided.

The Hypotheses Statements

The statements of hypotheses which follow are phrased in terms of relationships between certain experimental variables (nutrition educational message exposure level and amount of nutrition label information) and certain attitudinal dependent variables (overall opinion, attitude toward nutritional value and purchase interest). Six main hypotheses were developed and each main hypothesis has three sub-hypotheses. In total, eighteen hypotheses statements were formulated.

The main hypotheses 1, 3, and 5 relate to the research question about the impact of promotion as a part of a product information program. The main hypotheses 2, 4, and 6 relate to the research question about the impact of more (i.e. higher levels) of product information upon con-

sumer behavior. The hypotheses are framed in terms of different classes of food products, which relates to the question about our ability to project the findings to all products which may be affected by a new regulation.

Main Hypothesis I

Consumer attitudes toward a highly nutritious product will not change (no significant differences will be found) when consumers are exposed to various amounts of nutrition educational messages (the null hypothesis). The converse of this statement (significant differences will be found) is the research hypothesis. This hypothesis was tested via three sub-hypotheses which involve the various attitudinal elements of the experiment:

$H1A_o$: Consumers' overall impression of a highly nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H1B_o$: Consumers' attitudes toward a product's nutritional value within a highly nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H1C_o$: Consumers' interest in buying a highly nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

Main Hypothesis 2

Consumer attitudes toward a highly nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label (the null hypo-

thesis). The converse of this statement (significant differences will be found) is the research hypothesis. This second main hypothesis was again tested via three sub-hypotheses:

$H2A_o$: Consumers' overall impression of a highly nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H2B_o$: Consumers' attitudes toward a product's nutritional value within a highly nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H2C_o$: Consumers' interest in buying a highly nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

Main Hypothesis 3

Consumer attitudes toward a moderately nutritious product will not change (no significant differences will be found) when consumers are exposed to various amounts of nutrition educational messages (the null hypothesis). The converse of this statement (significant differences will be found) is the research hypothesis. As above, this main hypothesis was tested via three sub-hypotheses:

$H3A_o$: Consumers' overall impression of a moderately nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H3B_o$: Consumers' attitude toward a product's nutritional value within a moderately nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H3C_o$: Consumers' interest in buying a moderately nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

Main Hypothesis 4

Consumer attitudes toward a moderately nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label (the null hypothesis). The converse of this statement (significant differences will be found) is the research hypothesis. Three sub-hypotheses were used to test this relationship:

$H4A_o$: Consumers' overall impression of a moderately nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H4B_o$: Consumers' attitude toward a product's nutritional value within a moderately nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H4C_o$: Consumers' interest in buying a moderately nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

Main Hypothesis 5

Consumer attitudes toward a marginally nutritious product will not change (no significant differences will be found) when consumers are

exposed to various amounts of nutrition educational messages (the null hypothesis). The converse of this statement (significant differences will be found) is the research hypothesis. Again, three sub-hypotheses were employed to test this proposition:

$H5A_o$: Consumers' overall impression of a marginally nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H5B_o$: Consumers' attitudes toward a product's nutritional value within a marginally nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H5C_o$: Consumers' interest in buying a marginally nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

Main Hypothesis 6

Consumer attitudes toward a marginally nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label (the null hypothesis). The converse of this statement (significant differences will be found) is the research hypothesis. The three sub-hypotheses used to test the relationship were:

$H6A_o$: Consumers' overall impression of a marginally nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H6B_o$: Consumers' attitudes toward a product's nutritional value within a marginally nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H6C_o$: Consumers' interest in buying a marginally nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

Operational Definitions

The relationships between a number of variables, both independent and dependent, were expressed in the statements of hypotheses. This section provides operational definitions for each of the expressed variables along with other key terms. The specific questions and accompanying scales are fully described in Chapter 4.

Overall Impression

The consumer's overall impression of a product is defined as his overall reaction (all things considered) to a product (package) visual immediately after examining it. The subject's overall reaction was measured on a balanced seven-point itemized rating scale.

Attitude Toward Nutrition

Attitude toward a product's nutritional value is defined as the respondent's opinion of the product stimulus in terms of its perceived nutritional value. As with overall impression, it was measured on a balanced seven-point itemized rating scale. However, in this case the scale was graphically presented so as to provide an impression of a continuous instrument.

Buying Interest

Buying interest is defined as the likelihood, or probability, of a subject purchasing the test product on a future purchase occasion if it were available in stores. An eleven-point purchase probability scale was used in the research to determine buying interest among the respondents.

Product Types

A series of statements were made about products which were either highly nutritious, moderately nutritious or marginally nutritious. Specifically, what is meant by each of these terms? A highly nutritious product is defined as a product which is perceived to be highly nutritious by consumers. Likewise, moderately and marginally nutritious products are ones that are perceived to be that way by consumers. More specifically, the nutritious product used in this research was peanut butter. The moderately and marginally nutritious products were canned peaches and vanilla wafers respectively. A pilot test, in which a small sample of women ranked ten widely differing food products in terms of perceived nutritional value, was used to select these three food products (details about the pilot test and the product visuals are provided in Chapter 4).

Message Levels

Several hypotheses referred to consumers being exposed to various amounts of nutrition educational messages. A nutritional educational message is represented by a (mock) black and white newspaper advertisement, sponsored by the FDA, with reference to various nutritional concepts

and nutrition labeling as the major copy theme. Amount or level of exposure refers to the number of different FDA nutrition advertisements a subject would see, where three different exposure levels were utilized. Some subjects saw only one FDA advertisement (low exposure level) while others saw two (medium exposure level) or three (high exposure level) FDA advertisements (additional details are provided in Chapter 4).

Nutrition Information Levels

Likewise, several hypotheses referred to various levels of nutrition label information. Nutrition label information is defined as an item-specific list of data containing various nutritional characteristics (calories, vitamins, etc.) of the test products. The list of information was presented on a special panel on the back or side of a food package. Nutrition information level refers to the amount of nutrition data presented where three different levels were used in the experiment. The low level of information displayed only four bits of nutrition information. The medium level presented twelve bits of information and the high level presented twenty-one bits of information (see Chapter 4 for additional details).

Attitude Change

Attitude change is defined as differences in attitudes that result from the differences in experimental treatments. In this research twenty-seven different treatments were employed (three product classes which utilized three nutrition educational message levels by three levels of nutrition label information). A subject was assigned to one and only

one experimental treatment. Thus, attitude change can be assessed by testing for significant differences between selected experimental groups.

CHAPTER 4

METHODOLOGY

This chapter describes the methodology, procedures and materials used in the present investigation. For convenience, the chapter is divided into six parts: research methodology, sampling procedures, experimental stimuli, questionnaire design and testing procedures, statistical methods and research limitations. Each topic is described in depth in order to provide a clear understanding of the research design and the analytical procedures for the reader.

Research Methodology

This investigation utilized an experimental research design. Simply stated, experimentation seeks to establish casual relationships between variables. As Cox and Enis explain, "An experiment is performed when explanatory variables are manipulated and their effects upon dependent variables measured."[1] In this research two independent variables were manipulated (number of nutrition educational messages and level of

---

[1]Keith K. Cox and Ben M. Enis, The Marketing Research Process, (Pacific Palisades, California: Goodyear Publishing Co., Inc., 1972), p. 233.

nutrition information) while three attitudinal dependent variables were measured (overall product interest, perceived product nutrition value, and purchase probability).

Experimentation was selected as a research design since it has the capacity for providing more convincing evidence of casual relationships. Additionally, experimentation can offer the key element of control more so than many other research designs.[1] In summarizing the benefits of experimentation Churchill explains, "An experiment's greater ability to supply evidence of causality exists because of the control it affords the investigator."[2] When striving toward science in marketing, Boyd and Westfall emphasize the need for experimentation:

> If marketing is to become more scientific, more experiments are necessary. The fact that the number of marketing experiments has increased several times over has been one of the encouraging developments in the last five years, although the percentage of all projects done as experiments is still very small.[3]

Laboratory Experiment

More specifically, this research could be described as a laboratory experiment. In essence, a laboratory experiment utilizes an artificial setting for a specific research purpose. Using this method, the researcher hopes to simulate a real-world phenomena via an artificial environment. Kerlinger provides a more succinct definition of a laboratory experiment:

---

[1]Harper W. Boyd and Ralph Westfall, Marketing Research, Revised Edition (Homewood, Illinois: Richard D. Irwin, Inc., 1964), p.92.

[2]Gilbert A. Churchill, Marketing Research: Methodological Foundations (Hinsdale, Illinois: The Dryden Press, 1976), p. 86.

[3]Boyd and Westfall, Revised Edition, p. 92.

> A laboratory experiment is a research study in which the variance of all or nearly all of the possible influential independent variables not pertinent to the immediate problem of the investigation is kept at a minimum. This is done by isolating the research in a physical situation apart from the routine of ordinary living and by manipulating one or more independent variables under rigorously specified, operationalized, and controlled conditions.[1]

A laboratory experimental design was selected since it offered a number of positive features which were considered critically important to the investigation. For example, the study called for two independent variables to be manipulated simultaneously. Immediately following, a number of dependent measures were to be taken. At best it would be difficult to accomplish the objective in a field experiment since sources of extraneous variation would be uncontrollable. Kerlinger cites a number of other advantages of laboratory experimentation (in addition to the benefit of control):

1. Laboratory experiments can use random assignment of individuals to treatments and can manipulate one or more independent variables.

2. The researcher can acheive a high degree of specificity in the operational definitions of his variables.

3. Precise measurements are possible in laboratory experiments which may mean less error variance. The more precise a measurement is, the more certain the experimenter can be that the measures obtained vary little from their true values.

4. By specifying exactly the conditions of the experiment, the researcher can reduce the risk that subjects may respond equivocally and thus introduce random variance into the experimental situation.[2]

---

[1]Fred N. Kerlinger, Foundations of Behavior Research (New York: Holt, Rinehart and Winston, Inc., 1973), p. 398.

[2]Kerlinger, p. 399.

While laboratory experiments offer many positive features, they also present their share of problems. Many of the problems center on the principle of external validity. External validity refers to the ability of the researcher to generalize the findings from an artificial research setting to a broader or "real-world" environment. Kerlinger also points out that often times the strength of the experimental manipulations are weak in a laboratory situation.[1] Nevertheless, Pessemier suggests that laboratory experimental results "can be generalized as long as experimental conditions are psychologically equivalent to market conditions."[2]

While Kerlinger recognizes the nagging problem of external validity, he also emphasizes the strength of internal validity in laboratory work:

> The aim of laboratory experiments, then, is to test hypotheses derived from theory, to study the precise interrelations of variables and their operation, and to control variance under research conditions that are uncontaminated by the operation of extraneous variables. As such, the laboratory experiment is one of man's greatest achievements. Although weaknesses exist, they are weaknesses only in a sense that is really irrelevant. Conceding the lack of representativeness (external validity) the laboratory experiment still has the fundamental prerequisite of any research: internal validity.[3]

---

[1]Ibid.

[2]Edgar A. Pessemier, "An Experimental Method for Estimating Demand", Journal of Business, October, 1960, pp. 373-83.

[3]Kerlinger, p. 401.

Statistical Research Design

The statistical experimental design employed in this research was a factorial design. Green and Tull describe a factorial design as "one in which an equal number (usually) of observations is made of all combinations involving at least two levels of at least two variables."[1] A factorial design allows the researcher to study the impact of two or more experimental variables introduced simultaneously (each at various levels) upon a dependent variable. This type of experimental design has a unique feature which permits the researcher to study the interaction effect of the experimental variables. In referring to the application of this design, Cox and Enis suggest, "When there is reason for the manager to believe that two different factors may interact to produce a different effect upon the dependent variables than if the factors were tested separately, a factorial design is appropriate."[2]

The theoretical model for this design is captured in the following expression, where two experimental variables are introduced (as was the case with this investigation):

$$X_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$$

where X_{ijk} = an observation taken on a dependent variable

μ = mean of the population

α_i = main effect of variable I

---

[1]Paul E. Green and Donald S. Tull, Research for Marketing Decisions, Third Edition (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975), p. 413.

[2]Cox and Enis, p. 323.

β_j = main effect of variable II

$(\alpha\beta)_{ij}$ = interaction effect of variables I, II, and

ε_{ijk} = random effect from uncontrolled variation.[1]

More specifically, the research model employed in the study was a 3 X 3 factorial design -- a design in which two experimental variables are introduced, each at three treatment levels. As mentioned, one experimental variable introduced nutrition educational messages while the other introduced nutrition information on the label. The 3 X 3 factorial design was implemented three times (for three different classes of food products).

Specification of the Variables

In this section the various independent and dependent variables are explicitly defined. The experimental variables and the various treatment levels are presented first.

Experimental Variables. Variable I refers to the nutrition educational message exposure factor. Three treatment levels were specified--low, medium and high. A low level of exposure was arbitrarily set at one exposure to a nutritional advertising message. Two exposures were introduced for the medium treatment level and three exposures were used for the high treatment level. Message exposure was simulated by showing a series of advertising portfolios to the subjects. The nutrition advertisements were seen in the context of a competitive advertising environment; that is, each portfolio contained one nutrition advertisement along with

---

[1]Green and Tull, p. 413.

nine other advertisements for a wide variety of products and services. Subjects assigned to the low exposure level viewed only one portfolio while those assigned to the medium and high treatment saw two and three portfolios respectively. In experimentation at least three treatment levels are necessary to uncover possible curvilinear relationships.

Variable II refers to the amount of nutrition information displayed on the food product label where, again, three treatment levels were assigned. The low level of nutrition information was represented by a limited amount of nutrition data (4 items). The medium level contained a normal amount of nutrition data (13 items) while the high level contained a long list of nutrition data (22 items). Again, three treatment levels were employed in order to ascertain possible curvilinear relationships.

As mentioned, the 3 X 3 factorial design was used three times--once for a marginally nutritious product, once for a moderately nutritious product and once for a highly nutritious product. The marginal product was represented by a 7 ounce box of vanilla wafers. The moderately and highly nutritious products were represented by a 16 ounce can of sliced peaches and a 12 ounce jar of peanut butter respectively. Rationale for the selection of these particular product classes and the development of the visual product stimuli is presented later in this chapter. Incidentally, the reader may wonder why the product nutrition value factor was not simply included as a third experimental variable (i.e., a 3 X 3 X 3 design). In designing the investigation the researcher could not be certain that the three food products represented items that were equal distance apart on a product nutrition value continuum in terms of

laboratory tests and consumer perceptions. Additionally, the analytical methods which would subsequently be employed required a fairly continuous program of factors. Therefore, at the outset it was decided to replicate the experiment three times. A schematic of the experimental design is presented in Figure 4-1.

It is also significant to note that subjects were assigned to the various treatments at random. This is an extremely important principle of experimental design, especially when it is difficult (or impossible) to draw a random sample. The main benefit of random assignment is that it tends to reduce the influence of extraneous variables.[1] Neter and Wasserman emphasize the advantages of random assignment:

> ...Randomization tends to average out between the treatments whatever systematic effects may be present, apparent or hidden, so that comparisons between treatments measure only the pure treatment effects. Thus, randomization tends to eliminate the influence of extraneous factors not under the direct control of the experimenter. Randomization is appropriate not only for the assignment of treatments to experimental units but also for any other phase of the experiment where systematic effects not under the control of the experimenter may be present.[2]

Dependent Variables. Three dependent variables were specified which were attitudinal in nature. After viewing the product stimulus, subjects were questioned about their attitude toward it. The attitude measures were taken by way of a self-administered questionnaire. Three

---

[1]Roger E. Kirk, Experimental Design: Procedures for the Behavioral Sciences, (Belmont, California, Brooks/Cole Publishing Co., 1969), p. 103.

[2]John Neter and William Wasserman, Applied Linear Statistical Models, (Homewood, Illinois, Richard D. Irwin., Inc. 1974), p. 677.

Figure 4-1

Schematic of the Research Design
(Number of Subjects per Cell)

Peanut Butter
Nutrition Information Level

Message Level	Low	Medium	High
Low	15	15	15
Medium	15	15	15
High	15	15	15

Canned Peaches
Nutrition Information Level

Message Level	Low	Medium	High
Low	15	15	15
Medium	15	15	15
High	15	15	15

Vanilla Wafers
Nutrition Information Level

Message Level	Low	Medium	High
Low	15	15	15
Medium	15	15	15
High	15	15	15

dependent measures were of primary interest: 1) overall opinion of the product stimulus, 2) attitude toward the product stimulus in terms of its perceived nutritional value, and 3) a measure of behavioral intention -- how likely would the subject be to buy the product if it were commercially available. The research was designed to measure consumer response (via these three attitudinal measures) to manipulations of the independent variables.

Sampling Procedures

As in many experimental designs, the data were collected from only a portion of the population, i.e., a sample was drawn. By drawing a sample of elements from a larger group, and on the basis of the information collected, a researcher hopes to infer something about the larger group.[1] This is the nature of sampling. In this section the population, sample size, and sampling methodology are described in depth.

Selection of the Population

A population, or universe, is an identifiable group of entities that has a certain characteristic of interest to the researcher.[2] The determination of the population is primarily a matter of researcher judgement. That is, the researcher defines the population in a way in which the group will contain some phenomena of interest. The essence of the idea is captured by Zaltman and Burger:

---

[1] Churchill, p. 261.

[2] Ibid.

> The researcher must examine his behavioral model or structural model and determine what definition he must operationally create concerning his universe. Typically, this is done in terms of use characteristics of products and lifestyles of the target population. Once the universe has been defined operationally, the researcher must search his environment to see if the universe in question is listed by some agency...[1]

For this particular investigation, the population was defined as female heads of households residing in the city of Newport News, Virginia. Before specifically discussing the sampling methodology, let us examine the rationale for the population as defined. Since the study concerned packaged food products and nutrition, it seemed reasonable to conduct the research among those most closely associated with food product purchase decisions; namely female heads of households. While family roles may be changing, apparently it is still the housewife who is the primary purchasing agent for food and beverage products, as evidenced in a recent study by Haley, Overholser and Associates, Inc.[2] For example, the Haley, et al. survey, which utilized a national probability sample of 800 families, found that housewives accounted for 88% of the purchases of spaghetti and macaroni, 85% of the margarine purchases, 84% of the cereal purchases and 80% of the canned fruit drink purchases.[3] Thus, the housewife seems to have retained her role as "the gatekeeper" for many products entering the home.

---

[1]Gerald Zaltman and Philip C. Burger, Marketing Research: Fundamentals and Dynamics, (Hinsdale, Illinois: The Dryden Press, 1975), p. 388.

[2]Haley, Overholser and Associates, Inc., Purchase Influence: Measure of Husband/Wife Influence on Buying Decisions, Unpublished report sponsored by Family Weekly, Readers' Digest, Sports Illustrated, Time, and TV Guide.

[3]Ibid.

Under more ideal conditions the population would have been defined as all female heads of households in the United States and the sample would be drawn from that population. However, limited research funds dictated that the sample be drawn from a much more concise geographic area. Newport News, Virginia was conveniently specified as such an area. Although Newport News differs from the U.S. population in terms of race composition (a higher proportion of Blacks), it does parallel the U.S. population fairly well in terms of many other characteristics (income patterns, occupational classes and age composition).[1] In other words, Newport News can be considered as a fairly typical American city and we should be able to generalize the research findings to a broader geographic area with a considerable degree of confidence. Demographic comparison data are shown in Table 4-1.

Determination of Sample Size

In order to conduct the investigation and make conclusions with a fairly high degree of confidence, what size sample is required? The sample size was developed according to accepted principles of experimental design. Winer provides a technical approach to the determination of sample size for factorial experiments which utilizes the parameter ϕ':

$$\phi' = \sqrt{\frac{\Sigma(\mu_i-\mu)^2/k}{\sigma_\varepsilon^2}}$$

where $\mu_i-\mu$ = difference considered significant per treatment level,

k = number of treatment levels, and

---

[1] 1970 Census of Population, Vol. 1, Characteristics of the Population, United States Summary, Section 1, U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, Washington, D.C., Issued June, 1973.

Table 4-1

Demographic Comparisons

Age Composition	Newport News	Virginia	U.S.
0 to 4 years	9.1%	8.4%	8.4%
5 to 17 years	25.8	25.8	25.8
18 to 20 years	7.3	5.8	5.3
21 to 44 years	35.0	32.5	30.0
45 to 64 years	17.4	19.6	20.6
65 and over	5.4	7.9	9.9

Family Income	Newport News	Virginia	U.S.
0 - 999	3.7%	2.8%	2.5%
1000 - 3999	11.3	13.4	12.7
4000 - 7999	25.8	26.4	23.7
8000 - 14999	40.2	37.5	40.5
15000 - 24999	16.0	15.2	16.0
25000 & over	4.0	4.6	4.6

Race Composition	Newport News	Virginia	U.S.
White	70.8%	80.8%	87.4%
Negro	28.4	18.6	11.1
Other	.8	.6	1.4

Occupational Composition	Newport News	Virginia	U.S.
Professional	19.2%	16.0%	14.5%
Managerial	6.8	8.5	8.1
Sales	7.1	6.5	7.0
Clerical	17.3	18.0	17.8
Craftsman	18.2	14.2	13.9
Operatives	9.0	13.1	14.1
Transportation Operators	3.4	4.1	3.9
Non-Farm Laborers	4.1	4.8	4.7
Farmers	.1	1.5	1.8
Farm Laborers	.2	1.2	1.3
Service Workers	11.9	9.9	11.3
Private Household Workers	2.6	2.2	1.5

SOURCE: 1970 Census of Population, Vol. 1, Characteristics of the Population, United States Summary, Section 1, U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, Washington, D.C., Issued June, 1973.

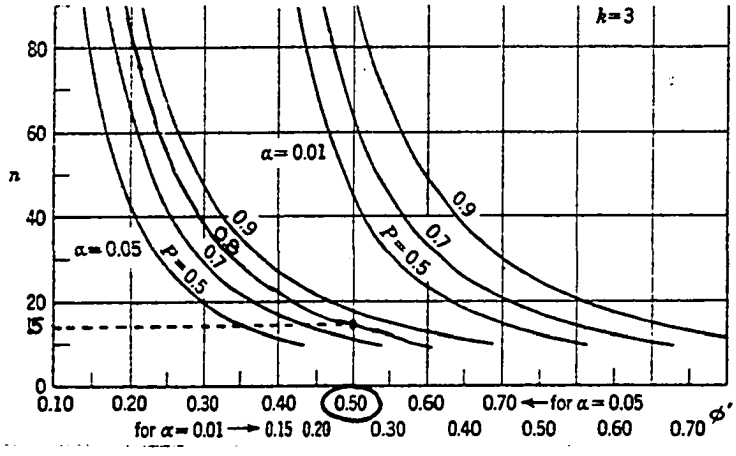
σ_ε^2 = experimental error per treatment.[1]

In order to determine the proper sample size, various estimates and assumptions had to be made about the dependent variables. It was reasoned that if $\mu_i - \mu \geq 1$, the difference would be considered as significant. Similarly, the value for α_ε^2 was set at 2.0. Finally, the researcher must specify levels for α (the probability of rejecting a true hypothesis) and β (the probability of accepting a false hypothesis). The power of the test is equal to $1-\beta$. For this experiment α was set at .05 and β was set at .20, commonly used levels in marketing research. Now ϕ' can be calculated.

$$\phi' = \sqrt{\frac{(1)^2 + (1)^2 + (1)^2/3}{2}}$$

$$\phi' = .50$$

The value for ϕ' is taken to a table which shows curves of constant power for tests on main effects, for the appropriate level of α, $1-\beta$, and k.[2] An example of how the figure was used is shown below:



---

[1] B. J. Winer, Statistical Principles in Experimental Design, (New York: McGraw-Hill Book Co., 1962)., p. 194.

[2] B. J. Winer, Statistical Principles in Experimental Design, Second Edition (New York: McGraw-Hill Book Co., 1971)., p. 221.

Thus, the derived value for n was 15. This tells the researcher the appropriate sample size for each level of each treatment, or the number of subjects per cell. The research employed two experimental variables each at three treatment levels, which translates to nine cells (3 x 3 factorial design). Therefore, the required sample size was 9 cells x 15 per cell = 135. However, the experiment was conducted three times -- once for each food product class. In essence, this required tripling the sample size to 405 (the research was subsequently conducted among 405 adult women).

Sample Methodology

Initially, the research plan called for probability sampling. In probability sampling a chance or random mechanism is employed in selecting the sample from a sampling frame.[1] More specifically, the research called for unrestricted random sampling, the most basic form of probability sampling. As defined by Luck, Wales and Taylor, unrestricted random sampling "provides for the sample selection to proceed to any part of the entire population, following the prescribed methods of designating who or what is to be selected, and then including in the sample whatever unit happens to be chosen."[2] Put another way, in unrestricted random sampling, each member of the population has an equal and known chance of being selected.

Initially, the researcher must consult a list, or frame, of members of the defined population. This provides the vehicle from which to draw the sample. It is the researcher's responsibility to con-

---

[1]Cox and Enis, p. 268.

[2]David J. Luck, Hugh B. Wales, and Donald A. Taylor, Marketing Research, 4th Ed.,(Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974), p. 154.

scientiously match the frame with the defined population as closely as possible. However, at any point in time, the frame may not match the population as precisely as desired, thus creating a potential source of bias. For example, geographic mobility of families may create some degree of bias in the frame.

The 1975 Newport News City Directory was selected as the sampling frame after much deliberation.[1] While the City Directory did not offer a list as complete as that of the local telephone directory, it did offer two distinct advantages for this particular project:

1. The City Directory lists female heads of households among the data it provides. Therefore, for any randomly selected household, it was possible to determine beforehand whether or not there was a female head. This factor was extremely important since the sample was to be contacted by mail.

2. The City Directory conforms to city boundaries. That is, it specifically lists Newport News households, as required by the earlier population definition. Other frames such as the telephone directory, tend to identify households in the larger metropolitan area, many outside of Newport News.

In order to appreciate the usefulness of the City Directory for this research, the reader must understand a few details about the procedures used to gather the data. Two features in particular dictated that this research be conducted in a central location or laboratory-type facility. First, the research design required a high degree of control, which is usually accomplished best in a laboratory setting. Second, the research employed a large number of visual materials (advertising portfolios,

---

[1] 1975 Newport News City Directory (Richmond, Virginia: Hill Directory Company, 1975).

food products and self-administered questionnaires), which could be handled most efficiently in a laboratory environment.

The randomly selected sample of women was contacted by mail. The introductory letter served to: 1) describe the nature and importance of the research, 2) specify the days and times when the research would be conducted, and 3) demonstrate that the research was being done for strictly academic purposes. (The mailing materials are displayed in Appendix C. Over two-thousand letters (2,160) were mailed to the randomly selected Newport News housewives in February 1976. The response goal was for one out of five women in the mail sample to participate. Unfortunately, the response rate was far below expectations with only about one in twenty (6%) responding.

In order to increase participation by adult women in the research it was decided to take the study out to the people. This could be done efficiently via purposive sampling in shopping malls - a sampling method widely used by commercial research companies. Purposive sampling is a form of non-probability sampling in which one can carefully choose the elements to be included in the sample so that the sample is suitable to the researcher's needs.[1] As Tull and Albaum explain, "The intent is to select elements that are believed to be typical or representative of the population in such a way that errors of judgment in the selection will cancel each other out."[2] Churchill provides an overview of non-

---

[1]Donald S. Tull and Gerald S. Albaum, Survey Research (New York: Intext Educational Publishers, 1973), p. 38.

[2]Ibid.

probability sampling:

> Nonprobability samples involve personal judgment somewhere in the selection process. Sometimes the judgment is imposed by the researcher, while in other cases the selection of population elements to be included is left to the individual field workers. Regardless of whose judgment serves to select the population elements, the fact that the elements are not selected probabilistically precludes an assessment of the degree of sampling error associated with the sample.[1]...

Most researchers would agree that unrestricted random sampling is a more desirable sampling method than purposive sampling. As Tull and Hawkins explain, "the need for projectable totals, low errors, high population heterogeniety, and high expected costs of errors favor the use of probability sampling."[2] Selltiz, et al. claim that without an objective method for making the judgments (in a purposive sample) there is no way of knowing if subjects are typical.[3]

A few researchers have recently taken a second look at nonprobability sampling and have found some benefits (in addition to ease of use). According to Schoner and Uhl, "one can never arrive at a truly objective probability statement about the accuracy of an estimate from sampling, since the sampling error measures only one of the sources

---

[1]Churchill, p. 263.

[2]Donald S. Tull and Del I. Hawkins, Marketing Research (New York: Macmillan Publishing Company, Inc., 1976), p. 163.

[3]Claire Selltiz, et al., Research Methods in Social Relations (New York: Holt, Rinehart and Winston, revised edition, 1959), p. 521.

of error."[1] Mayer and Brown suggest that nonprobability sampling, in some situations may be preferable to probability sampling.[2] Their argument centers on the idea that "there is no way to appraise objectively the 'quality' of any sample result."[3] Mayer and Brown propose a Bayesian-type approach for nonprobability sampling in which subjective probabilities would be attached to all sources of error:

> If the accuracy of alternate sample designs has to be evaluated on a subjective basis, there is no reason not to think of a comparison between probability and non-probability design in the same way as one would think about comparing two non-probability designs. For example, it would appear reasonable to expect that a quota sample with several controls would produce more accurate results than a street-corner sample. The amount of increase in accuracy is a matter of subjective judgment, but for a given survey we would expect that reasonable men with some survey experience would tend to agree. Similarly, the difference in accuracy between a specific probability and non-probability sample design can be assessed subjectively.[4]

The investigation continued with convenience sampling, a form of nonprobability sampling. Since nonprobability sampling is not as scientific as probability sampling, the author recognizes this situation as a limitation to the research.

---

[1]Bertram Schoner and Kenneth P. Uhl, Marketing Research (New York: John Wiley & Sons, Inc., second edition, 1975), p. 339.

[2]Charles S. Mayer and Rex V. Brown, "A Search for the Rationale of Non-probability Sample Designs," Proceedings of the 1965 Fall Conference, American Marketing Association, pp. 295-308.

[3]Ibid., p. 297-98.

[4]Ibid., p. 297.

Convenience sampling was done in two local shopping centers (Coliseum Mall and Mercury Mall) in March of 1976. The research was conducted during different hours of several days to permit a heterogeneous mix of shoppers. Shoppers were intercepted in the malls and were asked if they would participate in an experiment about advertising and products. The introduction was intentionally vague so as not to sensitize the people about the purpose of the study. Prospective subjects were also handed an official letter which authorized the study and explained that the study was being done strictly for research purposes (see Appendix C In total 315 adult women were recruited via this sampling method.

For analytical purposes, the random sample (n=90) and the convenience sample (n=315) were combined. As specified, 405 women ultimately participated in the research. What rationale can be provided for combining the two samples into one group? At least two reasons can be given:

1. The mean values (via a t-test) showed no statistically significant differences for the three dependent variables when the random sample was compared to the convenience sample. This evidence is shown in Table 4-2.

2. Random assignment of subjects to test conditions was used at the outset (in the random sample). Therefore, subjects could continue to be assigned to treatments at random in the convenience sample without fear of additional extraneous variation. Without the initial use of random assignment, the combined sample would raise serious methodological problems.

Table 4-2

Results of t Tests

Marginally Nutritious Product

Variable	Mean	Standard Deviation	t-Value	Probability
Overall Rating				
Random	4.233	1.478	-1.12	.271
Convenience	3.904	1.205		
Nutrition Value				
Random	3.800	1.648	.87	.390
Convenience	4.095	1.620		
Purchase Interest				
Random	4.500	2.862	- .39	.698
Convenience	4.266	2.988		

Moderately Nutritions Product

Variable	Mean	Standard Deviation	t-Value	Probability
Overall Rating				
Random	4.483	1.180	-1.42	.161
Convenience	4.144	1.118		
Nutrition Value				
Random	5.064	1.181	-1.03	.306
Convenience	4.807	1.315		
Purchase Interest				
Random	5.741	3.033	- .66	.511
Convenience	5.336	2.858		

Highly Nutritions Product

Variable	Mean	Standard Deviation	t-Value	Probability
Overall Rating				
Random	4.034	1.085	- .07	.945
Convenience	4.018	1.005		
Nutrition Value				
Random	5.172	1.071	-1.65	.105
Convenience	4.783	1.309		
Purchase Interest				
Random	4.275	2.576	.50	.619
Convenience	4.547	2.608		

Development of Experimental Stimuli

Considerable attention was devoted to the development of the experimental stimuli. This section describes the nature of each experimental variable and how the various visual materials were developed. Background pertaining to the food product class selection is also provided.

Nutrition Advertising Stimuli

In order to investigate the question of whether or not nutrition educational messages might alter consumer attitudes toward various food product types, a simulated print advertising campaign was developed with the help of The J. Walter Thompson Company and The Daily Press - Times Herald (Newport News - Hampton, Virginia daily newspaper). The simulated advertisements were tailored after the advertising strategy used by The J. Walter Thompson Company, on behalf of the FDA, to introduce consumers to nutrition labeling. The advertising strategy was specifically designed to educate the American public about selected nutritional concepts (protein, carbohydrates, and calories).[1] The FDA campaign used television as one advertising medium. The major copy theme, "Read the Label, Set a Better Table", was used in all promotional messages.[2] Examples of television commercials (storyboards) are presented in Appendix E. Special print materials, which included a brochure and poster, were distributed to various educational, social, and business groups.

---

[1] J. Walter Thompson Company, Food and Drug Administration, U.S. Department of Health, Education, and Welfare Nutrition Labeling, Unpublished Document, December 6, 1974, p. 2.

[2] Ibid.

When considering ways to "air" the FDA commercials in a laboratory setting, a number of obstacles emerged. In order to make the experiment as realistic as possible, it was considered desirable to expose the FDA message to subjects in the context of a competitive advertising environment. It would be difficult, at best, to show respondents a series of competitive television commercials in a laboratory situation. What's more, how could the commercials be shown efficiently to each and every subject since they arrived at the research site at their own convenience? Accordingly, it was decided to simulate message exposure via print advertising portfolios. Specifically, selected copy points from the television commercials were incorporated in a series of print newspaper advertisements. Newspaper advertisements were chosen since they would be easier to produce in finished form (black and white on newsprint) than color magazine advertisements. Copies of the "dummy" FDA newspaper advertisements are presented in Appendix F.

Since the actual FDA commercials would not be viewed in isolation (i.e. they would be seen in a competitive advertising environment), the research was designed so that the simulated advertisements would also be seen in a competitive environment. Thus, each print portfolio contained ten black and white newspaper advertisements, only one of which was an FDA "dummy" advertisement. The other nine advertisements promoted a wide variety of consumer products and services.

The research was also designed to avoid the unrealistic promotional situation in which exposure to an advertising campaign would be simulated by only one exposure to a message. Many authorities on advertising and communications believe that repetition is the key in

marketing communications.[1] Accordingly, this phase of the research was structured so that some of the subjects (one-third of the sample) received "light" introductory advertising (only one portfolio - Portfolio A), while others (one-third of the sample) received "medium" introductory advertising (two portfolios - Portfolios A and B). The final one-third of the sample received "heavy" introductory advertising (three portfolios - Portfolios A, B, and C). While the definition of "light", "medium", and "heavy" exposure was set arbitrarily, it should be pointed out that subjects viewed the portfoliios in a relatively short period of time; that is, message exposure was concentrated. Table 4-3 lists the newspaper advertisements which appeared in the various portfolios.

Product Class Selection

Three different food products were used in the experiment to see if the effects of nutrition messages and label information would differ from one product category to another. The selected product classes differed in terms of their perceived nutritional benefit. Specifically, peanut butter (perceived as high in nutritional value), canned peaches (perceived as moderately nutritious), and vanilla wafers (perceived as low in nutritional value) were selected. What was the rationale for choosing these particular product types? The product classes were selected on the basis of a pilot test which was conducted among a small number of Newport News women (n=12) in November of 1975. Respondents were asked

---

[1]Dennis H. Gensch, "Media Factors: A Review Article," Journal of Marketing Research, Vol. 7, May 1970, pp. 216-225.

Table 4-3

Portfolio Composition

Message Class	Portfolio I	Portfolio II	Portfolio III
FDA (dummy ads)	FDA-Pearl Baily	FDA-Cartoons	FDA-Shopper
Cigarettes	True	Pall-Mall	Vantage
Vegetables	Green Giant	Bird's Eye	Heinz French Fries
Automobiles	VW Rabbit	Chevrolet	BMW
Bread	Francisco Rolls	Rich's Bread	Martha White Flour
Spirits	Ruffino Chianti	Tanqueray Gin	Canadian Club
Small Ad	King Kelly Marmalade	Empress Tuna	Sweet n' Low
Milk Products	Alba Cocoa	Pet Skim Milk	Carnation Instant Breakfast
Jewelry	Zales-watches	Zales-rings	Zales-rings
Car Rental	Budget	National	Hertz

to rank ten different types of packaged food products in terms of frequency of usage in their household and perceived nutritional value. Results of the pilot test are presented in Table 4-4. Weights were assigned to each rank and summed across all respondents. The products scoring the highest, and the lowest, plus the median product, were selected for the experiment.

Again, in striving to provide realistic visual stimuli, actual products (packages), with unfamiliar brand names and graphics were developed specifically for the research. Respondents examined what appeared to be "real" products with colorful graphics, brand and manufacturer names, and product information (weight, ingredients, price, and nutrition information). Examples of the product labels for the various experimental treatments are displayed in Exhibit G.

Nutrition Label Stimuli

Nutrition information at three different levels appeared on special panels (locations) of the product labels. For each product type a high, medium and low nutrition information treatment was developed (i.e. nine package visuals were required). It is important to remember that within the experiment a single respondent saw only one of the nine items.

The low treatment level contained only basic information about calories, carbohydrates, protein, and fat. In essence, this treatment represented an abbreviated version of the nutrition data found on most food products today. The next treatment level presented a longer list of

Table 4-4

Product Pilot Test

Rank Order Summation (n=20)

Perceived Nutrition Value

Product Type	Summated Rank Order*
Peanut Butter	1.05
Frozen Concentrated Orange Juice	2.55
Canned Tomato Soup	3.80
Ready-to-eat Cereal	4.70
Canned Peaches	4.90
Canned Grape Drink	6.55
Canned Pudding	6.95
Saltine Crackers	7.30
Vanilla Wafers	7.65

*the lower the summated rank, the more nutritious the product type is perceived.

nutrition information. It added information on essential vitamins expressed as percentage of recommended daily allowance. This second level was designed to closely parallel the amount of nutrition data found on a typical jar of peanut butter, a typical can of peaches and a typical box of vanilla wafers. Finally, the high treatment level contained all of the above data plus information pertaining to trace elements. A trace element is a chemical element used by organisms in minute quantities which are essential to their physiology.[1] The specific information supplied is shown in Table 4-5.

The nutrition data that were presented on the test product labels was carefully developed for accuracy. The grams per serving and percentage of RDA per serving were determined after consultation with two food composition data sources (Agriculture Handbook No. 8[2] and Food Values of Portions Commonly Used[3]) and discussions with the head nutritionist at a large, local hospital.[4] Additionally, the derived values were checked for consistency with commercially available products. Therefore, it is believed that the nutrition information displayed on the test products was accurately and fairly presented.

---

[1]Webster's Seventh New Collegiate Dictionary, (Springfield, Mass.: G. and C. Merriam Co., 1972), p. 937.

[2]Composition of Foods, Agriculture Handbook No. 8, Agriculture Research Services of the U.S. Department of Agriculture, Revised December 1963.

[3]Charles Fredrick Church and Helen Nichols Church, Food Values of Portions Commonly Used, 12th Ed. (New York: J.P. Lippincott Co., 1976).

[4]Interview with Ellen Brasted, Clinical Dietician, Riverside Hospital, Newport News, Virginia, December 9, 1975.

Table 4-5

Nutrition Information on Package Labels

Low Treatment Level

Nutrition Information	Peanut Butter	Canned Peaches	Vanilla Wafers
serving size	2 tbsps.	1 cup	3 wafers
calories	190	180	51
protein	9 grams	1 gram	1 gram
carbohydrate	5 grams	45 grams	8 grams
fat	16 grams	0 grams	2 grams

Medium Treatment Level

Nutrition Information	Peanut Butter	Canned Peaches	Vanilla Wafers
serving size	2 tbsps.	1 cup	3 wafers
servings per container	10	2	20
calories	190	180	51
protein	9 grams	1 gram	1 gram
carbohydrate	5 grams	45 grams	8 grams
fat	16 grams	0 grams	2 grams
%RDA			
protein	15%	*	2%
vitamin A	*	20%	*
vitamin C	*	15%	*
thiamin	2%	*	*
riboflavin	*	4%	*
niacin	15%	8%	*
calcium	*	*	*
iron	2%	2%	*

*Contains less than two percent of the RDA.

Table 4-5 - Continued

High Treatment Level

Nutrition Information	Peanut Butter	Canned Peaches	Vanilla Wafers
serving size	2 tbsps.	1 cup	3 wafers
servings per container	10	2	20
calories	190	180	51
protein	9 grams	1 gram	1 gram
carbohydrate	5 grams	45 grams	8 grams
fat	16 grams	0 grams	2 grams
% RDA			
protein	15%	*	2%
vitamin A	*	20%	*
vitamin C	*	15%	*
thiamin	2%	*	*
riboflavin	*	4%	*
niacin	15%	8%	*
calcium	*	*	*
iron	2%	2%	*
phosphorous	15%	3%	2%
sodium	*	*	*
potassium	10	10	*
magnesium	*	*	*
vitamin D	*	*	*

*Contains less than two percent of the RDA.

Questionnaire Development and Testing Procedures

Two questionnaires were administered during the experiment--one after the advertising portfolio exposure; the other after exposure to the product visual. Both questionnaires were self-administered. Questionnaires are self-administered when the respondent merely answers a written question with a written response, the interviewer having no interaction with the subject.[1] Thus, self-administered questionnaires offer the important advantage of controlling for interviewer error. Three other advantages are cited by Selltiz,et al.:

> The impersonal nature of a questionnaire - its standardized wording, its standardized order of questions, its standardized instructions for recording responses - ensures some uniformity from one measurement situation to another...
>
> Another advantage of questionnaires is that respondents may have greater confidence in their anonymity, and thus feel freer to express views they fear might be disapproved of or might get them into trouble...
>
> Another characteristic of the questionnaire that is sometimes, though not always, desirable is that it may place less pressure on the subject for immediate response. When the subject is given ample time for filling out the questionnaire, he can consider each point carefully rather than replying with the first thought that comes to mind, as often happens under the social pressure of long silences in an interview...[2]

On the other hand, self-administered questionnaires are appropriate only if subjects have had a fair amount of education.[3] Selltiz,et al.also warn that "if the subject misinterprets a question (in a self administered questionnaire) or records his response in a baffling

---

[1]Cox and Enis, p. 228.

[2]Selltiz,et al., pp. 238-40.

[3]Ibid., p. 241.

manner, there is usually little that can be done to remedy the situation."[1] However, on balance, the self administered questionnaire fit well with the mechanical requirements of the research.

More specifically, the format of the questionnaire could be described as structured-disguised. Structure refers to the degree of standardization in the questionnaire while disguise means that the purpose of the research is not obvious to the subject from the questions posed. According to Churchill, structured-disguised questionnares "emerged as an attempt to secure the advantages of disguise in revealing subconscious and hidden motives and attitudes along with the advantage in coding and tabulation common to structured approaches."[2] At the outset, it was reasoned that consumers might tend to react favorably to direct questions about nutrition labeling. However, if approached in an indirect or disguised manner, consumer reactions might be somewhat different. The use of unobtrusive measures in research (such as disguise) is one way to help minimize the problem of attitude overstatement. Despite these advantages Selltiz, et al. warn that "more investigation of the validity of indirect tests is needed."[3]

Advertising Portfolio Test

After viewing the advertising portfolios, participants were instructed to fill out a short self-administered questionnaire. It is important to recall that the purpose of this phase of the research was just to expose subjects to nutrition educational messages (within a competitive

---

[1]Ibid., p. 242.

[2]Churchill, p. 176.

[3]Selltiz, et al., p. 314.

advertising environment). The short questionnaire, which followed each portfolio, was used as a logical or natural follow-up (the specific responses were not considered to be especially important). In other words, these questionnaires were primarily used to keep with the disguised nature of the experiment. Accordingly, most of the questions were open-end and unaided. For example, the questions typically centered on awareness, copy recall, general likes and dislikes, and so on.

For those respondents who saw more than one portfolio a different questionnaire was administered after each portfolio so as not to sensitize the subjects to any particular area of inquiry when viewing a subsequent portfolio. In other words, if respondents expected the same questions after each portfolio they would be conditioned to look for certain things. The research was designed to control for this possibility via variations in questions. Thus, three questionnaires were developed (see Appendix H).

Product Test

Immediately after completing the advertising test each respondent was shown one, and only one, packaged product. As mentioned earlier, nine different products were used at this stage of the research (three different food product types each with three different amounts of nutrition information). After briefly examining the product (most participants looked at the package for less than 45 seconds) respondents were handed another self-administered questionnaire. This questionnaire was much more structured than those used in the advertising test.

The questionnaire was designed to: 1) measure consumer reactions to the product stimulus on several product attributes, 2) gather data about the subjects' attitudes toward the importance of the various pro-

duct attributes, 3) gather life style and psychographic information about the respondents, and 4) collect basic demographic and food usage data from the subjects. Incidentally, this was the order in which the questions were presented; a group of product stimulus questions were presented first, followed by a block of food attribute importance questions and so on. Why were the questions presented in this particular sequence? Since rapport had been built and respondents had "settled down" during the advertising portfolio test, it seemed that the most important measures (those pertaining to the product stimulus) should be taken first while respondents were "fresh". Since the food attribute importance questions were less sensitive than the psychographic/life style questions they were presented next. This coincides with Tull and Hawkins' suggestion that "questions that are difficult to answer or that ask for controversial or sensitive information should be placed near the end of the questionnaire."[1] Classification questions appeared at the end of the instrument since some women may have been sensitive to the income and age questions. Additionally, classification questions are usually easy to answer requiring little thought process, an obvious advantage if a subject is "worn out" at the end. The rationale for this sequence of questions is captured well by Churchill:

> The proper questionnaire sequence is for questions securing the basic information to be presented first and those seeking classification information to be presented last. There is a logical reason for this. The

---

[1]Tull and Hawkins, p. 277.

> basic information is most critical. Without it, there is no study. Thus the researcher should not risk alienating the respondent by asking a number of personal questions before getting to the heart of the study, since it is not unusual for personal characteristics to cause the most alienation of respondents. Respondents who readily offer their attitudes toward the energy crisis may balk when asked for their income. As early questions aimed at determining their income may affect the whole tenor of the interview or other communications. It is best to avoid this possibility by placing the classification information at the end of the questionnaire.[1]

This section describes each of the four blocks of questions in detail. The reader may also wish to refer to the actual questionnaire which is displayed in Appendix I.

Product Stimulus Questions. From an analytical standpoint, the most critical questions focused on the product stimulus. In total, sixteen questions pertaining to the product stimulus were asked; however, only three were to be used as dependent measures. The other thirteen questions (which dealt with general likes and dislikes, opinions of package graphics, attitude toward the name, etc.) were primarily used to hide the three key questions.

All three key questions (and many of the others) could be described as multichotomous questions. A multichotomous question is a fixed alternative question in which the respondent is asked to choose the alternative that best fits his position on a subject.[2] Tull and Hawkins describe the advantages of multichotomous questions in marketing research:

---

[1]Churchill, p. 194.

[2]Ibid., p. 189.

> Multiple-choice questions offer a number of advantages over open-ended questions. They are generally easier for both the field interviewer and the respondent. Indeed, they are almost essential for securing adequate cooperation in self-administered surveys. They also tend to reduce interviewer bias and bias caused by varying levels of respondent articulateness. In addition, tabulation and analysis are much simpler...[1]

Overall reaction to the product stimulus, the first dependent measure, was measured on a seven-point itemized rating scale. The scale was balanced with a neutral point to make it easy for the subjects to use. Churchill recognizes the reliability of the itemized rating scale as a primary benefit:

> The itemized rating scale also possesses the advantages of ease of construction and use, and although it does not permit the fine distinctions possible with the graphic rating scale, the clear definition of categories generally produces more reliable ratings.[2]

The actual question pertaining to overall rating was stated as follows: "What is your overall reaction to the product you have just seen?" Respondents were instructed to check the statement that best fit their opinion:

____I am extremely positive toward it.
____I am very positive toward it.
____I am slightly positive toward it.
____I am neutral toward it.
____I am slightly negative toward it.
____I am very negative toward it.
____I am extremely negative toward it.

---

[1]Tull and Hawkins, p. 273.

[2]Churchill, p. 231.

The next dependent measure, perceived nutritional value of the product stimulus, employed a similar seven-point scale. However, this time the scale was "graphically" presented. When using a graphic scale, the respondent indicates his opinion by placing a mark at the appropriate point on a line that runs from one extreme of an attribute to another.[1] Such scales help the subject make distinctions from one scale point to another. Specifically, the question asked, "What is your overall opinion of the product's nutritional value?" Respondents were instructed beforehand on how to use the following scale:

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

The last of the product stimulus questions measured purchase interest. An eleven-point purchase probability scale was utilized. The eleven-point purchase probability scale was found to be a better indicator of actual behavior than a six-point purchase interest scale (definitely will buy to definitely not buy) in research done by Gruber.[2] Specifically, the question asked, "Taking into account everything, what do you think would be the chances that you would buy this product if it were available in your grocery store?" The following choices were provided:

____Absolutely certain I would buy (10 in 10 chances)
____Almost sure I would buy (9 in 10 chances)
____Very probable I would buy (8 in 10 chances)

---

[1]Churchill, p. 229.

[2]Alin Gruber, "Purchase Intent and Purchase Probability," Journal of Advertising Research, Vol. 10, No. 1, Jan. 1970, pp. 23-27.

____Probably I would buy (7 in 10 chances)
____Good possibility I would buy (6 in 10 chances)
____Fairly good possibility I would buy (5 in 10 chances)
____Fair possibility I would buy (4 in 10 chances)
____Some possibility I would buy (3 in 10 chances)
____Slight possibility I would buy (2 in 10 chances)
____Very slight possibility I would buy (1 in 10 chances)
____No chance I would buy (0 in 10 chances)

Food Attribute Importance Questions. The food attribute importance questions were used as follow-up questions to the first block of questions. In the first block attitudes toward the product stimulus were measured on nine different product attributes (opinion of the product's nutritional value was one of them). The second block of questions merely asked how important each of the nine attributes was to the individual. For example, respondents were asked, "How important is the appearance (package size, taste, etc.) to you when you choose a food product?" Again, subjects were instructed beforehand on how to use the following graphic rating scale:

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

This particular line of questioning, ratings of product stimulus on a series of attributes followed by measures of attribute importance, follows the basic linear compensatory model advanced by Wilkie and Pessemier.[1] Simply stated, the model treats the overall attitude score (Ajk) for a brand (j) by a person (k) as the summation of importance weights toward the various product attributes (Ijk) times the individual belief

[1]Wilkie, William L. and Pessemier, Edgar A., "Issues in Marketing's Use of Multi-attribute Attitude Models," Journal of Marketing Research, Vol. X, November 1973, pp. 428-441.

(Bjk) that the brand has that attribute.[1]

$$A_{jk} = \sum_{i=1}^{n} I_{ik} B_{ijk}$$

While there is considerable debate on the issue of explanatory and predictive power of the importance weight, Wilkie and Pessemier conclude, "it appears that the importance or value component should continue to be included in the model."[2]

Life Style and Psychographic Questions. A series of twelve life style, personality,and psychological questions also appeared in the questionnaire. These questions could be used to analyze the reactions of specially selected life style or psychological sub-groups at a later date.

The questions in this block covered a wide range of subjects. A Likert-type scale was used to gather the information. A Likert scale requires the subject to indicate his degree of agreement or disagreement with a series of statements related to some phenomenon.[3] It is also possible to calculate a score for an individual by summing the scores across the various questions. The Likert-type questions used in the research departed from the norm in two respects: 1) the questions used a seven-point scale rather than a five-point scale (to permit more freedom of response), and 2) the questions covered a wide range of subjects (total

---

[1]Ibid., p. 429.

[2]Ibid., p. 436.

[3]Tull and Hawkins, p. 348.

score would be meaningless but scores on separate subjects could be derived).

After receiving instructions on how to use the scale, subjects read a series of twelve statements and indicated their degree of agreement or disagreement after each. The twelve statements and accompanying scale are shown below:

____I am usually the first in my crowd to try a new product.
____I enjoy entertaining in my home.
____I always strive to prepare well balanced meals.
____I enjoy doing things with children.
____I welcome new convenient prepared foods.
____I carefully shop around for the best buy.
____Food products are less nutritious today then they used to be.
____I think the world is moving too fast.
____Natural foods are worth the extra money you pay for them.
____A woman's place is in the home.
____I like to spend time alone.
____I love to cook.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

Demographic and Usage Questions. Finally, basic demographic and food usage information was gathered from each participant. Included here were questions about age, education, age of children, income, and occupation of both husband and wife. Broad income and age categories were used to overcome respondent sensitivity to answering these questions directly. In addition, general attitudes and usage of peanut butter, canned peaches, and vanilla wafers were gathered.

Statistical Methods

The main statistical method employed in the analysis was analysis of variance. An additional technique, covariance analysis, was introduced as a control device. Both of these techniques, according to Green and Tull, "are particularly useful in experimental design work where the researcher can control certain variables of interest and measure their influence on some response variable."[1] The purpose of this section is to briefly explain the nature of the two analytical devices, and identify the rationale for their use in this investigation.

Analysis of Variance

Analysis of variance (ANOVA) is a statistical method which permits a researcher to analyze both the independent and interaction effects of two or more independent variables on a dependent variable.[2] The objective of ANOVA (and covariance analysis) is to test for statistically significance differences among average responses due to controlled variables, after allowing for influences on responses due to uncontrolled variables.[3] Responses due to uncontrolled variation can be controlled via covariance analysis. Green and Tull suggest that the name "analysis of variance" is very descriptive "because if the mean responses of the test objects are different among treatments, then the variance of the combined groups will exceed the variances of the individual groups."[4]

---

[1]Green and Tull, p. 329.

[2]Kerlinger, p. 245.

[3]Green and Tull, p. 403.

[4]Ibid., p. 403.

In terms of the present experiment it was hypothesized (null hypotheses in Chapter 3) that consumer attitudes would not be affected by either of the two independent variables (nutrition educational messages and amount of nutrition label information). In ANOVA the procedure for examining the impact of each experimental variable separately is called the statistical test for main effects. In addition, ANOVA permits the researcher to test for the combined effect of two or more independent variables upon a dependent variable. This latter procedure is called testing for the effects of interaction. In a single 3 x 3 factorial design there are two main effects and one interaction effect that can be measured. Chapter 5 describes the results of these tests on the data.

At this point it is important to recall that three dependent variables were specified in the research design. ANOVA can only be applied to one dependent variable at a time. Consequently, a separate ANOVA is required to study main and interaction effects of the experimental variables for each dependent variable. Thus, in the next chapter three separate ANOVA procedures are required for each of the three product classes. In other words, ANOVA would be applied to critical measures from each product class experiment. ANOVA will be used to analyze the impact of the experimental variables on the dependent variables (overall opinion, perceived nutritional value, and purchase interest).

What are the underlying assumptions of ANOVA? According to Tull and Hawkins ANOVA involves four basic assumptions:

1. Treatments are assigned at random to test units.
2. Measurements are intervally scaled and are taken from a population that is normally distributed.
3. The variances in the test groups are equal.
4. The effects of treatments on responses are additive.[1]

Before proceeding to use ANOVA, how well does the present study fit with the four conditions spelled out by Tull and Hawkins? As mentioned earlier, from the very beginning the experiment used random assignment of subjects to the various treatment conditions. Obviously the first condition is met. The fourth condition is also easily met. The theoretical model employed in the design of this experiment explicitly stated that the effects of the treatments on response were additive: $X_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \varepsilon_{ijk}$. The second and third assumptions of Tull and Hawkins are not as easily demonstrated.

The third assumption suggests that the researcher demonstrate empirically that the variances in the test groups are equal. Such a test is performed in Chapter 5 which shows that this condition is met. The test for homogenity of variance utilized the statistic F_{max}:

$$F_{max} = \frac{\text{largest of k variances}}{\text{smallest of k variances}}$$

where k is the number of variances.[2] This is one of several available methods which can be used to determine if test group variances are homogeneous.[3] On the other hand, as Kirk points out, "Since the F distribution is so robust with respect to violation of the assumption of homogeneity

---

[1]Tull and Hawkins, p. 540.

[2]Kirk, p. 62.

[3]Ibid., pp. 61-63.

of error variance, it is not customary to test this assumption routinely."[1]

Finally, consider Tull and Hawkins' second assumption about ANOVA. In essence, Tull and Hawkins argue that the dependent measurements must at least be intervally scaled. In this experiment the dependent measures would have to be classified as ordinal. However, obviously the scales which were used were more than merely rank orders. The subjects marked the places on the scales that best fit their attitudes. With enough choices the scales would appear to be continuous. In fact, it is quite possible that some respondents conceptualized an underlying continuous scale, especially when the choices were displayed "graphically".

Anderson provides another arguement for applying ANOVA to ordinal-type data. Anderson argues that the type of measuring scale used has little to do with the use of parametric or nonparametric tests.[2] In so doing, Anderson refers to Lord's statement, "the statistical test can hardly be cognizant of the empirical meaning of the numbers which it deals."[3] Thus, Anderson reasons "the validity of statistical inference cannot depend on the type of measuring scale used."[4] On a somewhat different but related issue Anderson makes some observations about the assumption of equinormality. Anderson argues that even if equinormality does not exist the researcher may still be able to use parametric tests

---

[1]Ibid., p. 62.

[2]Norman H. Anderson, "Scales and Statistics: Parametric and Non-Parametric," Psychological Bulletin, Vol. 58, No. 4, 1961, pp. 305-316.

[3]Ibid. (F. M. Lord. "On the Statistical Treatment of Football Numbers, American Psychologist, Vol. 8, 1953, pp. 750-751.) p. 309.

[4]Anderson, p. 308.

in analyzing the treatment means. Specifically, Anderson reminds us that "the F ratio remains constant with changes in unit or zero point of the measuring scale."[1]

Briefly, it should be noted that several other statistical techniques were considered for the analytical portion of the research. For example, a chi-square analysis was considered but rejected because the research dealt with more than nominal variables and the research involved more than two criterion variables. A chi-square test is appropriate when the researcher wants to determine the existence of a relationship between two variables in a table, inferred from sample data (i.e., a test of independence of classification).[2] Another analytical candidate was a simple t-test; however, it is used primarily to test for the statistical difference between two sets of sample data to see if they are from the same population. Regression analysis was deemed inappropriate for this study since its main purpose is to predict the value of some desired variable. In summary, ANOVA was clearly the most appropriate analytical method.

Covariance Analysis

Covariance analysis was introduced as a control devise. The main objective of covariance analysis is to reduce experimental error by accounting for extraneous factors. In experimentation it is possible that differences in observations on a dependent variable may be due to an extraneous influence rather than the influence of the experimental variable. For example, if subjects were different (e.g. on some important

---

[1]Anderson, p. 308.

[2]Zaltman and Burger, p. 442.

demographic measure) from one experimental group to another, scores on a critical dependent measure could be a reflection of the demographic differences. It is possible to control for this type of problem through covariance analysis. It is essential, however, that the extraneous factor be anticipated and measured at the time of the investigation. Any extraneous factor which has been measured can be used as a covariate. Thus, a covariate may be defined as any extraneous variable whose effect may not have been anticipated in the original experimental design.[1] Green and Tull provide a more technical explanation:

> In covariance analysis we introduce one or more additional predictor variables (assumed to be interval scaled) that are presumed to be associated with the criterion variable as well. The purpose of covariance analysis is to statistically adjust criterion-variable responses for the effects of these additional variables so that statistical tests involving the significance of the treatment variables can be made more sensitive.[2]

In essence, covariance analysis is a regression technique. Churchill describes how it works:

> ...The method itself essentially involves the regression of the response variable (call it Y) on the uncontrolled covariate (call it X). The Y measures are then adjusted on the basis of the resulting regression equation. If the Y measures are substantially correlated with the X measures, then the analysis of covariance will result in a smaller experimental error than would be obtained from a direct analysis of the Y measures. The calculated F ratios would consequently be larger and the power of the test would be increased.[3]

In the present investigation covariance analysis was used to

---

[1]Churchill, p. 468.

[2]Green and Tull, p. 330.

[3]Churchill, p. 468.

control for possible sources of extraneous variation from selected demographic factors. Specifically, age, education, income and number of children living at home were designated as covariates. Results of the analysis are presented in Chapter 5.

Limitations of the Research

Before proceeding to the analysis, it is important to recognize the limitations of the research. There are essentially five limiting factors that should be understood. They stem from experimentation, treatment levels, sampling, product stimuli and measurement.

The experimental nature of the study (its various manipulations and many visuals) precluded measurement in a natural environment. Subjects were artificially exposed to advertisements and package visuals and individual reactions to the materials were gathered in an uncharacteristic manner. Under normal circumstances it is doubtful that the visual stimuli would have received as much close attention. However, this condition prevailed across all test conditions and therefore should not have biased the results. It would have been desirable to expose the subjects to broadcast advertisements (as originally developed for the FDA) within a competitive advertising environment. However, as suggested earlier, this presented a number of major mechanical problems.

The second limitation centers on the choice of treatment levels which were employed in the experiment. The three levels of advertising exposure and nutrition label information were arbitrarily set. It would have been desirable to have had more treatment levels to more closely measure curvilinear relationships. Nevertheless, while the levels were

subjectively chosen, considerable care was taken to represent various real world counterparts.

Third, the research has a limitation which traces to the sampling plan. Only adult women from Newport News were included in the sample for reasons of convenience and budget limitations. Findings from this research should be projectable to the geographic area, as defined, with considerable confidence. However, it may be more difficult to project the findings to the entire population of American women. Additionally, non-probability sampling was used which precludes an assessment of sampling error. Nevertheless, considerable care was taken to recruit a heterogeneous mix of women for the experiment.

Obviously, it would have been desirable to conduct the research with a wider array of food product types. However, the food products were rationally selected (on a basis of a pilot test) to represent very different products in terms of perceived nutritional value. Respondents examined food packages which were artificial. It could be argued that the participants reacted to the novelty of a new product. While this may have been a problem, many of the questions required the subject to consider the product entity in which the nutrition data was one element.

Finally, the problem of measurement of the dependent variables must be recognized. The research was designed to measure subject's attitudes toward the visual stimuli. Attitudes are mental states and they are generally difficult to measure. Individual attitude may not be totally reflected in a few attitudinal questions and scales. The issue then

is whether or not the questions and scales accurately measured the phenomena of interest, i.e., the problem of validity. This is a limitation inherent in most types of attitude research. Unfortunately, it can not be easily overcome, as indicated by Tull and Hawkins:

> Attitudes do not exist in the physical sense of that term. There is, to our knowledge at least, no physical component to an attitude. Therefore, measuring an attitude is substantially more difficult than measuring a physical characteristic such as weight. The problem is made even more complex by the many conceptual definitions of attitude. Furthermore, the operational definitions often have at best a limited relationship to any specific conceptual definition.[1]

---

[1]Tull and Hawkins, p. 333.

CHAPTER 5

ANALYSIS AND FINDINGS

This chapter contains the analysis of the data and the major findings of the research. Of the five sections presented, details about the data prior to the analysis are found in the first two. The third section presents the analysis which utilizes analysis of variance and covariance analysis. Next, results of the hypotheses testing program are presented. The final section contains a general discussion of the research findings.

Preliminary Steps

Prior to conducting the analysis, a series of preliminary steps were necessary as required for most investigations of a quantitative nature. Specifically, the steps involved editing, coding and tabulation of the data.

At the end of each day of field work, questionnaires were checked for completeness, legibility and consistency. This procedure is generally referred to as a field edit. Such a procedure was necessary to reach the goal of 405 complete, usable questionnaires. Churchill describes the virtue of a field edit:

> ...The field edit is a preliminary edit. It is designed to detect the most glaring omissions and inaccuracies. It is also useful in helping to control the field force and

> to clear up misunderstandings regarding directions, procedures, specific questions, and so on, that the field staff may have.
>
> The field edit ideally occurs as soon as possible after the questionnaire or other data-collection form has been administered. If problems are detected at this time, they can be corrected before the interviewing or observation staff is disbanded and while the particular contact that served as a basis for the troubled instrument is still fresh in the interviewer's mind.[1]

A more thorough edit of all questionnaires was performed at the conclusion of all field work. Editing at this stage involved correction of obvious errors and checking for consistency. To insure uniformity of treatment, only one researcher was used to edit all questionnaires. This type of editing procedure has been called the central-office edit.[2]

The next preliminary step involved coding in which raw data are transformed into symbols, such as numbers that may be easily tabulated. However, as Selltiz et al. warn, "The transformation is not automatic, however, it involves judgement on the part of the coder."[3] Coding for the closed end or multichotomous questions was easily accomplished -- numbers were simply assigned to the various choice alternatives so that a numerical value symbolized a certain response. Coding for open end or free response questions is much more difficult. Codes for the written responses must first be developed and then the individual responses must be judged as to

---

[1]Gilbert A. Churchill, Marketing Research: Methodological Foundations, (Hinsdale, Illinois: The Dryden Press, 1976), p. 353.

[2]Ibid., pp. 354-55.

[3]Selltiz, et al., p. 401.

whether or not they fit a particular response code. If not, a new response code must be developed. As with the editing phase, one person was employed to code all of the questionnaires so as to maintain consistency when researcher judgement was required.

Description of the Data

This section briefly reviews the nature of the data that were used in the analysis and presents some descriptive statistics about the data. To recap, three dependent measures were specified -- overall opinion of the product stimulus (measured on a seven-point scale), opinion of the product's nutritional value (measured on a seven-point scale), and interest in buying the product stimulus (measured on an eleven-point scale). Some descriptive statistics (mean values and standard deviations) about each of the dependent variables are provided in Table 5-1 (for the highly nutritious product), Table 5-2 (for the moderately nutritious product) and Table 5-3 (for the marginally nutritious product).

The data which follow are presented by experimental treatment. In total there were 27 test conditions - three advertising exposure levels (low, medium and high) by three levels of nutrition label information (low, medium and high) for three classes of food products (highly nutritious product, moderately nutritious product and marginally nutritious product). The mean values and standard deviations for the three dependent variables for each of the 27 cells are displayed in the following tables. For example, the mean value for the highly nutritious product with the low level of advertising exposure and the low level of nutrition label information was 3.53 (with a standard deviation of .99) - upper left corner of Table 5-1.

Table 5-1

Mean and Standard Deviation of Opinion of Overall Product, Nutrition Value, and Purchase Interest by Treatment for the Highly Nutritious Product

Opinion	Nutrition Level[2]	Advertising Level[1] Low Mean	s[3]	Medium Mean	s	High Mean	s	Marginal Mean	s
Overall Product	Low	3.53	.99	3.93	.96	4.07	.70	3.84	.90
	Medium	4.00	1.31	3.73	1.16	4.00	1.00	3.91	1.16
	High	4.47	1.06	4.20	1.01	4.27	.80	4.31	.95
	Marginal	4.00	1.17	3.96	1.04	4.11	.83	4.02	1.02
Nutrition Value	Low	4.47	1.50	4.47	1.50	4.80	1.42	4.58	1.45
	Medium	5.20	.94	4.53	.74	4.93	1.44	4.89	1.09
	High	5.13	.99	5.47	1.13	4.80	1.42	5.13	1.20
	Marginal	4.93	1.19	4.82	1.23	4.84	1.40	4.87	1.27
Purchase Interest	Low	4.07	2.96	3.67	2.41	4.80	2.48	4.18	2.61
	Medium	5.53	2.70	3.87	2.70	3.67	2.47	4.36	2.70
	High	5.40	2.59	3.80	2.01	5.60	2.47	4.93	2.45
	Marginal	5.00	2.78	3.78	2.33	4.69	2.55	4.49	2.59

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

Table 5-2

Mean and Standard Deviation of Opinion of Overall Product, Nutrition Value, and Purchase Interest by Treatment for the Moderately Nutritious Product

Opinion	Nutrition Level[2]	Advertising Level[1] Low Mean	s[3]	Medium Mean	s	High Mean	s	Marginal Mean	s
Overall Product	Low	4.07	1.53	4.07	1.03	4.53	.99	4.22	1.20
	Medium	4.20	.56	3.67	.98	4.47	1.19	4.11	.98
	High	4.67	1.23	4.07	1.28	4.27	1.16	4.33	1.23
	Marginal	4.31	1.18	3.93	1.10	4.42	1.10	4.22	1.14
Nutrition Value	Low	5.00	1.60	4.40	1.35	4.87	1.30	4.76	1.42
	Medium	5.00	1.20	4.40	1.60	5.20	.86	4.87	1.27
	High	5.07	1.16	5.13	1.30	4.73	1.10	4.98	1.18
	Marginal	5.02	1.31	4.64	1.43	4.93	1.10	4.87	1.29
Purchase Interest	Low	5.73	3.52	4.07	1.98	6.40	2.72	5.40	2.92
	Medium	4.40	2.13	5.13	2.39	5.60	2.82	5.04	2.46
	High	5.80	3.26	6.07	2.40	5.67	4.10	5.84	3.25
	Marginal	5.31	3.03	5.09	2.36	5.89	3.22	5.43	2.89

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

Table 5-3

Mean and Standard Deviation of Opinion of Overall Product, Nutrition Value, and Purchase Interest by Treatment for the Marginally Nutritious Product

Opinion	Nutrition Level[2]	Advertising Level[1] Low Mean	s[3]	Medium Mean	s	High Mean	s	Marginal Mean	s
Overall Product	Low	4.33	1.18	3.93	1.10	3.73	1.03	4.00	1.11
	Medium	4.33	1.23	3.87	1.69	3.33	1.40	3.87	1.48
	High	4.67	1.45	4.13	.83	3.47	1.06	4.09	1.22
	Marginal	4.44	1.27	3.98	1.23	3.51	1.16	3.98	1.27
Nutrition Value	Low	4.20	1.15	3.80	1.90	4.27	1.22	4.09	1.44
	Medium	4.27	1.62	4.67	1.76	2.73	1.62	3.89	1.84
	High	4.67	1.18	3.93	1.79	3.73	1.71	4.11	1.60
	Marginal	4.38	1.32	4.13	1.82	3.58	1.63	4.03	1.63
Purchase Interest	Low	4.87	3.31	3.67	2.74	3.00	2.42	3.84	2.89
	Medium	5.87	3.02	4.73	3.04	3.20	2.24	4.60	2.94
	High	4.40	3.07	5.13	3.42	4.00	2.65	4.51	3.03
	Marginal	5.04	3.13	4.51	3.07	3.40	2.43	4.32	2.95

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

As explained in the previous chapter, covariance analysis was employed to control for the influence of possible extraneous variation upon the dependent variables by accounting for the correlation between the dependent variables and the covariates. Four key demographic covariates were specified which included age (measured via seven closed-end responses), education (measured via seven closed-end responses), income (measured via six closed-end responses), and number of children living at home. Some descriptive statistics (mean values and standard deviations) about the covariates are provided in Table 5-4 (for the highly nutritious product), Table 5-5 (for the moderately nutritious product) and Table 5-6 (for the marginally nutritious product).

The table data are again presented by each of the 27 experimental conditions. For example, the mean value for age of respondents who received a low level of advertising and low level of nutrition information for a highly nutritious product was 4.33 (which translates to approximately 33 years of age on the multichotomous age question) - upper left corner of Table 5-4.

Analysis of the Data

The data analysis was accomplished in three phases. The first step was basically a preliminary procedure involving a test for homogeneity of variance. The second part of the analytical program utilized analysis of variance (ANOVA). Covariance analysis was employed in the final phase. The output of the data analysis using these methods is described in this section. The ANOVA and covariance analysis are presented by product class.

Table 5-4

Mean and Standard Deviation of Covariates By

Treatment for the Highly Nutritious Product

Covariate	Nutrition Level[2]	Advertising Level[1] Low Mean	Low s[3]	Medium Mean	Medium s	High Mean	High s	Marginal Mean	Marginal s
Age	Low	4.33	1.54	3.87	1.55	4.67	1.63	4.29	1.58
	Medium	4.40	1.72	4.40	1.77	4.60	1.40	4.47	1.60
	High	4.00	1.96	4.53	1.46	4.33	1.80	4.29	1.73
	Marginal	4.24	1.72	4.27	1.59	4.53	1.59	4.35	1.63
Education	Low	3.07	1.28	3.00	1.00	3.27	.83	3.11	1.05
	Medium	3.27	1.03	3.07	1.16	3.00	1.36	3.11	1.17
	High	2.93	1.03	2.80	1.08	2.93	1.10	2.89	1.05
	Marginal	3.09	1.10	2.96	1.07	3.07	1.12	3.04	1.09
Income	Low	3.20	1.61	2.87	1.06	3.73	1.49	3.27	1.42
	Medium	3.73	.96	3.67	1.50	3.73	1.10	3.71	1.18
	High	3.13	1.60	3.20	1.42	3.73	1.22	3.36	1.42
	Marginal	3.36	1.42	3.24	1.35	3.73	1.25	3.44	1.35
Children	Low	1.00	1.00	1.00	1.25	.93	1.10	.98	1.10
	Medium	.93	1.28	.67	1.05	1.33	1.18	.98	1.17
	High	.93	.96	.67	.72	.47	.74	.69	.82
	Marginal	.96	1.07	.78	1.02	.91	1.06	.88	1.04

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

Table 5-5

Mean and Standard Deviation of Covariates By Treatment

for the Moderately Nutritious Product

Covariate	Nutrition Level[2]	Advertising Level[1] Low Mean	s[3]	Medium Mean	s	High Mean	s	Marginal Mean	s
Age	Low	4.07	1.67	4.20	1.01	4.00	1.51	4.09	1.40
	Medium	3.73	1.53	3.73	1.62	4.40	1.50	3.96	1.55
	High	3.80	1.82	4.73	1.58	3.93	1.49	4.16	1.65
	Marginal	3.87	1.65	4.22	1.46	4.11	1.48	4.07	1.53
Education	Low	3.60	1.12	3.13	1.19	2.93	1.10	3.22	1.15
	Medium	3.40	.91	3.40	.99	4.00	1.20	3.60	1.05
	High	3.13	1.25	3.27	1.10	2.87	1.06	3.09	1.13
	Marginal	3.38	1.09	3.27	1.07	3.27	1.21	3.30	1.12
Income	Low	3.33	1.23	3.13	1.13	3.07	1.71	3.24	1.35
	Medium	3.20	1.27	3.00	1.36	2.73	1.58	2.98	1.39
	High	2.33	1.45	3.53	1.19	2.93	1.71	2.93	1.51
	Marginal	2.96	1.36	3.22	1.22	2.98	1.64	3.05	1.42
Children	Low	1.47	1.18	4.87	1.64	1.00	1.13	1.44	1.36
	Medium	1.27	1.53	1.27	1.49	1.07	1.03	1.20	1.34
	High	.87	1.06	1.20	1.66	.93	1.03	1.00	1.26
	Marginal	1.20	1.27	1.44	1.59	1.00	1.04	1.22	1.32

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

Table 5-6

Mean and Standard Deviation of Covariates By Treatment

for the Marginally Nutritious Product

Covariate	Nutrition Level[2]	Advertising Level[1] Low Mean	s[3]	Medium Mean	s	High Mean	s	Marginal Mean	s
Age	Low	3.73	1.67	4.80	1.97	4.33	1.23	4.29	1.67
	Medium	3.93	1.34	4.60	1.88	3.93	1.71	4.16	1.65
	High	3.47	1.85	4.13	1.46	4.60	1.35	4.07	1.60
	Marginal	3.71	1.60	4.51	1.77	4.29	1.44	4.17	1.63
Education	Low	2.87	.99	3.80	.68	2.80	1.08	3.16	1.02
	Medium	2.87	1.06	3.27	1.10	3.27	1.62	3.13	1.27
	High	3.53	1.30	2.87	.99	3.00	1.00	3.13	1.12
	Marginal	3.09	1.15	3.31	1.00	3.02	1.25	3.14	1.13
Income	Low	3.27	1.28	3.40	1.40	3.07	1.10	3.24	1.25
	Medium	2.87	1.36	3.20	1.66	3.67	.98	3.24	1.37
	High	3.53	1.25	4.13	1.06	3.20	1.32	3.62	1.25
	Marginal	3.22	1.30	3.58	1.42	3.31	1.15	3.37	1.29
Children	Low	.87	.83	1.20	1.47	.87	.92	.98	1.10
	Medium	1.60	1.30	.67	.82	.93	1.44	1.07	1.25
	High	1.27	1.49	1.33	1.05	.73	1.10	1.11	1.23
	Marginal	1.24	1.25	1.07	1.16	.84	1.15	1.05	1.19

[1]Advertising: low (1 exposure), medium (2 exposures), high (3 exposures).

[2]Nutrition: low (4 items), medium (13 items), high (22 items).

[3]s denotes standard deviation.

Test for Homogeneity of Variance

Recall from the previous chapter that theoretically ANOVA can be applied only when certain conditions exist. Homogeneity of variance is one necessary condition. In essence, the assumption is that variances across the various treatment conditions are equal. Kirk provides a more technical description of the principle of homogeneity of variance:

> ...Other sources of variation among the observations within a cell include lack of consistency in measuring the dependent variable, variation in administration of the treatments to the n experimental units, and interaction between the experimental units and the treatments. These and other unidentified sources of variation are referred to as experimental error or error variance. It can be shown by maximum-likelihood methods that the variance (σ^2_{ij}) of n units representing a random sample from a population of N units provides an unbiased estimate of the population variance σ^2_{ij}. The model underlying a completely randomized design requires that the population variance (experimental error) be constant for each of the pq populations. This assumption of homogeneity of experimental error can be restated as
>
> $$\sigma^2_{11} = \sigma^2_{12} = \cdots = \sigma^2_{ij} \quad \text{for all ij's.}$$ [5]

Although homogeneity of variance is important, it should be noted that modest departures from the condition may still be permissible. According to Kirk, "The F distribution is robust with respect to violation of the assumption of homogeneity of population-error variance provided that the number of observations in the samples is equal."[2] While tests for homo-

---

[1] Roger E. Kirk, Experimental Design: Procedures for the Behavioral Sciences (Belmont, California: Brooks/Cole Publishing Co., 1969), p. 183.

[2] Ibid, p. 61.

geneity of variance may not be widely used in the social and behavioral sciences, such tests are appropriate where heterogeneity is suspected.[1]

Hartley's F_{max} statistic is one of many available methods to test for homogeneity of variance.[2] The hypothesis of homogeneity of variance is rejected if the calculated value for F_{max} (below) is greater than the table value for F_{max}.

$$F_{max} = \frac{\text{largest of k variances}}{\text{smallest of k variances}} = \frac{\sigma^2_i \text{ largest}}{\sigma^2_i \text{ smallest}}$$

The table value for F_{max} for the present research design was 5.40 where k = 9 (number of treatment variances) and n-1 = 14 (number of observations in each cell minus one). Table 5-7 specifically shows the results of the tests on the dependent variables for the three product classes. Clearly, the assumption of homogeneity of variance is met in all cases except one (eight out of nine tests). Since the calculated F_{max} did not differ widely from the table value in the one exceptional case and since the F distribution is fairly robust, it seemed reasonable to include it in the analysis.

Analysis for the Highly Nutritious Product

As explained in Chapter 4, ANOVA is a statistical procedure which allows the researcher to study the effect of two or more independent variables upon a dependent variable. It is also possible to assess the

---

[1] Kirk, p. 62.

[2] Ibid., pp. 61-62.

Table 5-7

Homogeneity of Variance Tests

	σ^2 largest	σ^2 smallest	F_{max}	Homogeneity of Variance
Vanilla Wafers				
Overall Rating	1.685^2	$.834^2$	4.0818	yes
Nutrition Value	1.897^2	1.146^2	2.7400	yes
Purchase Probability	3.420^2	2.242^2	2.3269	yes
Canned Peaches				
Overall Rating	1.534^2	$.561^2$	7.4753	no
Nutrition Value	1.604^2	$.862^2$	3.4624	yes
Purchase Probability	1.981^2	4.100^2	4.2839	yes
Peanut Butter				
Overall Rating	1.309^2	$.704^2$	3.4568	yes
Nutrition Value	1.506^2	$.743^2$	4.1082	yes
Purchase Probability	2.963^2	2.007^2	2.1796	yes

effects of interaction of the independent variables upon the dependent variable via ANOVA. Since three dependent variables were of primary interest in this research, three separate ANOVA procedures were necessary.

Before specifically proceeding to the analysis, a few preliminary remarks about ANOVA are in order. For a 3x3 factorial design ANOVA provides three critical measures which are expressed as F ratios. An F ratio is calculated for each of the two experimental variables (nutrition educational message exposure level and nutrition label information level) which is used in the statistical tests for main effects. The third critical measure is an F ratio for the combined effect of both factors -- this is used in the statistical test for interaction effects. When compared to a table containing the critical values of the F distribution (with the appropriate degrees of freedom), the calculated F ratio indicates the statistical significance of each factor. The statistical significance level for this test was set at .05, a commonly used level in the social and behavioral sciences.

The purpose of ANOVA is to "partition the total variance into the component attributable to the treatment effect and the component attributable to chance".[1] In other words, total variation can be divided into that due to experimental treatment (between group variance) and that due to error (within group variance). Variance is calculated by dividing the sum of the square deviations from the mean by the degrees of freedom. After the

---

[1]Keith K. Cox and Ben M. Enis, The Marketing Research Process (Pacific Palisades, California: Goodyear Publishing Co., Inc., 1972), p. 387.

total variance has been partitioned, the effect of the treatments on the data can be measured by the F ratio. The F ratio is calculated by dividing the treatment variance (expressed as mean square) by the error variance (expressed as mean square).

For the highly nutritious product, peanut butter, did the introduction of either experimental variable have any significant impact upon the dependent variable overall rating? Did the interaction of the two experimental variables create any significant differences? Results of the ANOVA procedure presented in Table 5-8 provides answers to these questions. The analysis shows no significant main effects and no significant interaction effect for the variable overall rating at the .05 level. In other words, the manipulation of the experimental variables had no appreciable affect on subjects' overall impression of the test product.

Next, the ANOVA routine was applied to a different dependent-measure -- perceived nutritional value. The results are displayed in Table 5-9. The outcome was essentially the same -- no significant main effects and no significant interaction effect. Finally, in terms of the last dependent measure, purchase probability, the same pattern was found -- no statistically significant main and interaction effects (see Table 5-10).

Covariance analysis was employed as a control devise. When used in this manner covariance analysis permits the researcher to adjust the research results for extraneous variables whose effects may not have been anticipated in the original experimental design.[1] The primary ob-

---

[1]Churchill, p. 468.

Table 5-8

ANOVA for Highly Nutritious Product

Variable - Overall Rating

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	.578	2	.289	.281	.999
Nutrition Level	5.733	2	2.867	2.787	.064
Interaction Effect	3.022	4	.756	.735	.999
Error	129.600	126	1.029		
Total	138.933	134	1.037		

Table 5-9

ANOVA for Highly Nutritious Product

Variable - Nutrition Value

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	.311	2	.156	.098	.999
Nutrition Level	6.978	2	3.489	2.189	.114
Interaction Effect	7.511	4	1.878	1.178	.323
Error	200.800	126	1.594		
Total	215.600	134	1.609		

Table 5-10

ANOVA for Highly Nutritious Product

Variable - Purchase Probability

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	36.311	2	18.156	2.800	.063
Nutrition Level	14.044	2	7.022	1.083	.342
Interaction Effect	34.311	4	8.578	1.323	.264
Error	817.067	126	6.485		
Total	901.733	134	6.729		

jective of covariance analysis is to reduce experimental error and increase treatment sum of squares by adjusting for the extraneous variation. The analytical procedure first accounts for the correlation between the dependent variable and the covariate and then adjusts the initial mean differences in the experimental group.[1] The real payoff of this procedure is succinctly described by Churchill:

> ...An uncontrolled, unadjusted for, extraneous variable could affect the results to such an extent that the tests would indicate equality of treatment means when, in fact, there was a substantial difference in the effectiveness of the various treatments. The effect of the extraneous influence would be said to be confounded with the results. Alternatively, the test might lead to a rejection of the equal mean hypothesis, but this rejection could be an artifact of the analysis in that the extraneous variable, for example, store traffic, was responsible for the observed result, and there were no treatment differences. Adjustment for the covariate would reveal the fallacy of the initial conclusion...[2]

As discussed earlier, four covariates were specified. Each of the variables was considered to be an important demographic measure and it was felt that any differences between treatment groups caused by these variables should be removed. The covariates were age, education, income, and number of children.

Rather than show the entire output for the "adjusted" ANOVAs, the data have been summarized in Table 5-11. The table shows the F ratios (and accompanying significance levels) for the main and interaction effects for the three dependent variables, after they were adjusted for the four co-

---

[1]Kerlinger, p. 370.

[2]Churchill, pp. 471-472.

Table 5-11

Covariance Analysis

for Highly Nutritious Product

	Straight ANOVA		ANOVA with Covariates	
	F Ratio	Signif-icance	F Ratio	Signif icance
Overall Rating				
Advertising Level	.281	.999	.339	.999
Nutrition Level	2.787	.064	2.305	.102
Interaction	.735	.999	.778	.999
Nutrition Value				
Advertising Level	.098	.999	.107	.999
Nutrition Level	2.189	.114	2.194	.114
Interaction	1.178	.323	1.416	.232
Purchase Probability				
Advertising Level	2.800	.063	2.497	.085
Nutrition Level	1.083	.342	1.198	.305
Interaction	1.323	.264	1.121	.350

variates. The F ratios for the ANOVA (without covariates) are also included in the table for comparison purposes. For the highly nutritious product the covariates apparently had no significant influence on the dependent variables. In other words, the conclusions reached earlier from the ANOVA (no significant main and interaction effects) held after controlling for the four extraneous factors. Even though the power of the test was increased via covariance analysis, the overall conclusions regarding the role of the experimental variables were unchanged.

Analysis for the Moderately Nutritious Product

For the moderately nutritious product, canned peaches, the findings from the analysis via ANOVA closely paralleled the findings for the highly nutritious product. For instance, in terms of the dependent variable overall rating, both main effects were found to be insignificant as was the interaction effect (see Table 5-12). The ANOVA results for the other two dependent variables, perceived nutritional value and purchase probability, are presented in Table 5-13 and Table 5-14, respectively. Both of the analyses show the same consistent pattern -- no significant main effects and no significant interaction effects.

The output from the covariance analysis for the moderately nutritious product is shown in Table 5-15. As in the previous case, the analysis reveals that there were no significant main or interaction effects across all three dependent variables, after adjusting for the covariates. In other words, after the extraneous influence of the four demographic factors was removed, there was still no statistically significant evidence that the experimental variables had any impact on the dependent variables.

Table 5-12

ANOVA for Moderately Nutritious Product

Variable - Overall Rating

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	5.911	2	2.956	2.295	.103
Nutrition Level	1.111	2	.556	.431	.999
Interaction Effect	4.044	4	1.011	.785	.999
Error	162.267	126	1.288		
Total	173.333	134	1.294		

Table 5-13

ANOVA for Moderately Nutritious Product

Variable - Nutrition Value

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	3.511	2	1.756	1.049	.354
Nutrition Level	1.111	2	.556	.332	.999
Interaction Effect	6.044	4	1.511	.903	.999
Error	210.933	126	1.674		
Total	221.600	134	1.654		

Table 5-14

ANOVA for Moderately Nutritious Product

Variable - Purchase Probability

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	15.348	2	7.674	.920	.999
Nutrition Level	14.459	2	7.230	.867	.999
Interaction Effect	40.207	4	10.052	1.205	.311
Error	1051.067	126	8.342		
Total	1121.081	134	8.366		

Table 5-15

Covariance Analysis

for Moderately Nutritious Product

	Straight ANOVA		ANOVA with Covariates	
	F Ratio	Signif-icance-	F Ratio	Signif-icance
Overall Rating				
Avertising Level	2.295	.103	1.639	.197
Nutrition Level	.431	.999	.790	.999
Interaction	.785	.999	.936	.999
Nutrition Value				
Advertising Level	1.049	.354	1.047	.355
Nutrition Level	.332	.999	.318	.999
Interaction	.903	.999	.759	.999
Purchase Probability				
Advertising Level	.920	.999	.855	.999
Nutrition Level	.867	.999	1.478	.231
Interaction	1.205	.311	.985	.999

Analysis for the Marginally Nutritious Product

Thus far the various experimental treatments have had no appreciable effect on the dependent variables for two of the product classes. The findings were not the same for the marginally nutritious product, vanilla wafers. Interestingly, consistent statistically significant differences (across all three dependent measures) were found for one of the experimental factors -- nutrition educational message exposure. In other words, exposure to nutrition educational messages apparently had a real impact on how subjects judged the marginally nutritious product. The other main effect, level of nutrition label information, was not statistically significant. The ANOVA results which reveal this pattern are presented in Table 5-16 (overall rating), Table 5-17 (perceived nutrition value), and Table 5-18 (purchase probability).

In terms of the interaction effects, no statistically significant differences were found for the variables overall rating and purchase probability. However, for the variable perceived nutritional value a significant interaction effect emerged. This suggests that the introduction of both nutrition educational messages and nutrition label information combined to produce a significant difference in how subjects felt about the test product's nutritional value. Since this one finding was fairly inconsistent with the interaction effects found for the other two dependent variables (the F ratios were much smaller) and since the research allowed for some Type II error, it was felt that the finding should not be taken too seriously.

Table 5-16

ANOVA for Marginally Nutritious Product

Variable - Overall Rating

	Sum of Squares	df	Mean Square	F ratio	Signif - icance
Main Effects					
Advertising Level	19.600	2	9.800	6.352	.003
Nutrition Level	1.378	2	.689	.447	.999
Interaction Effect	1.556	4	.389	.252	.999
Error	194.400	126	1.543		
Total	216.933	134	1.619		

Table 5-17

ANOVA for Marginally Nutritious Product

Variable - Nutrition Value

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	15.126	2	7.563	3.053	.049
Nutrition Level	1.348	2	.674	.272	.999
Interaction Effect	25.274	4	6.319	2.551	.042
Error	312.133	126	2.477		
Total	353.881	134	2.641		

Table 5-18

ANOVA for Marginally Nutritious Product

Variable - Purchase Probability

	Sum of Squares	df	Mean Square	F ratio	Signif-icance
Main Effects					
Advertising Level	63.348	2	31.674	3.760	.025
Nutrition Level	15.348	2	7.674	.911	.999
Interaction Effect	27.141	4	6.785	.805	.999
Error	1061.467	126	8.424		
Total	1167.304	134	8.711		

Since statistically significant differences were found as a result of one of the experimental variables in this portion of the research, the author proceeded to examine the differences more closely. The manipulation of nutrition educational message exposure from a low level (one portfolio) to a medium level (two portfolios) to a high level (three portfolios) produced a statistically significant difference among the dependent variables. What was the nature and direction of the difference? In order to answer this important question the data (mean values) were plotted graphically in Figure 5-1 (overall rating), Figure 5-2 (perceived nutritional value), and Figure 5-3 (purchase probability). As clearly shown, the relationship was a negative one -- as the number of message exposures went up, respondents' opinions of the marginally nutritious product went down. This pattern was consistently demonstrated for each dependent measure.

Covariance analysis for the marginally nutritious product was the last part of the analytical program. The data (F ratios and significance levels) are presented in Table 5-19. The covariance analysis was consistent with the ANOVA results. Although the absolute values of the F ratios showed some change after adjustment for the covariates, the overall conclusions regarding the main and interaction effects remained the same. That is, the nutrition educational exposure factor was significant while the nutrition label information factor was not significant. Generally speaking, the interaction effect was not significant (except for the variable perceived nutritional value) after accounting for the covariates.

Figure 5-1

Mean Values for Marginally Nutritious Product

Variable - Overall Rating

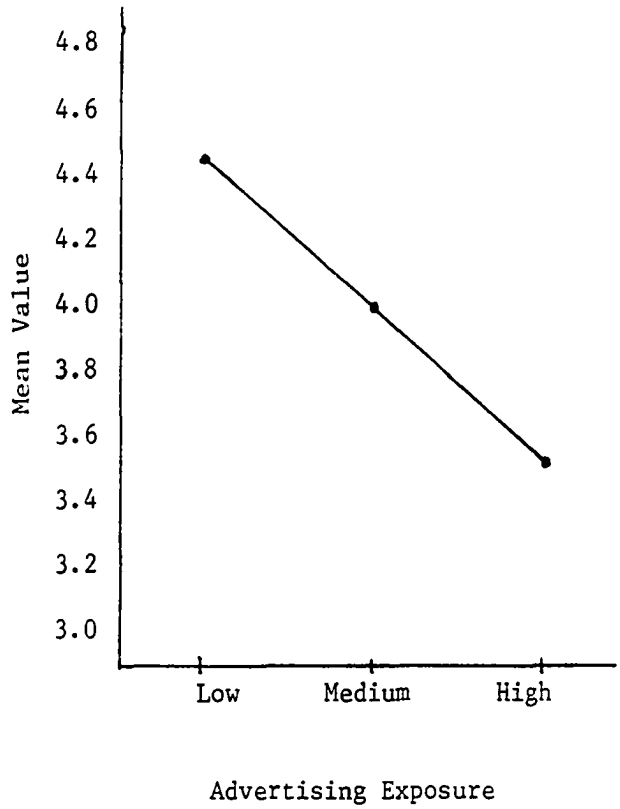


Figure 5-2

Mean Values for Marginally Nutritious Product

Variable - Nutrition Value

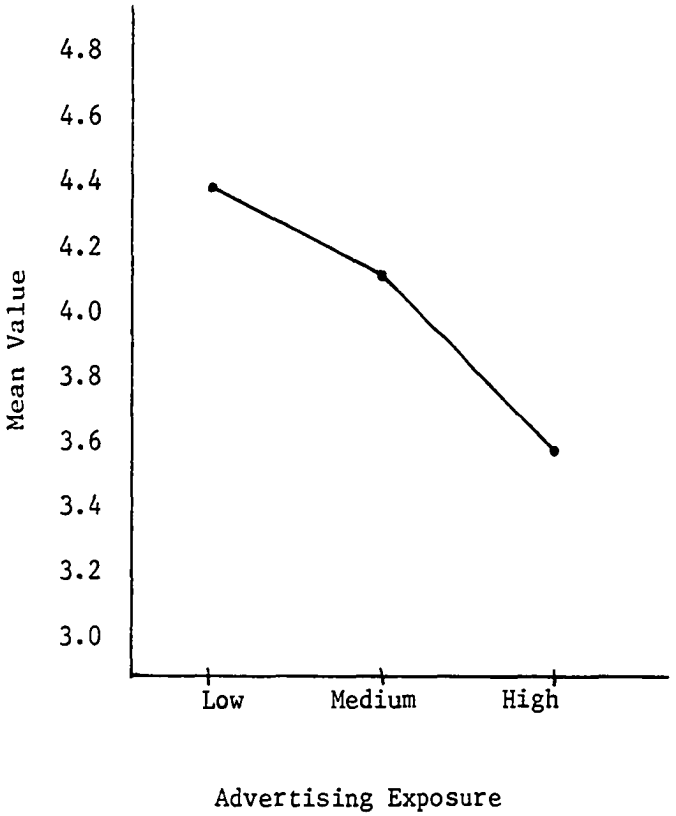


Figure 5-3

Mean Values for Marginally Nutritious Product

Variable - Purchase Probability

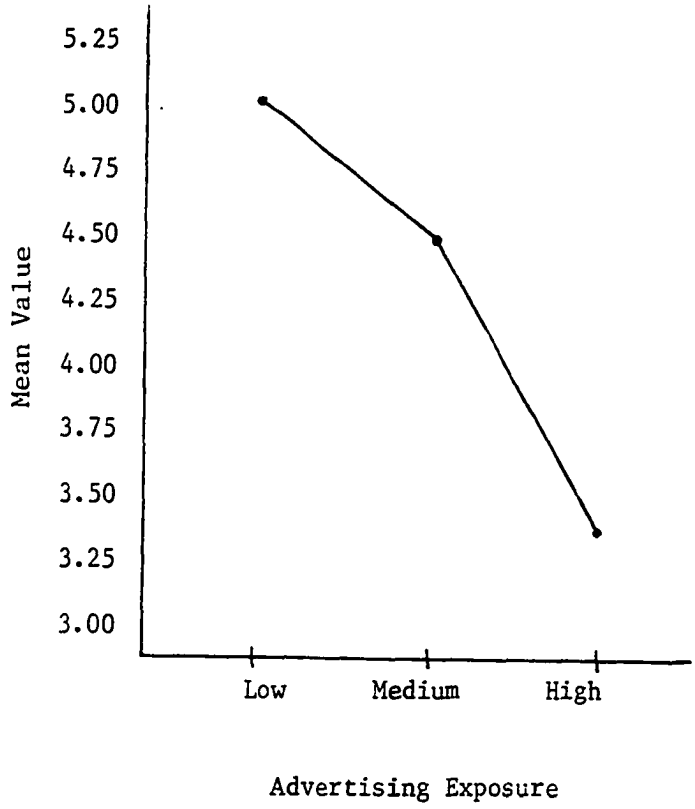


Table 5-19

Covariance Analysis

for Marginally Nutritious Product

	Straight ANOVA		ANOVA with Covariates	
	F Ratio	Signif-icance	F Ratio	Signif-icance
Overall Rating				
Advertising Level	6.352	.003	5.889	.004
Nutrition Level	.447	.999	.331	.999
Interaction	.252	.999	.430	.999
Nutrition Value				
Advertising Level	3.053	.049	3.616	.029
Nutrition Level	.272	.999	.491	.999
Interaction	2.551	.042	2.522	.044
Purchase Probability				
Advertising Level	3.760	.025	3.450	.034
Nutrition Level	.911	.999	.850	.999
Interaction	.805	.999	1.460	.217

Test of the Hypothesis Program

The analytical results can now be applied to the statements of hypotheses which were spelled out in Chapter 3. In that chapter, six main hypotheses were developed which were to be tested via eighteen sub-hypotheses. For convenience, the eighteen sub-hypotheses are displayed in Table 5-20. This section describes the results of the hypotheses testing program.

Based upon the analysis of the data, all but one of the main hypotheses were not rejected. In other words, the analytical evidence supported the null hypotheses in five out of six cases. Generally speaking, the introduction of nutrition educational messages and nutrition label information did not affect consumer attitudes toward food products in this laboratory experiment.

The first main hypothesis was not rejected. The hypothesis stated that consumer attitudes toward a highly nutritious product would not change when consumers were exposed to nutritional educational messages at various levels of exposure. This relationship was tested via three sub-hypotheses which encompassed the dependent variables. According to the data analysis the following conclusions were drawn pertaining to the sub-hypotheses:

$H1A_o$: was not rejected

$H1B_o$: was not rejected

$H1C_o$: was not rejected

The second main hypothesis was not rejected. The hypothesis stated that consumer attitudes toward a highly nutritious product would not change when various levels of nutrition information were displayed on the product

Table 5-20

Statements of Hypotheses

$H1A_o$: Consumers' overall impression of a highly nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

HIB_o: Consumers' attitudes toward a product's nutritional value within a highly nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

HIC_o: Consumers' interest in buying a highly nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H2A_o$: Consumers' overall impression of a highly nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H2B_o$: Consumers' attitudes toward a product's nutritional value within a highly nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H2C_o$: Consumers' interest in buying a highly nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product level.

$H3A_o$: Consumers' overall impression of a moderately nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H3B_o$: Consumers' attitude toward a product's nutritional value within a moderately nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

Table 5-20 (continued)

$H3C_0$: Consumers' interest in buying a moderately nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H4A_0$: Consumers' overall impression of a moderately nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H4B_0$: Consumers' attitude toward a product's nutritional value within a moderately nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H4C_0$: Consumers' interest in buying a moderately nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H5A_0$: Consumers' overall impression of a marginally nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H5B_0$: Consumers' attitudes toward a product's nutritional value within a marginally nutritious product class will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H5C_0$: Consumers' interest in buying a marginally nutritious product will not change (no significant differences will be found) when they are exposed to various amounts of nutrition educational messages.

$H6A_0$: Consumers' overall impression of a marginally nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H6b_0$: Consumers' attitudes toward a product's nutritional value within a marginally nutritious product class will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

$H6C_0$: Consumers' interest in buying a marginally nutritious product will not change (no significant differences will be found) when various levels of nutrition information are displayed on the product label.

label. The three sub-hypotheses which were employed to test the relationship were not rejected:

$H2A_o$: was not rejected
$H2B_o$: was not rejected
$H2C_o$: was not rejected

Likewise, the third and fourth main hypotheses were not rejected. These hypotheses involved a moderately nutritious product. The third hypothesis stated that consumer attitudes toward a moderately nutritious product would not change when consumers were exposed to nutritional educational messages at various levels of exposure. The fourth hypothesis stated that consumer attitudes toward a moderately nutritious product would not change when various levels of nutrition information were displayed on the product label. Each of these relationships was again tested via three sub-hypotheses with the following outcome:

$H3A_o$: was not rejected
$H3B_o$: was not rejected
$H3C_o$: was not rejected
$H4A_o$: was not rejected
$H4B_o$: was not rejected
$H4C_o$: was not rejected

The fifth main hypothesis was rejected. The hypothesis stated consumer attitude toward a marginally nutritious product would not change when consumers were exposed to nutritional educational messages at various levels of exposure. Three sub-hypotheses which encompassed the dependent variables were employed to test the relationship and all three were rejected:

$H5A_o$: was rejected
$H5B_o$: was rejected
$H5C_o$: was rejected

The sixth main hypothesis was not rejected. The hypothesis stated that consumer attitudes toward a marginally nutritious product would not change when various levels of nutrition information were displayed on the product label. The relationship was tested via three sub-hypotheses with the following results:

$H6A_o$: was not rejected
$H6B_o$: was not rejected
$H6C_o$: was not rejected

Discussion of the Findings

Based upon the analysis of the data from this laboratory experiment, it appears that consumers' attitudes toward food products were not influenced by the amount of nutrition information displayed on the product label. Consumers did not feel any more positive toward the test products when higher levels of nutrition information were provided. This was true for a wide range of food products. Thus, it seems that participants were generally "indifferent" as to the amount of information that was given.

A similar result was found for the nutrition education factor, but not for all food product classes. For the experiments involving a highly nutritious product and a moderately nutritious product, exposure to nutrition educational messages had no particular influence as to how subjects judged the test products. However, for the marginally nutritious product, nutrition message exposure did seem to affect consumers' attitudes toward the test product. Interestingly, the relationship was not a positive one --

the more messages subjects received about nutrition, the less regard they had for the product. This seems to suggest that nutrition message exposure may be an effective vehicle for making people cognizant of the value of marginal or non-nutritious types of foods.

The above findings were supported after the effects from extraneous variation from key demographic variables were removed from the data. In other words, none of the findings was altered as a result of the covariance analyses. Thus, it appears that random assignment of subjects to experimental treatments worked well as a means of controlling for extraneous variation.

CHAPTER 6

SUMMARY AND CONCLUSIONS

This final chapter summarizes the research and draws conclusions from it. The chapter is divided into three sections. The first section summarizes the research problem, design and findings. In the second section several conclusions and implications are discussed. Suggestions for future research endeavors in the area of product information are made in the final section.

Summary of the Research

The research was designed to assess consumer reactions to nutrition label information and nutrition educational messages via a structured-disguised or unobtrusive method of investigation. Although several previous studies pertaining to product information and nutrition labeling have been conducted, many of the investigations have employed direct questioning of consumers. It may be quite natural for people to over-react (overstate attitudes) when questioned directly about the usefulness of product information.

Research Questions and Hypotheses

Several research questions were posed after reviewing the concept of full disclosure of information. By and large, many consumerists and public policy officials have argued for more and more product information in the interest of the consumers' "right to be informed". However,

recently questions have been raised by some researchers about the consumer's ability to handle large amounts of information efficiently when faced with a decision making task. Unfortunately, little attention has been given to this problem. Before new information programs are adopted the author feels that we need to assess objectively the impact of existing information programs on consumer behavior. Perhaps it would be better to try to find more effective ways to communicate existing information rather than develop new forms of information which may ultimately not be used. Consumer research data gathered in an objective manner is needed to help resolve such issues. With that idea firmly in mind, the present investigation was developed.

The research dealt with three fundamental questions:

1. Do consumers exhibit more favorable attitudes toward brands which display higher levels of product information (e.g. nutrition information)?

2. Are consumer attitudes toward food products with nutrition label information likely to change as a result of exposure to educational messages about nutrition?

3. Is it fair to assume that consumer reaction to higher levels of nutrition label information and nutrition educational messages would be the same for all packaged food products, or is type of information important for some classes of food products and not for others?

The first research question is quite straight forward. It raises a question about information load and consumer reaction - if a brand provides higher levels of product information, will consumers be more positively disposed toward that brand? The second question is more complex. The nutrition labeling program was launched in a slightly different manner compared to many other new consumer information programs.

The FDA decided to use the mass media (radio and television advertising) to help educate the public about the value of nutrition and nutrition information as the program began. This research attempted to assess the impact of nutrition labeling on consumers when it was preceded by such educational messages (via a simulated advertising campaign). The third research question deals with the value or importance of nutrition information to consumers for different classes of food products.

Based upon the research questions and a review of the literature, six main hypotheses were developed:

$H1_o$: Consumer attitudes toward a highly nutritious product will not change when they are exposed to various amounts of nutrition educational messages.

$H2_o$: Consumer attitudes toward a highly nutritious product will not change when various levels of nutrition information are displayed on the product label.

$H3_o$: Consumer attitudes toward a moderately nutritious product will not change when they are exposed to various amounts of nutrition educational messages.

$H4_o$: Consumer attitudes toward a moderately nutritious product will not change when various levels of nutrition information are displayed on the product label.

$H5_o$: Consumer attitudes toward a marginally nutritious product will not change when they are exposed to various amounts of nutrition educational messages.

$H6_o$: Consumer attitudes toward a marginally nutritious product will not change when various levels of nutrition information are displayed on the product label.

The six main hypotheses were tested via several sub-hypotheses which encompassed three attitudinal dependent variables. The research was designed to provide an objective test of the above relationships.

Research Design

A laboratory experiment was used to collect the data from 405 female participants. More specifically, the research called for a 3x3 factorial design in which two experimental variables were manipulated simultaneously -- exposure to nutrition educational messages and exposure to food products displaying nutrition label information. Each factor had three treatment levels -- high, medium and low. Participants were first shown a series of newspaper advertisements in a portfolio in which one of the advertisements contained a message about nutrition labeling (the number of portfolios viewed per subject varied). Next, respondents were shown a product prototype with nutrition label information (the amount of information also varied). Thus, there were nine test conditions and a subject was randomly assigned to one and only one of the treatments.

The experiment was replicated for different classes of food products. One of the research questions raised the issue of effectiveness of nutrition label information for different types of products. In order to develop such data the experiment was implemented three times with different product stimuli. The product prototypes used in the research were selected on the basis of pilot test with 12 housewives to represent products perceived to be high in nutrition value (peanut butter), moderate in terms of nutrition value (canned peaches), and marginal in terms of nutrition value (vanilla wafers). The product visuals which were ultimately used in the experiment appeared quite realistic (as did the newspaper advertisements). Within a product class the labels looked exactly the same except for the amount of nutrition data.

Self-administered questionnaires were developed to measure consumer reaction to the advertising and product stimuli. Among other things the product questionnaire contained a small battery of questions about the product stimulus. The objective was to measure consumer reactions to the product stimulus and nutrition labeling in an unobtrusive manner and gather basic demographic and life style information about the subjects. Three product-related questions were considered to be key surrogate indicators of the subjects' attitude toward the test product -- overall opinion (measured on a seven-point scale), perceived nutritional value (measured on a seven-point scale), and purchase probability (measured on an eleven-point scale). The design assumed that attitude change, created by the manipulation of the experimental variable, could be assessed via measurement of the three attitudinal dependent variables.

Initially, the research specified unrestricted random sampling. The population was defined as married women residing in the City of Newport News, Virginia and a sampling frame which listed such individuals was selected. Since it is women who do the bulk of food shopping and are primarily responsible for meal planning it seemed reasonable to restrict the study to that population. A random sample was drawn from the Newport News City Directory and the sample was contacted by mail. Unfortunately, the number of women who actually participated in the research (which was done at three central locations) was quite low. Subsequently, the research was taken to shopping malls where subjects could conveniently be recruited for the study. Although convenience sampling may not be as desirable as simple random sampling, a t-test of mean ratings for several key variables revealed no significant differences between the two groups.

Ultimately, 405 women participated in the research. Importantly, it should be noted that subjects were randomly assigned to experimental treatments throughout the study.

The data were analyzed by two analytical methods -- analysis of variance (ANOVA) and covariance analysis. ANOVA is appropriate for experimental designs in which two or more independent variables are manipulated each at two or more levels. ANOVA allows the researcher to study the main and interaction effects of two or more experimental factors on a dependent variable. The research fit the underlying assumptions of ANOVA quite well, including the test for homogeneity of variance. Covariance analysis, on the other hand, was used as a control device. The objective of covariance analysis is to reduce experimental error by accounting for extraneous factors whose influence may not have been anticipated in the research design. Four key demographic variables were specified as covariates which were subsequently controlled in the analysis.

Summary of the Findings

The findings from the research were fairly straight-forward and uncomplicated. Generally speaking, the introduction of nutrition educational messages and nutrition label information had no significant influence on consumers' attitudes toward the test products. This was especially true for the highly nutritious product and the moderately nutritious product treatments. In other words, the nutrition education factor apparently had no effect on how subjects judged the test products in two of the three experiments. The same was true for the nutrition information factor -- the amount of nutrition data had no significant

influence on subjects' impressions of the test products. Additionally, there were no significant interaction effects. Thus, in terms of the hypotheses testing program, all of the null hypotheses were not rejected for the highly nutritious product and the moderately nutritious product:

$H1_o$: was not rejected
$H2_o$: was not rejected
$H3_o$: was not rejected
$H4_o$: was not rejected

The research findings pertaining to the marginally nutritious product were not exactly the same. As found in the other case, the nutrition information factor was not significant. However, the nutrition educational factor was significant. The statistical significance (.05 level) of the nutrition education factor was noticed for all three dependent variables. No significant interaction effects were noticed for two of the three dependent variables (a significant interaction effect was found for the variable perceived nutrition value). These findings were carried to the null hypotheses with the following conclusions:

$H5_o$: was rejected
$H6_o$: was not rejected

A further inspection of the data for the marginally nutritious product revealed that the relationship between nutrition educational messages and attitudes toward the test product was a negative one. That is, the more messages (advertisements) that were provided about nutrition, the less regard subjects had for the marginally nutritious product.

The above findings were not altered after the demographic covariates were considered. In other words, the covariates did not seem

to have any significant influence on the dependent variables, as demonstrated by the covariance analysis. This suggests that the use of random assignment of subjects to test conditions helped to minimize extraneous variation.

Conclusions and Implications

Five major conclusions can be drawn from the data which was developed from this investigation. First, the laboratory experiments demonstrated that consumers seemed to be somewhat passive about nutrition labeling. That is, the research revealed that subjects were basically "indifferent" as to the amount of nutrition data that was provided. This situation was found for a wide range of packaged food products. There may be at least six possible explanations for this phenomena.

1. Consumers are not interested in such information.
2. Consumers don't know how to use the information.
3. Consumers do not consider nutrition to be a major determinant in the choice process.
4. The point of diminishing returns of food product information has been reached.
5. Consumers may already possess sufficient knowledge about the nutritional benefits of food products, which would tend to diminish the importance of nutrition label information.
6. The information is not in a form which is convenient to read, understand, and process.

On the basis of this research it is difficult to specifically isolate the root cause of the "indifference" of consumers to nutrition information. However, this researcher suspects that the cause traces to several of the above factors. Some consumers may be passive toward

nutrition information because they don't understand it or don't know how to use it. Other consumers may simply not have the time to be bothered with it. Whatever the case, it appears unlikely that consumers will switch their purchases to brands which carry higher levels of product information.

Second, promotion efforts about nutrition labeling and nutrition in general may be a good medium for increasing the responsiveness of consumers to this type of information. It may be possible to raise the consumers' level of awareness about the importance of proper nutrition via promotion in the mass media. Additionally, perhaps educational programs could be designed to show consumers how to use such information effectively to make wiser purchase decisions. Although the nutrition education factor was not significant in two of the experimental settings, it was significant for the marginally nutritious product experiment. Repeated exposure to nutrition messages made subjects less receptive to the marginally nutritious product. Therefore, a continuation of promotional efforts (with a heavy level of exposure) may be an effective vehicle for making people cognizant of the value of marginally nutritious foods or non-nutritious foods. Thus, this researcher believes that it is not enough to just provide product information -- additional steps must be taken to get the information used by consumers. Similar sentiments by Day and Brandt were cited earlier but they are worth repeating:

> ...What is clear, however, is that it is not enough to simply provide consumers with more information. That is simply the first step in a major educational

> task of getting consumers to understand the information, and persuading them to use it...[1]

Third, it seems reasonable to conclude that the concept of a nutrition information list at the point of purchase might have some merit. The "list" could display nutrition information for all of the competing brands within a given product category. Research by Russo, et al. revealed that the introduction of a unit price list was "a significant factor in switching purchases toward the lower unit priced packages."[2] Thus it seems that information processing is facilitated when consumers can examine product data in a "side-by-side" comparison. The introduction of a "nutrition list" might serve to enhance consumer acceptance and usage of nutrition information. This would at least seem to be an idea worthy of investigation in future research efforts.

Fourth, it can also be concluded that direct questioning of consumers about their attitudes and intended usage of product information can be somewhat misleading. Several earlier investigations indicated that consumers were very interested in the concept of nutrition labeling when questioned directly about it. Additionally, many consumers suggested that they would conscientiously use such information to help them make purchase decisions. This research indicates that the positive

---

[1]George S. Day and William K. Brandt, "Consumer Research and the Evaluation of Information Disclosure Requirements: The Case of Truth in Lending", Journal of Consumer Research, Vol. 1, June 1974, pp. 21-32.

[2]J. Edward Russo, Gene Krieser and Sally Miyashita, "An Effective Display of Unit Price Information," Journal of Marketing, Vol. 39, April 1975, pp. 11-19.

feelings and anticipated usage of nutrition label information may not be totally valid. When provided, higher levels of information did not seem to make any difference to the subjects in this experiment. As discovered in several other studies dealing with consumers, people often tend to overstate their attitudes and behavioral intentions. Thus, it is recommended that researchers give serious consideration to adopting indirect or disguised research methods when attempting to objectively assess consumer reactions to new stimuli.

Finally, this research suggests that proposals for new information programs within well established consumer product classes should be given a low priority at the federal regulatory agencies (e.g., FDA, FTC, etc.). Under the following market conditions, it would seem that shoppers themselves would place a low priority on nutrition information:

1. A proliferation of brands and package sizes/types in most food product categories.
2. An increased demand on women's time (the proportion of women in the labor force jumped from 29.6% in 1950 to 39.9% in 1975[1]). Working women would tend to have less time to shop.
3. Extreme interest and sensitivity of consumers to price information in an era of inflation.

As discussed earlier, the hope for consumer adoption of new information programs such as nutrition labeling (under the above market conditions) may be through two avenues: 1) creating awareness of such programs, and or 2) educating people on how to effectively use the information.

---

[1]The Conference Board, "Women in the Labor Force," Roadmaps of Industry, No. 1794, November, 1976.

Suggestions for Future Research

This research has clearly not answered all of the questions that have been raised concerning the value of new product information programs. While the research has addressed a number of issues, it has also raised a number of other issues. This final section makes several suggestions for future research endeavors pertaining to consumer response to product information.

One such suggestion has already been made (investigate the concept of a "nutrition list"). Other recommended areas of inquiry are explained below:

1. The response of consumers to various product information programs should be analyzed by key demographic sub-groups. Naturally, this would require a sample size large enough to permit an in-depth analysis by sub-group. Although a few such studies have been reported (mainly in the area of unit pricing), they should be extended to other types of consumer information.

2. Experimental designs, similar to the present one, should be applied to consumer information programs that are in the proposal stage. Perhaps consumer response to the information could be measured more precisely if they were exposed to the information for the first time. Such an approach might be an attractive method for pre-testing new ideas pertaining to information disclosure.

3. Future research should also try to determine whether or not a promotion/education factor would be important for other information programs. This research would be designed to provide an indication as to the appropriatness/ degree of promotion/education efforts which may be needed to successfully launch new programs.

4. Although it might be difficult to administer, it would be worthwhile to study consumer behavior at the point of purchase via disguised methodology. This would suggest a "candid camera" type of approach. Through such research it may be possible to generate data pertaining

to: a) the amount of time people take to examine food products, b) the degree to which people make brand by brand comparisons, and c) what food classes do consumers spend the most time evaluating.

5. It would also be interesting to develop a field experiment in which a product information variable could be manipulated on actual products in stores. Obviously, sales would be an especially important dependent variable. Unfortunately, such research also poses some rather difficult design problems (e.g., manipulation of product information on packages that are offered for sale).

6. Include a control group in future product information studies in which some subjects would not receive the special product information. This would help to provide a clearer indication as to whether or not additional forms of information disclosure are really important to consumers.

7. Do people utilize/assimilate product information once the brand is in the home? This would suggest a home use test in which information factors would be manipulated and attitudes measured. Such research might provide valuable insight as to whether or not consumers react favorably to product information after an extended period of time.

The above research ideas should not be taken as an all-inclusive list. Rather, the research recommendations seem particularly relevant to this researcher after being totally emersed in product information research for the past several months. If other marketing researchers can help to generate data along the above lines we will be rendering an extremely important service for public policy officials by providing them with useful inputs for their decision-making process pertaining to information disclosure. The importance of this type of research is expressed well by Wilkie and Gardner:

> Marketers are thus faced with the alternatives of either increased participation in enlightened policy making or continued reaction in the political area. The research gap can be closed if the marketer is

willing to understand and adapt to the exigencies of policy decisions. Marketers should recognize that public policy will continue to be created, with or without their research.[1]

---

[1]William L. Wilkie and David M. Gardner, "The Role of Marketing Research in Public Policy Decision Making," Journal of Marketing, Vol. 38, January 1974, p. 38.

APPENDICES

Appendix A

Nutritional Labeling Status

The Food and Drug Administration has completed a major reorganization of regulations dealing with food labeling. The most important of these regulations is "Nutrition Labeling"—the direct listing of nutrient contents of a food on the label. Formerly, when vitamins were added to foods, the products carried "Special Dietary" labels. Now, common foods, including most of those that contain added nutrients, can be labeled under Nutrition Labeling. The Special Dietary Foods label will be restricted to foods that really are special, such as those that are used for sole items of the diet or under the supervision of a physician. Nutrition labeling is voluntary, with a few major exceptions. The exceptions are foods to which nutrients are added or about which nutrition claims have been made. Enriched bread, breakfast cereals, and enriched milk products are among the foods to which nutrients have been added and for which Nutrition Labeling is mandatory. Another change brought about by nutrition labeling is that the Minimum Daily Requirement (MDR) values that were listed by the Food and Drug Administration starting in 1941 have been replaced by "U.S. Recommended Daily Allowance" (US-RDA) values, a new set of labeling standards. The U.S. RDA standards were derived from the *Recommended Dietary Allowances* published by the National Academy of Sciences-National Research Council. Although a few of the National Academy of Sciences' RDA values have been lowered, there is no intent to change the U.S. RDA values at this time.

During the development of the Nutrition Labeling regulation, nutrition educators and spokesmen stressed the advantages of a standard format for the consumer and as an aid in consumer education. An example of the standard format required by the regulation is presented in Figure 1.

NUTRITION INFORMATION—PER SERVING

Serving Size =	1 cup	Servings per container = 2	
CALORIES	110	CARBOHYDRATE	20 grams
PROTEIN	7 grams	FAT	1 gram

PERCENTAGE OF U.S. RECOMMENDED DAILY ALLOWANCES
(U.S. RDA)

PROTEIN	10	RIBOFLAVIN	8
VITAMIN A	20	NIACIN	8
VITAMIN C	35	CALCIUM	4
THIAMINE	10	IRON	10

Figure 1—Canned peas

The statement "Per Serving" is required under (or following) the heading "Nutrition Information." This is to avoid any possible misconception on the amount of food this nutrition information describes. Then below this is listed the serving size and the number of servings per container. Several people and several groups have wanted the Food and Drug Administration to establish serving sizes. The Agency decided that this was not reasonable and that it would be far better if given trade groups and their members would establish serving sizes among themselves. It is important, however, that proper serving sizes be selected and that a given food be described in terms of only a single serving size by several manufacturers. This appears to be happening. In the few cases where it doesn't, steps are being taken to insure that uniform standard sizes are selected. For example, general principles for the establishment of serving (or portion) sizes and specific serving sizes were proposed for breakfast beverages, meal replacements, ready-to-eat breakfast cereals, hot breakfast cereals, and fluid milk beverages (39FR20888, June 14, 1974).

Caloric content is the next item on the label. Calories are listed in two-calorie increments below 20 calories and in five-calorie increments up to 50 calories. Above 50 calories, 10-calorie increments are used.

Contents of protein, carbohydrate and fat are listed to the nearest gram, for the purpose of simplifying consumer understanding and use. A proposal has been published which suggests use of the term "less than 1 gm." where more than zero but less than 1 gram of these three macronutrients is present.

Immediately following the listing of the macronutrients appears a list of the other nutrients, vitamins, minerals and protein—all expressed as a percentage of the U.S. Recommended Daily Allowance (U.S. RDA). Nutrients are listed in order—protein, vitmin A, vitamin C, thiamin, riboflavin, niacin, calcium and iron. Twelve other vitamins and minerals also may be listed if present. This is the standard format and it is required in all except a very few cases. If it is necessary, there will appear several zeros, or perhaps asterisks, in the column to the right indicating that there is zero or less than 2% of a given nutrient in a food. Manufacturers and marketing managers do not particularly like this approach. However, professionals in this area and also consumers are convinced that this standard format is necessary if people are to learn that no single food is the source of all their nutrients.

Final regulations also have been issued for the "Labeling of Foods in Relation to Fat, Fatty Acid, and Cholesterol."

A manufacturer may indicate on the label of his product the composition of the fat and/or the amount of cholesterol that are in the product. The use of cholesterol or fat labeling invokes full nutrition labeling. For that reason, fat composition labeling may be conveniently considered together with nutrition labeling. A label illustrating this combination is shown in Figure 2.

NUTRITION INFORMATION
(Per Serving)

Serving Size=3 oz.		Servings per container=5	
Calories	170	Fat (percent of Calories 37%)	7 g
Protein	24 g	Polyunsaturated*	1 g
Carbohydrate	0 g	Saturated	2 g
		Cholesterol* (65 mg/100 g)	55 mg

Percentage of U.S. Recommended Daily Allowances (U.S. RDA)

Protein	50	Riboflavin	4
Vitmin A	0	Niacin	50
Vitamin C	0	Calcium	0
Thiamine	2	Iron	8

*Information on fat and cholesterol content is provided for individuals who, on the advice of a physician, are modifying their total dietary intake of fat and cholesterol.

Figure 2—Tuna, canned in oil, drained

In addition to a statement of the total grams of fat, fat labeling requires a statement of the percent of calories provided by fat. Below this are listed the grams of polyunsaturated fat and grams of saturated fat. Whenever fat or cholesterol labeling is used, it must be accompanied by the statement:

> "Information on fat and cholesterol content is provided for individuals who, on the advice of a physician, are modifying their total dietary intake of fat and cholesterol."

It is permissible to list sodium content without using nutrition labeling. However, sodium content also may appear on a nutrition label. In both cases, it is listed in milligrams per 100 grams, each declared to the nearest multiple of 5 milligrams.

Nutrition labeling also takes into account the quality of protein in the food. Protein quality is commonly described by the expression, "Protein Quality Efficiency Ratio" or "PER." PER is defined as the gain in weight of a young rat divided by the weight of protein consumed during a period of rapid growth, usually of four-weeks duration. A control is run with as nearly identical rats as possible in which casein is the protein. The ratio

for casein containing diet commonly is about 2.5. If it differs from 2.5, both ratios are corrected so that the ratio for casein becomes 2.5 and the other PER is adjusted accordingly. Two adult U.S. RDA values for protein have been set. The U.S. RDA values for adults are listed as 65 grams if the PER of the protein is less than that of casein and 45 grams if the PER is equal to or better than that of casein. This means that when a "better than casein" protein is consumed, less protein is needed for a person to obtain the U.S. RDA value than when a protein with a PER value below casein is consumed. The "better than casein" group would be the traditional high quality proteins from meat, fish, eggs and dairy products. Other protein products such as vegetable proteins and mixtures of cereal and animal proteins would be expected to fit the 65 gram value. The regulation is also written so that protein that has a value less than 20 percent of the PER of casein cannot be counted as contributing protein at all. Generally speaking, the common vegetable proteins sch as those present in soy, lentiles, wheat and the like would have a U.S. RDA of 65 grams. Actually, the penalty is not large and recognizes the large contribution such vegetable sources make to the daily protein supply.

Baby foods have been provided with a unique exemption. Foods prepared and promoted for both infants (0 to 12 months) and older babies (less than 4 years) may show the percentage of the U.S. RDA of protein for infants (0-12 mo.) is 18 grams if the PER is equal to or greater than casein. If the PER value is less than that of casein, the U.S. RDA value is 25 grams. For labeling foods for children under 4 years of age the corresponding U.S. RDA values for protein are 20 and 25 grams.

Another protection on protein quality has been built into the infant (0-12 mo.) U.S. RDA for protein. Total protein with a PER less than 40 percent of the PER in casein may not be stated on the label as contributing any percentage of the U.S. RDA of protein. In addition, the statement "not a significant source of protein for infants," must appear adjacent to the protein content.

One of the major stimuli for establishment of nutrition labeling was consumer groups who desired more information on what is in foods they buy and eat. These groups wanted up-to-date information on nutrient content of each brand and not just representative nutrient values based upon years of survey averages. Consumers emphasized that they were not only interested in learning whether products were appetizing and attractive but wanted to know whether or not food products contained vitamin A, vitamin C or other nutrients.

A standard of identity has been finalized for dietary supplements of vitamins and minerals, under the "Special Dietary Foods" regulations. Upper and lower limits for the vitamin and mineral contents of dietary supplements are specified in terms of U.S. RDA levels. Generally the lower limit is 50% of the U.S. RDA value and the upper limit is 150% of the U.S. RDA of this value for each nutrient. Dietary supplements are

classified as foods but at nutrient levels above 150% of the U.S. RDA they are classified as over-the-counter drugs.

Two exceptions are vitamin A and D that are classed as prescription drugs at 200% and 100% of their respective U.S. RDA values. This distinction is made because of the proven toxicity of these two vitamins at high dosage levels.

The availability of nutrition labeling could lead to a "horsepower race." Several precautions have been established to prevent such undesirable actions. The Food and Drug Administration has issued Nutritional Quality Guidelines for several food product classes. The purpose of a guideline is to prescribe a basic level of nutrient composition for a class of food. When the nutrient composition of a product complies with the prescribed guideline, the product's label may make the statement, "This product provides nutrients in amounts appropriate for this class of food as determined by the U.S. Government." This product shall carry the common or usual name provided for in the guideline, present nutrition labeling on the product, and make no special claim for nutrients that were added to permit the product to meet the prescribed guideline. Any nutrients added, however, are to be included in the ingredient statement and on the "Nutrition Label."

The first of the nutritional quality guidelines to be published was for "Frozen 'heat-and-serve' dinners." To qualify as a dinner, the product must be composed of three parts which include 1) one or more protein sources from meat, poultry, fish, cheese or eggs, 2) one or more vegetables or vegetable mixtures other than potatoes, rice or cereal products, and 3) potatoes, rice or cereal products or another vegetable or vegetable mixture. Other items of food that may be included, such as soup, bread, beverage or dessert are not counted as fulfilling any part of the basic nutrient requirements of the components specified, but must be included in "Nutritional Labeling."

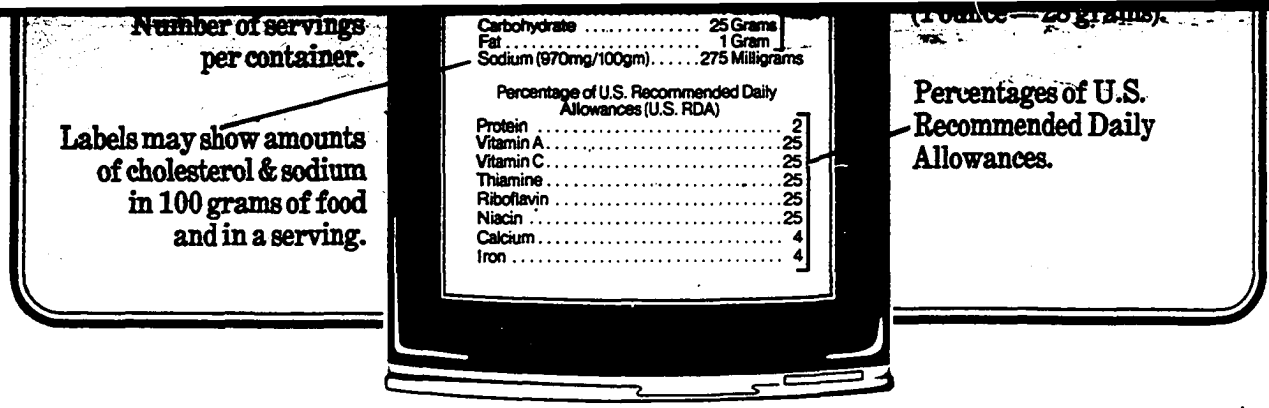
Nutritional quality guidelines have also been prepared for:
Non-carbonated breakfast beverage products,
Fortified hot breakfast cereals, and
Fortified ready-to-eat breakfast cereals.

Further, the Food and Drug Administration has proposed a formal statement of the principles governing the addition of nutrients to foods. This statement (39FR20903-20904, June 14, 1974) provides the rationale for the large number of regulations issued in 1973 and 1974 pertaining to direct labeling of the nutrient contents of foods.

"Nutrition Labeling" resulted from consumer interest in nutrition and has led to an unprecedented opportunity for nutrition education. Nutrition has become of major interest in food marketing as shown by the various approaches used by food manufacturers and distributors. It is vital that these efforts be conservative, correct and coordinated with several operating programs of governmental and academic organizations. It is also essential that these programs be brought up-to-

date with rapidly expanding knowledge and awareness. To that end, the Food and Drug Administration is launching a major effort in consumer education for use of the nutrition label.

Source: H. Neal Dunning, "Nutrition Labeling Status," Association of Food and Drug Officials of the United States, Quarterly Bulletin, Vol. 39 (1975), pp. 43-48.



The upper portion of the label shows you the number of calories in a serving of the food, and lists, in grams, the amount of protein, carbohydrate and fat. These are the three major nutrients that make up all the food we eat.

The lower portion of the label tells you the percentage of United States Recommended Daily Allowance (U.S. RDA) for protein and seven vitamins and minerals provided in one serving. Add percentages for each nutrient consumed throughout the day. When the daily total approaches 100, you are getting an ample supply of that nutrient.

The chart on the opposite side of this brochure shows what the U.S. RDA is for specific nutrients.

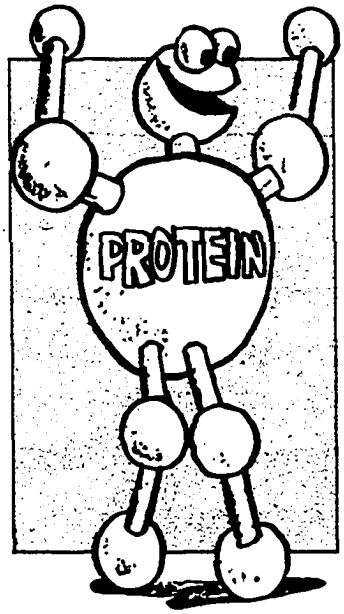
A Well-Balanced Diet

Food provides us with the nutrients we require each day to stay healthy. Since no single food can provide all the nutrients needed, we must eat a variety of foods each day. Nutrition labels tell us what nutrients foods contain. They can help us select the foods we need for a well-balanced diet.

Let's look at the key nutrients to see what they do for your body and foods that supply them.

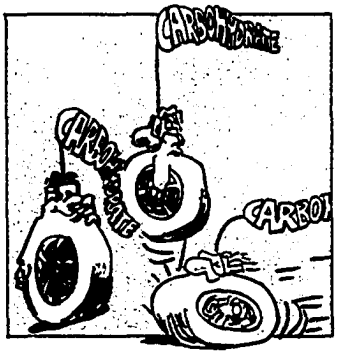
PROTEIN

Function Builds and repairs all body tissues. Supplies energy.
Good Sources Meat, fish, poultry, eggs, milk and cheese. Also dried peas and beans, nuts, and enriched breads and cereals.



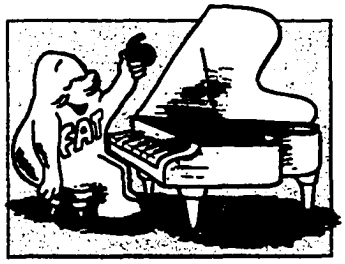
Carbohydrate

Function Supplies energy.
Good Sources Sugar and other sweets. Starches: breads, cereals, rice, pasta, potatoes.



FAT

Function Most concentrated source of energy. Carries vitamins A, D, E and K.
Good Sources Butter, margarine, vegetable oils, salad dressings, meat and dairy fats.

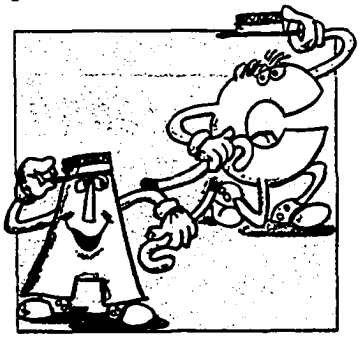


VITAMINS

Vitamin A—Function Promotes normal vision in dim light, and healthy skin and lining tissues. Resistance to infection.
Good Sources Liver, eggs, dark green and yellow vegetables, butter, margarine, milk, peaches and cantaloupe.

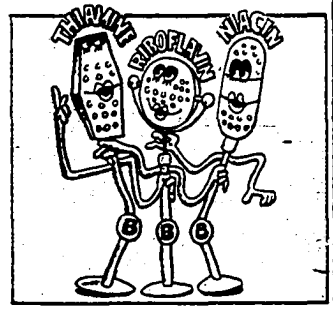
Vitamin D—Function Helps the body build calcium and phosphorus into bones and teeth.
Good Sources Fish liver oils and fortified milk and margarine. Formed in the skin when exposed to sunlight.

Vitamin C or Ascorbic Acid—Function Important for healthy tissues—gums, blood vessels, bones and teeth. Promotes healing.
Good Sources Citrus fruits, strawberries, cantaloupe, broccoli, cabbage, tomatoes, green peppers and potatoes.



Thiamine or Vitamin B_1—Function Promotes normal digestion and helps keep the nervous system healthy.
Good Sources Meat, especially pork and liver, enriched breads and cereals, dried peas and beans.

Riboflavin or Vitamin B_2—Function Helps keep eyes, skin, mouth and the nervous system healthy.
Good Sources Meat, especially liver, milk, and milk products, eggs, green leafy vegetables, enriched breads and cereals.

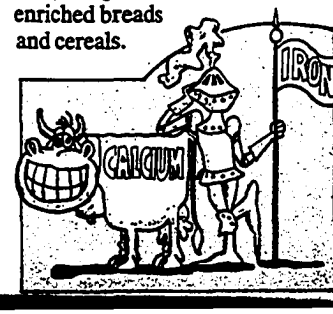


Niacin—Function Helps keep skin, mouth and the nervous system healthy.
Good Sources Liver, fish, meat, enriched breads and cereals, milk, peanuts.

MINERALS

Calcium—Function Builds bones and teeth and helps nerves, muscles and heart function properly. Helps blood clotting.
Good Sources Milk and milk products, salmon, sardines, green leafy vegetables.

Iron—Function Helps build red blood cells.
Good Sources Meats, especially liver, egg yolk, oysters, green leafy vegetables, dried fruits, enriched breads and cereals.



How smart shoppers can use Nutrition Labeling

To serve better meals:

one: Compare labels to select foods that round out the nutrients you need daily. For example, if you need more Vitamin A, compare food labels to find the best sources of this vitamin.

two: Use nutrition labels to help count calories.

three: People on special diets recommended by their physicians can use nutrition labels to help avoid restricted foods.

four: Read labels on new foods to see what nutrients they supply.

To save money:

Yields: 4 (½-cup)* servings
(31¢ ÷ 4 = Cost)
Cost 7.8¢ per serving

Brand X
31¢
16 oz.

Yields: 7 (½-cup)* servings
(49¢ ÷ 7 = Cost)
Cost: 7¢ per serving

Brand Y
49¢
29 oz.

*Note: Serving sizes must be the same for accurate comparison.

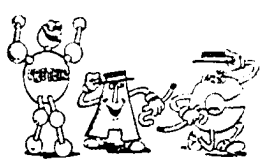
one: Use labels to compare the cost per serving of similar foods *(see illustration).*

two: Read labels to make sure you get the most for your food dollar. For example, compare two frozen pot pies of the same weight. One costs 39 cents, the other 29 cents. But when you read the nutrition label, you may see the pot pie that costs 39 cents provides a higher percentage of the U.S. RDA for protein. So if you are serving the pot pie as a main dish, and protein content is important, the one that costs 39 cents may be a better buy–nutrition-wise.

three: Read labels to find less-costly substitutes for more expensive foods. For instance, you may be surprised to learn that many canned and packaged foods have high amounts of protein at a reasonable price.



U.S. RDA



The U.S. RDAs are the amounts of protein, vitamins and minerals people need each day to stay healthy.

These allowances are set by the Food and Drug Administration. They are based on body needs for most healthy adults.

Set at generous levels, they provide a considerable margin of safety for most people above minimum body needs for most nutrients.

Nutrition labels list U.S. RDAs *by percentage* per serving of food.

For example, if the nutrition label says "Vitamin A-10," that means a serving of the food contains 10 percent of the U.S. RDA for Vitamin A.

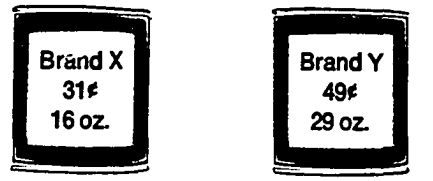
U.S. RDAs replace the outdated "Minimum Daily Requirements" (MDR).

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service, Food and Drug Administration

U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)
For adults and children over 4 years old

NUTRIENTS	AMOUNTS
Protein	45 or 65 grams**
Vitamin A	5,000 International Units
Vitamin C (ascorbic acid)	60 milligrams
Thiamine (vitamin B_1)	1.5 milligrams
Riboflavin (vitamin B_2)	1.7 milligrams
Niacin	20 milligrams
Calcium	1.0 gram
Iron	18 milligrams
Vitamin D	400 International Units
Vitamin E	30 International Units
Vitamin B_6	2.0 milligrams
Folic acid (folacin)	0.4 milligram
Vitamin B_{12}	6 micrograms
Phosphorus	1.0 gram
Iodine	150 micrograms
Magnesium	400 milligrams
Zinc	15 milligrams
Copper	2 milligrams
Biotin	0.3 milligram
Pantothenic acid	10 milligrams

**45 grams if protein quality is equal to or greater than milk protein



*Note: Serving sizes must be the same for accurate comparison.

one: Use labels to compare the cost per serving of similar foods *(see illustration)*.

two: Read labels to make sure you get the most for your food dollar. For example, compare two frozen pot pies of the same weight. One costs 39 cents, the other 29 cents. But when you read the nutrition label, you may see the pot pie that costs 39 cents provides a higher percentage of the U.S. RDA for protein. So if you are serving the pot pie as a main dish, and protein content is important, the one that costs 39 cents may be a better buy—nutrition-wise.

three: Read labels to find less-costly substitutes for more expensive foods. For instance, you may be surprised to learn that many canned and packaged foods have high amounts of protein at a reasonable price.



U.S. RDA



The U.S. RDAs are the amounts of protein, vitamins and minerals people need each day to stay healthy.

These allowances are set by the Food and Drug Administration. They are based on body needs for most healthy adults.

Set at generous levels, they provide a considerable margin of safety for most people above minimum body needs for most nutrients.

Nutrition labels list U.S. RDAs *by percentage* per serving of food.

For example, if the nutrition label says "Vitamin A-10," that means a serving of the food contains 10 percent of the U.S. RDA for Vitamin A.

U.S. RDAs replace the outdated "Minimum Daily Requirements" (MDR).

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service, Food and Drug Administration
5600 Fishers Lane, Rockville, Maryland 20852

DHEW Publication No. (FDA) 75-4001

U.S. RECOMMENDED DAILY ALLOWANCES (U.S. RDA)
For adults and children over 4 years old

NUTRIENTS	AMOUNTS
Protein	45 or 65 grams**
Vitamin A	5,000 International Units
Vitamin C (ascorbic acid)	60 milligrams
Thiamine (vitamin B_1)	1.5 milligrams
Riboflavin (vitamin B_2)	1.7 milligrams
Niacin	20 milligrams
Calcium	1.0 gram
Iron	18 milligrams
Vitamin D	400 International Units
Vitamin E	30 International Units
Vitamin B_6	2.0 milligrams
Folic acid (folacin)	0.4 milligram
Vitamin B_{12}	6 micrograms
Phosphorus	1.0 gram
Iodine	150 micrograms
Magnesium	400 milligrams
Zinc	15 milligrams
Copper	2 milligrams
Biotin	0.3 milligram
Pantothenic acid	10 milligrams

**45 grams if protein quality is equal to or greater than milk protein, 65 grams if protein quality is less than milk protein.

Read the Label, Set a Better Table

A Guide to Nutrition Labeling
From The Food and Drug Administration

Read the Label, Set a Better Table

Mailing Materials

The Christopher Newport College
of The College of William And Mary
in Virginia

February 11, 1976

Dear Mrs.

From February 14 through March 8, 1976 a special consumer research project will begin in Newport News. The project is being conducted by Professor Jon Freiden and his marketing research class on behalf of the Division of Business at the College. Your name was selected strictly at random from the Newport News City Directory for participation in this important study and we urgently need your help. Your cooperation will represent a positive step toward resolving vital consumer issues.

The study will deal mainly with products and advertising. We want to determine your individual reactions to different ideas. In other words, there will be no "right" or "wrong" answers, we just want to know your opinions.

For your convenience you can participate in this research most any time over a three week period at one of the three different Newport News locations. From February 14 through February 24 the research will be conducted at Christopher Newport College, Shoe Lane, (Campus Center Building). From February 25 through March 1 the research will be held at Carver Intermediate School, 6160 Jefferson Avenue. The research will be conducted at Denbigh High School, 259 Denbigh Boulevard, from March 3 through March 8. Please come to whichever location is most convenient for you.

Attached is a schedule outlining the times each research center will be open, many different hours are scheduled so that you can find one that best fits your day. The entire program should take no longer than twenty minutes of your time.

For your added convenience a number of young people will be on hand to attend to your young children if you wish to bring them along. Also, special parking places will be reserved at each location. (Watch for the signs.)

Please keep the attached schedule handy and we will hope to see you sometime between February 14 and March 8. Although we can't afford to pay you for your valuable time, refreshments will be served as a very small token of our appreciation.

Edwin C. Boyd

Edwin C. Boyd
Chairman
Division of Business

P. O. Box 6070
Newport News, Virginia 23606

Area Code 804—596-7611

Appendix C (continued)

TIMES RESEARCH CENTERS WILL BE OPEN

Christopher Newport College (Campus Center Building), Shoe Lane

Feb. 14 (Sat.):	9:00 - 11:00 a.m.	and	2:00 - 5:00 p.m.
Feb. 16 (Mon.):	3:00 - 5:00 p.m.	and	8:00 - 10:00 p.m.
Feb. 17 (Tues):	8:00 - 10:00 a.m.	and	1:00 - 3:00 p.m.
Feb. 18 (Wed.):	9:00 - 11:00 a.m.	and	7:00 - 9:00 p.m.
Feb. 19 (Thurs.):	10:00 - 12:00 noon	and	12:00 - 2:00 p.m.
Feb. 20 (Fri.):	2:00 - 4:00 p.m.	and	7:00 - 9:00 p.m.
Feb. 23 (Mon.):	8:00 - 10:00 a.m.	and	3:00 - 5:00 p.m.
Feb. 24 (Tues.):	10:00 - 12:00 noon	and	8:00 - 10:00 p.m.

Carver Intermediate School (near auditorium), 6160 Jefferson Avenue

Feb. 25 (Wed.):	4:00 - 5:00 p.m.	and	7:00 - 9:00 p.m.
Feb. 26 (Thurs):	10:00 - 12:00 noon	and	3:00 - 5:00 p.m.
Feb. 27 (Fri.):	12:00 - 2:00 p.m.	and	6:00 - 8:00 p.m.
Feb. 28 (Sat.):	9:00 - 12:00 noon	and	2:00 - 5:00 p.m.
Mar. 1 (Mon.):	4:00 - 6:00 p.m.	and	7:00 - 9:00 p.m.

Denbigh High School (near auditorium), 259 Denbigh Boulevard

Mar. 3 (Wed.):	3:00 - 5:00 p.m.	and	6:00 - 8:00 p.m.
Mar. 4 (Thurs.):	9:00 - 11:00 a.m.	and	1:00 - 3:00 p.m.
Mar. 5 (Fri.):	12:00 - 2:00 p.m.	and	7:00 - 9:00 p.m.
Mar. 6 (Sat.):	9:00 - 12:00 noon	and	1:00 - 4:00 p.m.
Mar. 8 (Mon.):	3:00 - 5:00 p.m.	and	6:00 - 8:00 p.m.

Appendix D

Intercept Letter



The Christopher Newport College
of The College of William And Mary
in Virginia

March 19, 1976

Dear Peninsula Shopper:

The project that you have been asked to participate in is strictly for research purposes. The study is being conducted by Professor Jon Freiden and his marketing students. The research, which deals with products and advertising, is designed to explore some important consumer issues. It will take about fifteen minutes of your time to participate. Coffee will be served as a small token of our appreciation.

Thank you for your cooperation.

Edwin C. Boyd

Edwin C. Boyd
Chairman
Division of Business

P. O. Box 6070

Newport News, Virginia 23606

Television Storyboards

JWT

420 LEXINGTON AVENUE
NEW YORK 17

CLIENT: U.S. FOOD AND DRUG ADMINISTRATION
PRODUCT: NUTRITION LABELING CAMPAIGN
TITLE: "DICK VAN DYKE"
CODE NO. : 74-05-30
JO# 987-381-438

DATE: 10/9/74
LENGTH: 30 SECONDS



1. DICK VAN DYKE: Hey folks,



2. now you can learn how to plan better balanced meals without taking a course in nutrition.



3. Simple. Just read the labels on the foods you buy.



4. Thanks to a new government program,



5. the labels will now tell you how many calories, vitamins and minerals,



6. and how much protein, carbohydrate and fat



7. you're getting per serving.



8. And the more you know about what you're eating,



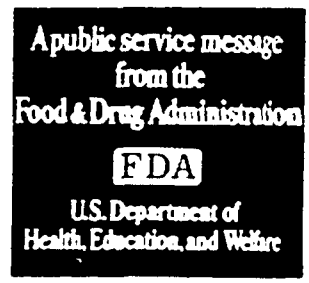
9. the better you'll eat.



10. So take a tip from Dick Van Dyke and the U.S. Food & Drug Administration,



11. read the label, set a better table.



12. (SILENT)

JWT
420 LEXINGTON AVENUE
NEW YORK 17

CLIENT: U.S. FOOD AND DRUG ADMINISTRATION
PRODUCT: NUTRITION LABELING CAMPAIGN
TITLE: "PEARL BAILEY"
CODE NO.: 74-07-30
JO# 987-381-438

DATE: 10/9/74
LENGTH: 30 SECONDS



1. PEARL BAILEY: Oh, hello, I'm Pearl.



2. I'm here to tell you about a real important program



3. to help you get better food value for your money.



4. It's called Nutrition Labeling,



5. and you can read about it on a whole lotta packages now at your supermarket.



6. This label tells you, per serving, how many calories you get,



7. what amount of vitamins and minerals,



8. how much protein, carbohydrates, and fats.



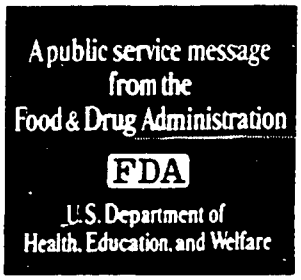
9. Sweetheart, it's a whole book.



10. Just read the label.



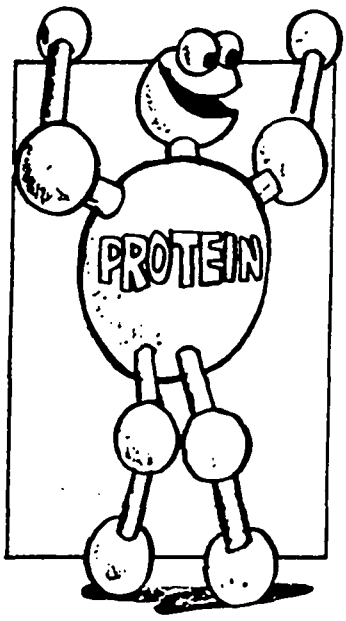
11. You'll set a better table.

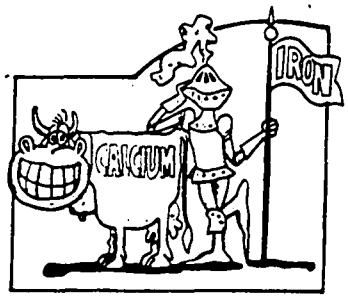


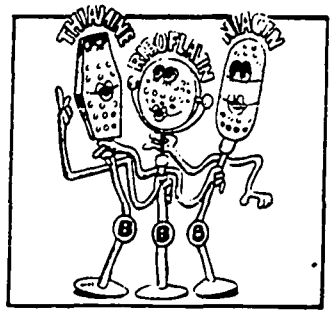
12. Look here, honey. Protein, vitamins ...

Simulated Newspaper Advertisements

NUTRITION LABELING LETS YOU IN ON WHAT'S INSIDE







Now ... nutrition labeling takes the guesswork out of food buying! Many packaged foods now show on the labels how many servings are in the container — how many calories, how much protein, carbohydrate and fat are in each serving — and the percentage of U.S. Recommended Daily Allowances of protein and seven vitamins and minerals! Start using the nutrition labels to get better nutrition value for your money. "Read the label — set a better table."

FDA

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

We want you to know .....



about nutrition labels on food

Something new is being added to food labels — nutrition information. Now, the labels of many foods will tell you how many calories are in a serving and also how much protein, fat, carbohydrate, and the percentage of U.S. Recommended Daily Allowances (U.S.RDA) of important vitamins and minerals. Nutrition information can help you plan better meals for you and your family, and also help your get better value for your money.

FDA

Food and Drug Administration
5600 Fishers Lane
Rockville, Md 20852

Read the Label,



Read the Label, Set a Better Table

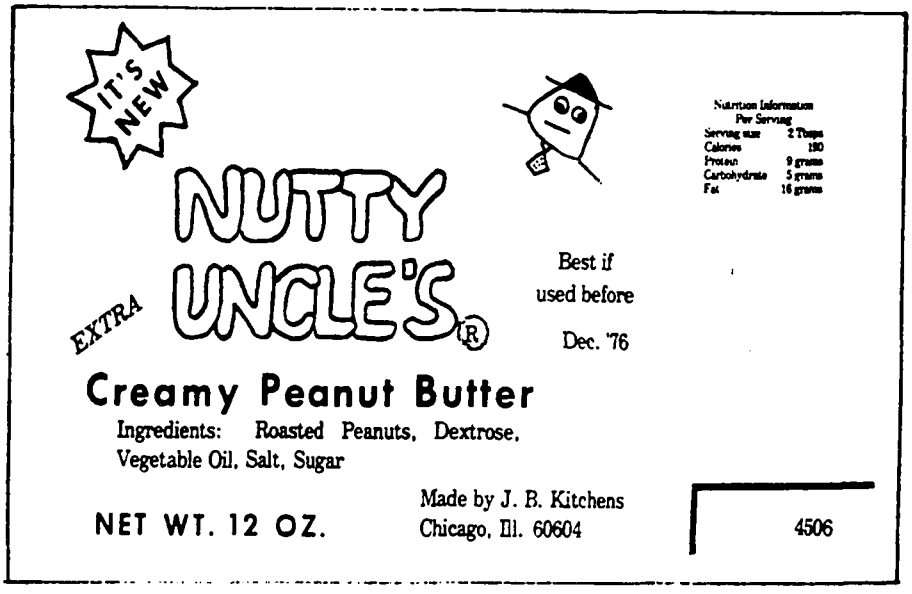
Hi, there.
This is your good friend, Pearl Bailey,
with some good news about eating right.
No one knows better than me how important that is.
Next time you go to the supermarket,
look at all those food boxes and cans.
A lot of them have nutrition labels now,
with information to help you
get better food value for your money.
The lables show, per serving,
how many calories you get, what amount of
vitamins and minerals.

They tell you how much protein you get —
keeps you strong.
How much carbohydrate — that's pep and energy.
And how much fat — goodness knows,
everybody needs some fat.
So ... just read your label, honey. You'll set a
better table.

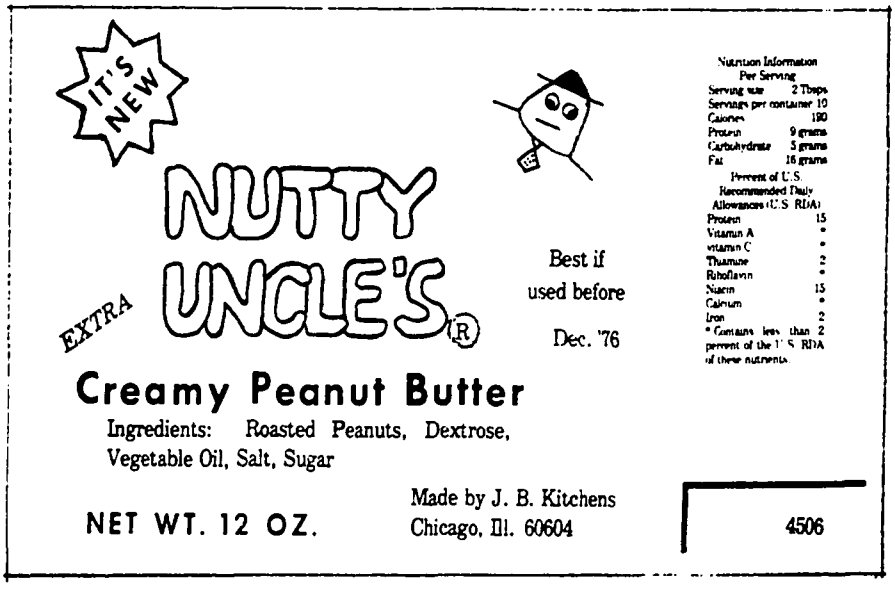
FDA

Product Label Treatments

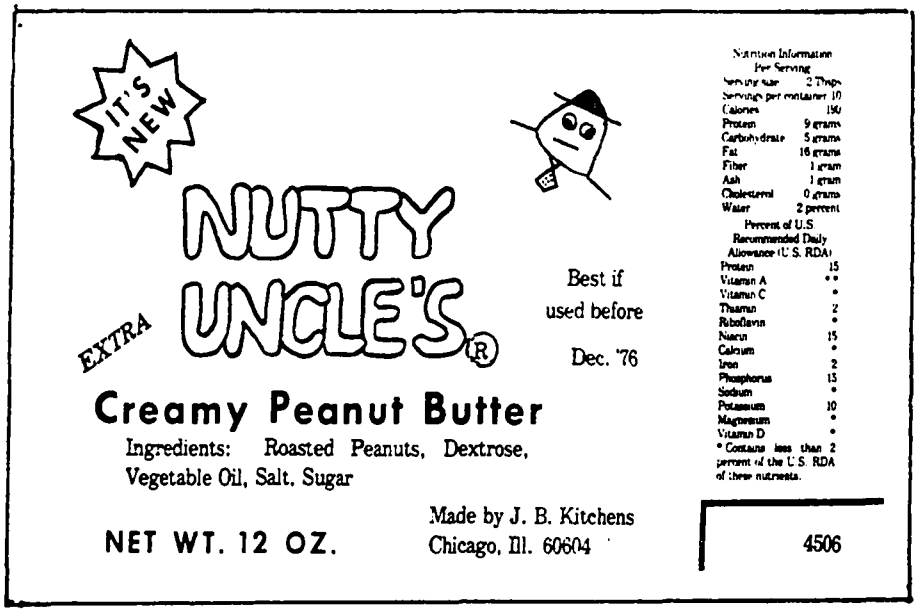
Low Level



Medium Level



High Level



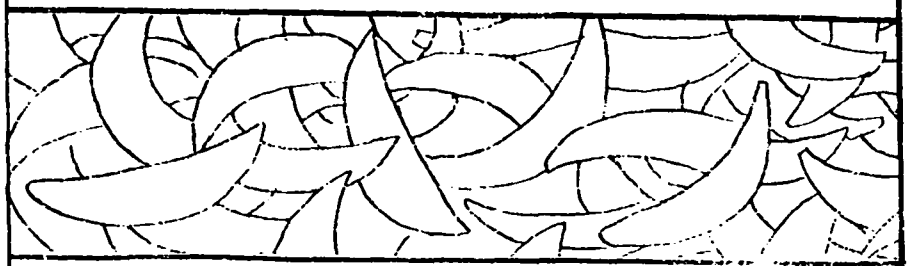
IT'S NEW

Peachtree®

yellow cling

Sliced Peaches

heavy syrup



NET WT. 16 OZ. (1 LB.)

Ingredients: Cling Peaches, Water, Sugar, Corn Sweetner

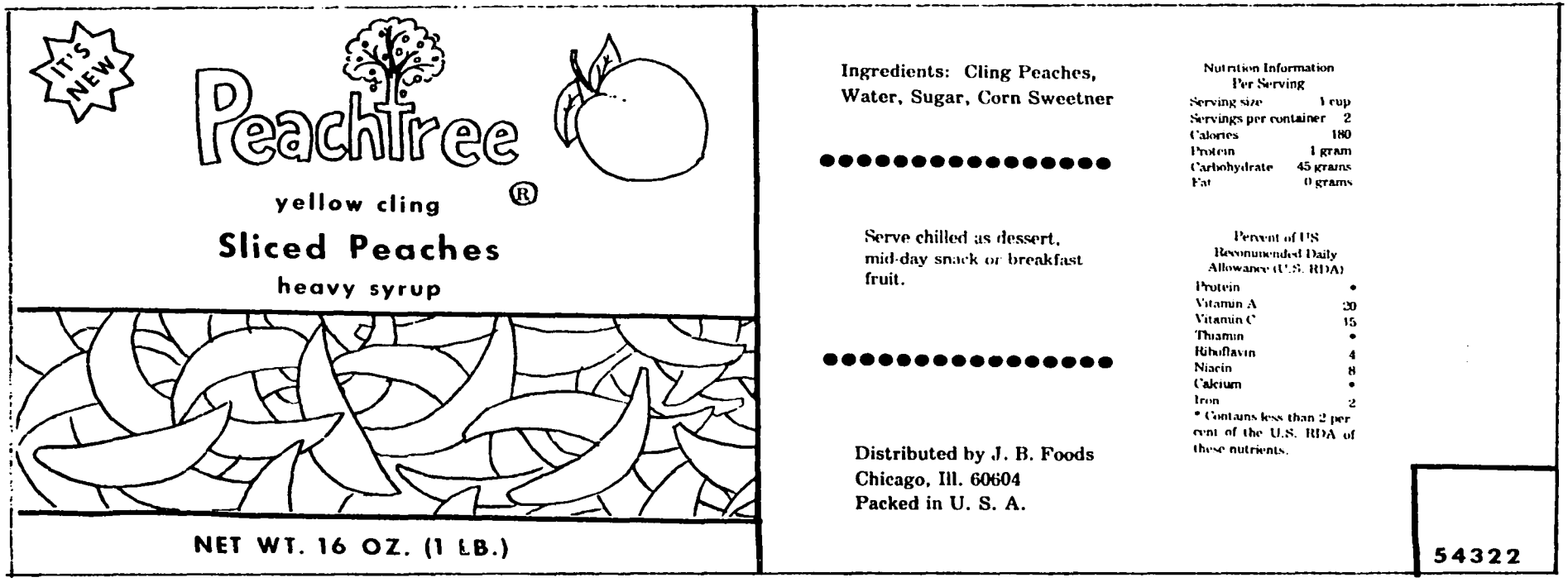
Nutrition Information Per Serving

Serving size	1 cup
Calories	180
Protein	1 gram
Carbohydrate	45 grams
Fat	0 grams

Serve chilled as dessert, mid-day snack or breakfast fruit.

Distributed by J. B. Foods
Chicago, Ill. 60604
Packed in U. S. A

54322


IT'S NEW
Peachtree
®
yellow cling
Sliced Peaches
heavy syrup
NET WT. 16 OZ. (1 LB.)
Ingredients: Cling Peaches, Water, Sugar, Corn Sweetner
Serve chilled as dessert, mid-day snack or breakfast fruit.
Distributed by J. B. Foods
Chicago, Ill. 60604
Packed in U. S. A.
Nutrition Information Per Serving
Serving size 1 cup
Servings per container 2
Calories 180
Protein 1 gram
Carbohydrate 45 grams
Fat 0 grams
Percent of US Recommended Daily Allowance (U.S. RDA)
Protein *
Vitamin A 30
Vitamin C 15
Thiamin *
Riboflavin 4
Niacin 8
Calcium *
Iron 2
* Contains less than 2 per cent of the U.S. RDA of these nutrients.
54322

IT'S NEW

Peachtree®

yellow cling

Sliced Peaches

heavy syrup



NET WT. 16 OZ. (1 LB.)

Ingredients: Cling Peaches, Water, Sugar, Corn Sweetner

Serve chilled as dessert, mid-day snack or breakfast fruit.

Distributed by J. B. Foods
Chicago, Ill. 60604
Packed in U. S. A.

Nutrition Information
Per Serving

Serving size	1 cup
Serving per container	2
Calories	180
Protein	1 gram
Carbohydrate	45 grams
Fat	0 grams
Fiber	1 gram
Ash	1 gram
Cholesterol	0 grams
Water	79 percent

Percent of U.S. Recommended Daily Allowance (U.S. RDA)

Protein	*
Vitamin A	20
Vitamin C	15
Thiamin	*
Riboflavin	4
Niacin	8
Calcium	*
Iron	2
Phosphorus	3
Sodium	*
Potassium	10
Magnesium	*
Vitamin D	*

* Contains less than 2 percent of the U.S. RDA of these nutrients.

54322

Price

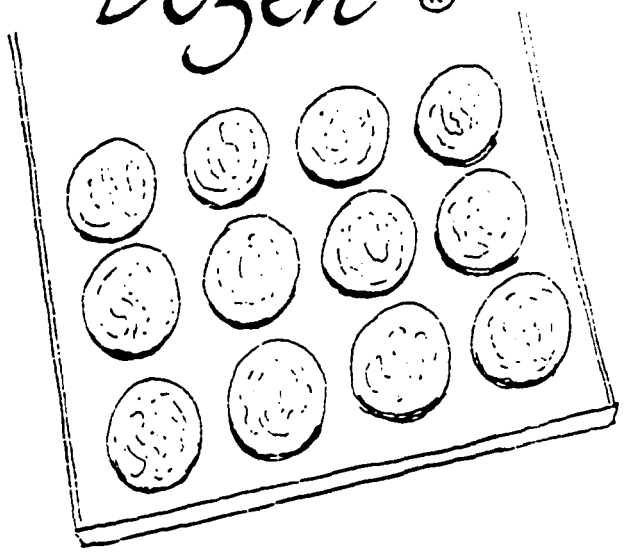
Baker's Dozen ®

VANILLA WAFERS

easy open/close box

IT'S NEW

Baker's Dozen ®



Baker's Dozen ®

Nutrition Information
Per Serving

Serving size	3 wafers
Calories	51
Protein	1 gram
Carbohydrate	8 grams
Fat	2 grams

VANILLA WAFERS

fresh....

light....

and golden brown

From the Kitchens of J. B. Foods Corp.
Chicago, Ill. 60604

NET WT. 7¼ OZ.

Ingredients: Enriched Wheat flour, rye flour, shortening, whey solids, eggs, butter, emulsifier, salt, leavening, vanillia, artificial flavor

Price

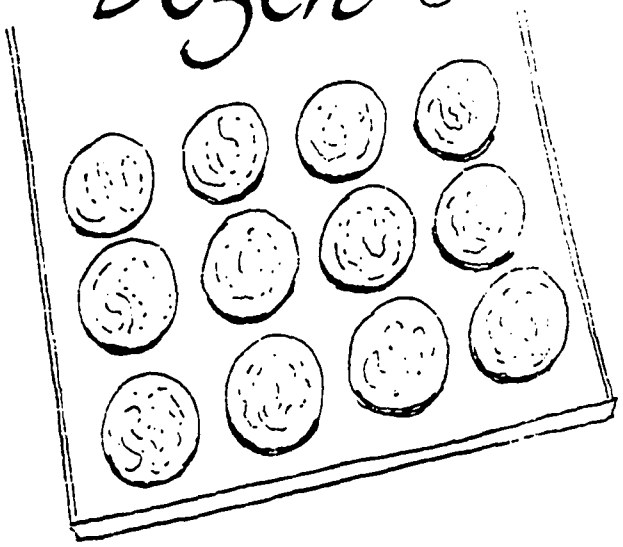
Baker's Dozen®

VANILLA WAFERS

easy open/close box

IT'S NEW

Baker's Dozen®



Baker's Dozen®

Nutrition Information
Per Serving

Serving size	3 wafers
Serving per container	20
Calories	51
Protein	1 gram
Carbohydrate	8 grams
Fat	2 grams

Percent of U.S. Recommended Daily Allowance (U.S. RDA)

Protein	2
Vitamin A	*
Vitamin C	*
Thiamin	*
Riboflavin	*
Niacin	*
Calcium	*
Iron	*

VANILLA WAFERS

fresh....

light....

and golden brown

From the Kitchens of J. B. Foods Corp.
Chicago, Ill. 60604

NET WT. 7¼ OZ.

Ingredients: Enriched Wheat flour, rye flour, shortening, whey solids, eggs, butter, emulsifier, salt, leavening, vanillia, artificial flavor

Price

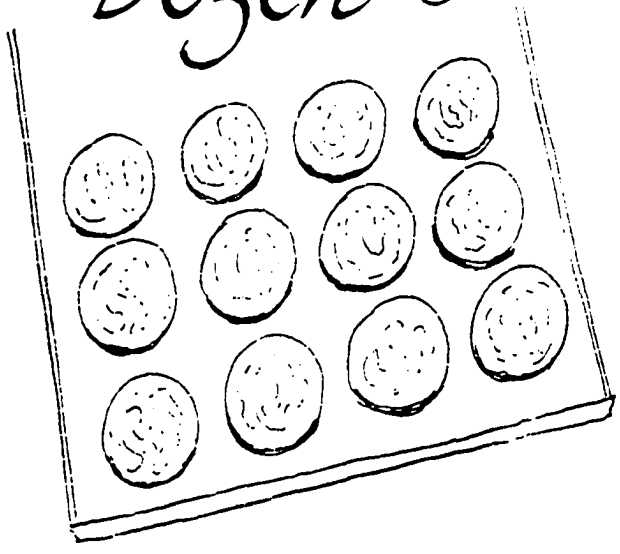
Baker's Dozen ®

VANILLA WAFERS

easy open/close box

IT'S NEW

Baker's Dozen ®



VANILLA WAFERS

fresh....

light....

and golden brown

From the Kitchens of J. B. Foods Corp.
Chicago, Ill. 60604

NET WT. 7¼ OZ.

Baker's Dozen ®

Nutrition Information
Per Serving

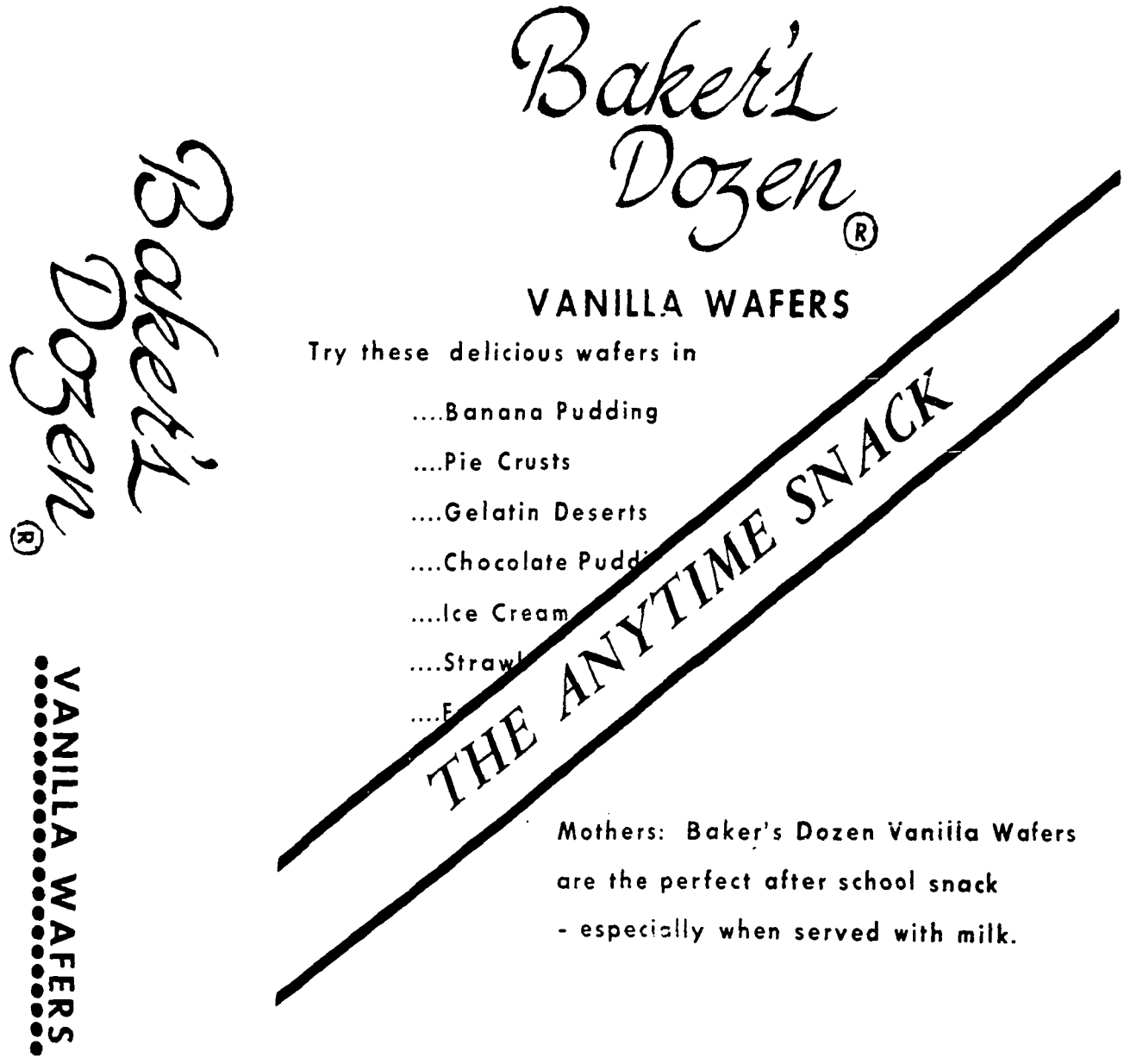
Serving size	3 wafers
Servings per container	20
Calories	51
Protein	1 gram
Carbohydrate	8 grams
Fat	2 grams
Fiber	0 grams
Ash	1 gram
Cholesterol	0 grams
Water	3 percent

Percent of U.S. Recommended Daily Allowance (U.S. RDA)	
Protein	2
Vitamin A	*
Vitamin C	*
Thiamin	*
Riboflavin	*
Niacin	*
Calcium	*
Iron	*
Phosphorus	2
Sodium	*
Potassium	*
Magnesium	*
Vitamin D	*

* Contains less than 2 percent of the U.S. RDA of these nutrients.

Ingredients: Enriched Wheat flour, rye flour, shortening, whey solids, eggs, butter, emulsifier, salt, leavening, vanillia, artificial flavor

Back Panel



Satisfaction Always Guaranteed by J. B. Foods Corp.

Appendix H

ADVERTISING QUESTIONAIRE I

The following questions pertain to the series of ads you just saw. There are no right or wrong answers; we would just like to know your opinion.

1. Which one of the ads you just saw do you think was the most appealing?

_____

1a. What was it that made that ad appealing to you? _____

_____

_____

1b. What feature of the ad do you remember the best? _____

_____

_____

2. Have you seen any of the ads before?

___ No
___ Yes - Which ad(s) have you seen before? _____

_____

_____

_____

Appendix H (continued)

ADVERTISING QUESTIONAIRE II

The following questions pertain only to the series of ads you just saw. They do not pertain to the first set of ads you saw. Again, it's your opinion we want.

1. Which one of the ads you just saw do you think was the most unbelievable?

_____

1a. What was it that made that ad seem unbelievable to you? _____

_____

_____

1b. How would you describe the type of person who would read that ad? _____

_____

_____

2. Do you presently use any of the products or services shown in the ads?

___ No
___ Yes - Which one(s) do you presently use? _____

_____

_____

3. Have you seen any of the ads before?

___ No
___ Yes - Which ad(s) have you seen before? _____

_____

_____

_____

Appendix H (continued)

ADVERTISING QUESTIONAIRE III

The following questions pertain only to the series of ads you just saw. They do not pertain to the first or second set of ads you saw. Please give us your opinion.

1. Which one of the ads you just saw do you think would be read most often by adult men?

_____

2. Which one of the ads do you think would be read least often by adult men?

_____

3. How many ads do you recall seeing in the last set of ads?

___ 1	___ 6	___ 11
___ 2	___ 7	___ 12
___ 3	___ 8	___ 13
___ 4	___ 9	___ 14
___ 5	___ 10	___ 15

4. Have you seen any of the ads before?

___ No
___ Yes - Which ad(s) have you seen before? _____

_____

_____

Appendix I

Product Questionnaire

Now that you have briefly examined the product, please answer the following questions as best you can. There are no right or wrong answers. We would like to know your individual opinions. Please feel free to ask the assistant for help if you don't understand any of the questions.

1. What is your overall reaction to the product you have just seen? (Check the statement which best fits your opinion.)

__ I am extremely positive toward it.
__ I am very positive toward it.
__ I am slightly positive toward it.
__ I am neutral toward it.
__ I am slightly negative toward it.
__ I am very negative toward it.
__ I am extremely negative toward it.

2. What do you think you would like most about the product?

_____

_____

3. What do you think you would like least about the product?

_____

_____

4. To what extent do you think this product is like other products of its kind that are currently on the market?

__ It is just like other products available.
__ It is somewhat like other products available.
__ It is quite different from other products available.
__ It is totally different from other products available.

Please rate the product you have just seen in terms of the following characteristics. (On some of the characteristics you may have to use your imagination as to what you think the product would be like if you had actually tried it.)

To rate the product we will use a scale from +3 to -3. If you feel extremely positive toward the product on a certain characteristic you would circle +3. If you feel very positive toward the product on a certain characteristic circle +2. If you feel slightly positive, circle +1. On the other hand, if you feel extremely negative toward the product you would circle -3 and so on. (-2 means very negative and -1 means slightly negative) A circle around 0 would mean that you are neutral and have no feelings one way or the other.

5. What is your opinion of the product's name ?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

__ I am very positive toward it.
__ I am slightly positive toward it.
__ I am neutral toward it.
__ I am slightly negative toward it.
__ I am very negative toward it.
__ I am extremely negative toward it.

2. What do you think you would like most about the product?

_____

_____

3. What do you think you would like least about the product?

_____

_____

4. To what extent do you think this product is like other products of its kind that are currently on the market?

__ It is just like other products available.
__ It is somewhat like other products available.
__ It is quite different from other products available.
__ It is totally different from other products available.

Please rate the product you have just seen in terms of the following characteristics. (On some of the characteristics you may have to use your imagination as to what you think the product would be like if you had actually tried it.)

To rate the product we will use a scale from +3 to -3. If you feel extremely positive toward the product on a certain characteristic you would circle +3. If you feel very positive toward the product on a certain characteristic circle +2. If you feel slightly positive, circle +1. On the other hand, if you feel extremely negative toward the product you would circle -3 and so on. (-2 means very negative and -1 means slightly negative) A circle around 0 would mean that you are neutral and have no feelings one way or the other.

5. What is your opinion of the product's name ?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

6. What is your opinion of the appearance of the product?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

7. What is your opinion of the size of the package?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

8. What is your opinion of the product's nutritional value?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

9. What is your opinion of the convenience of the product?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

10. What is your opinion of the product's taste? (Use your imagination)

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

11. What is your opinion of the product's quality?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

12. What is your opinion of its value for the money?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

13. What is your opinion of the package colors?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

Now just a few more questions about the product you examined.

14. Who in your family would you serve this product to? (Check as many as would apply in your opinion.)

__ Children 0-2 years old
__ Children 3-5 years old
__ Children 6-12 years old
__ Teenagers
__ Adult women
__ Adult men

15. What time(s) of day would you normally serve this product? (Check as many as would apply in your opinion.)

__ Breakfast
__ Morning Snack
__ Lunch
__ Afternoon Snack
__ Supper
__ Evening Snack

16. Taking into account everything, what do you think would be the chances that you would buy this product if it were available in your grocery store?

__ Absolutely certain I would buy (10 in 10 chances)
__ Almost sure I would buy (9 in 10 chances)
__ Very probable I would buy (8 in 10 chances)

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

12. What is your opinion of its value for the money?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

13. What is your opinion of the package colors?

+3	+2	+1	0	-1	-2	-3
Extremely Positive	Very Positive	Slightly Positive	Neutral	Slightly Negative	Very Negative	Extremely Negative

Now just a few more questions about the product you examined.

14. Who in your family would you serve this product to? (Check as many as would apply in your opinion.)

__ Children 0-2 years old
__ Children 3-5 years old
__ Children 6-12 years old
__ Teenagers
__ Adult women
__ Adult men

15. What time(s) of day would you normally serve this product? (Check as many as would apply in your opinion.)

__ Breakfast
__ Morning Snack
__ Lunch
__ Afternoon Snack
__ Supper
__ Evening Snack

16. Taking into account everything, what do you think would be the chances that you would buy this product if it were available in your grocery store?

__ Absolutely certain I would buy (10 in 10 chances)
__ Almost sure I would buy (9 in 10 chances)
__ Very probable I would buy (8 in 10 chances)
__ Probably I would buy (7 in 10 chances)
__ Good Possibility I would buy (6 in 10 chances)
__ Fairly good possibility I would buy (5 in 10 chances)
__ Fair possibility I would buy (4 in 10 chances)
__ Some possibility I would buy (3 in 10 chances)
__ Slight possibility I would buy (2 in 10 chances)
__ Very slight possibility (1 in 10 chances)
__ No chance I would buy (0 in 10 chances)

A few moments ago you rated the product on nine characteristics. Now we would like to know, in general, how important each characteristic is to you personally when you choose food products. To do this we will use a very similar +3 to -3 scale. If a certain characteristic is extremely important to you when you choose a food product you would circle +3. For an extremely unimportant characteristic you would circle -3 and so on.

17. How important is the name to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

18. How important is the appearance to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

19. How important is the size of the package to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

20. How important is the nutritional value to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

21. How important is the convenience to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

22. How important is the taste to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

23. How important is the quality to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

24. How important is the value for the money to you when you choose food products?

circle +3. For an extremely unimportant characteristic you would circle -3 and so on.

17. How important is the name to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

18. How important is the appearance to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

19. How important is the size of the package to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

20. How important is the nutritional value to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

21. How important is the convenience to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

22. How important is the taste to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

23. How important is the quality to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

24. How important is the value for the money to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

25. How important is the package color to you when you choose food products?

+3	+2	+1	0	-1	-2	-3
Extremely Important	Very Important	Slightly Important	Neutral	Slightly Unimportant	Very Unimportant	Extremely Unimportant

Following are 12 miscellaneous statements. Please indicate the degree to which you agree or disagree with each statement. If you agree very strongly circle +3, if you agree strongly circle +2, if you agree circle +1. On the other hand, if you disagree very strongly circle -3, if you disagree strongly circle -2, if you disagree circle -1. A circle around 0 means you have no opinion one way or the other.

26. I am usually the first in my crowd to try a new product.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

27. I enjoy entertaining in my home.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

28. I always strive to prepare well balanced meals.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

29. I enjoy doing things with children.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

30. I welcome new convenient prepared foods.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

31. I carefully shop around for the best buy.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

32. Food products are less nutritious today than they used to be.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

33. I think the world is moving too fast.

+3	+2	+1	0	-1	-2	-3

Very Strongly	Strongly		Opinion		Strongly	Very Strongly

27. I enjoy entertaining in my home.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

28. I always strive to prepare well balanced meals.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

29. I enjoy doing things with children.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

30. I welcome new convenient prepared foods.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

31. I carefully shop around for the best buy.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

32. Food products are less nutritious today than they used to be.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

33. I think the world is moving too fast.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

34. Natural foods are worth the extra money you pay for them.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

35. A woman's place is in the home.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

36. I like to spend time alone.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

37. I love to cook.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

These final questions are about you and are used only for the purpose of analysis. All information is used only for this research and will never be revealed to anyone.

38. Do you have any children living at home?

__ No
__ Yes - What age(s) are they? ____ ____ ____ ____ ____ ____ ____

39. What was the last grade of school you completed?

__ Some grade school
__ Completed grade school
__ Some high school
__ Completed high school
__ Some college
__ Completed college
__ Attended graduate school

40. Are you presently employed?

__ No
__ Yes - What is your occupation? _____

41. Are you married?

__ No
__ Yes - If yes, what was the last grade of school your husband completed?

__ Some grade school
__ Completed grade school
__ Some high school
__ Completed high school
__ Some college
Completed high school

Strongly Strongly

37. I love to cook.

+3	+2	+1	0	-1	-2	-3
Agree Very Strongly	Agree Strongly	Agree	No Opinion	Disagree	Disagree Strongly	Disagree Very Strongly

These final questions are about you and are used only for the purpose of analysis. All information is used only for this research and will never be revealed to anyone.

38. Do you have any children living at home?

__ No
__ Yes - What age(s) are they? ___ ___ ___ ___ ___ ___ ___

39. What was the last grade of school you completed?

__ Some grade school
__ Completed grade school
__ Some high school
__ Completed high school
__ Some college
__ Completed college
__ Attended graduate school

40. Are you presently employed?

__ No
__ Yes - What is your occupation? _____

41. Are you married?

__ No
__ Yes - If yes, what was the last grade of school your husband completed?

__ Some grade school
__ Completed grade school
__ Some high school
__ Completed high school
__ Some college
__ Completed high school
__ Attended graduate school

Is your husband presently employed?

__ No
__ Yes - What is his occupation? _____

42. Roughly speaking, in which catagory below would your total household income fall?

__ Under $5,000
__ $5,000 to $9,999
__ $10,000 to $14,999
__ $15,000 to $19,999
__ $20,000 to $24,999
__ Over $25,000

43. In which catagory below does your age fall?

__ 15-19 years old
__ 20-25 years old
__ 26-29 years old
__ 30-39 years old
__ 40-49 years old
__ 50-59 years old
__ 60 years old or older

44. How often do you purchase peanut butter at your grocery store?

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

45. In general, how would you describe your overall attitude toward peanut butter?

__ I am extremely positive toward it.
__ I am very positive toward it.
__ I am slightly positive toward it.
__ I am neutral toward it.
__ I am slightly negative toward it.
__ I am very negative toward it.
__ I am extremely negative toward it.

46. How often do you purchase canned peaches at your grocery store?

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

47. In general, how would you describe your overall attitude toward canned peaches?

__ I am extremely positive toward them.
__ I am very positive toward them.
__ I am slightly positive toward them.
__ I am neutral toward them.
__ I am slightly negative toward them.
__ I am very negative toward them.
__ I am extremely negative toward them.

48. How often do you purchase vanilla wafer cookies at your grocery store?

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

45. In general, how would you describe your overall attitude toward peanut butter?

__ I am extremely positive toward it.
__ I am very positive toward it.
__ I am slightly positive toward it.
__ I am neutral toward it.
__ I am slightly negative toward it.
__ I am very negative toward it.
__ I am extremely negative toward it.

46. How often do you purchase canned peaches at your grocery store?

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

47. In general, how would you describe your overall attitude toward canned peaches?

__ I am extremely positive toward them.
__ I am very positive toward them.
__ I am slightly positive toward them.
__ I am neutral toward them.
__ I am slightly negative toward them.
__ I am very negative toward them.
__ I am extremely negative toward them.

48. How often do you purchase vanilla wafer cookies at your grocery store?

__ Usually every week
__ Usually every other week
__ Usually once a month
__ Usually every other month
__ Only occasionally (3 or 4 times a year)
__ Rarely (once or twice a year)
__ Never

49. In general, how would you describe your overall attitude toward vanilla wafer cookies?

__ I am extremely positive toward them.
__ I am very positive toward them.
__ I am slightly positive toward them.
__ I am neutral toward them.
__ I am slightly negative toward them.
__ I am very negative toward them.
__ I am extremely negative toward them.

THANK YOU FOR YOUR CO-OPERATION IN THIS IMPORTANT RESEARCH.

BIBLIOGRAPHY

Books

Aaker, David A. and Day, George S. eds. Consumerism: Search for the Consumer Interest. New York: The Free Press, 1974.

Boyd, Harper W. and Westfall, Ralph. Marketing Research. Homewood, Ill.: Richard D. Irwin, Inc., 1964.

Church, Charles F. and Church, Helen N. Food Values of Portions Commonly Used. New York: J. P. Lippincott Co., 1976.

Churchill, Gilbert A. Marketing Research: Methodological Foundations. Hinsdale, Ill.: The Dryden Press, 1976.

Cox, Keith K. and Enis, Ben M. The Marketing Research Process. Pacific Palisades, Calif.: Goodyear Publishing Co., 1972.

Enis, Ben M. Marketing Principles. Pacific Palisades, Calif.: Goodyear Publishing Co., 1974.

Green, Paul E. and Tull, Donald S. Research for Marketing Decisions, Third Edition. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1975.

Gwiner, Robert F.; Brown, S. W.; Hagan, A. J.; Ostrom, L. L.; Rowe, K. L.: Schlacter, J. L.: Schmidt, A. H.: and Shrock, D. L. Marketing. New York: West Publishing Co., 1977.

Hughes, G. David and Ray, Michael L. eds. Buyer/Consumer Information Processing. Chapel Hill, N. C.: The University of North Carolina Press, 1974.

Kahneman, Daniel. Attention and Effort. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1973.

Kerlinger, Fred N. Foundations of Behavioral Research, Second Edition. New York: Holt, Rinehart and Winston, Inc., 1973.

Kerr, John R. and Littlefield, James E. Marketing: An Environmental Approach. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1974.

Kirk, Roger E. Experimental Design: Procedures for the Behavioral Sciences. Belmont, Calif.: Brooks/Cole Publishing Co., 1969.

Kotler, Philip. Marketing Management, Third Edition. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1976.

Luck, David J.; Wales, Hugh G.; and Taylor, Donald A. Marketing Research, Fourth Edition. Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1974.

Marcus, Burton H. Modern Marketing. New York: Random House, 1975.

McCarthy, E. Jerome. Basic Marketing: A Managerial Approach, Fifth Edition. Homewood, Ill.: Richard D. Irwin, Inc., 1975.

Neter, John and Wasserman, William. Applied Linear Statistical Models. Homewood, Ill.: Richard D. Irwin, Inc., 1974.

Schoner, Bertram and Uhl, Kenneth P. Marketing Research, Second Edition. New York: John Wiley & Sons, Inc., 1975.

Selltiz, Claire; Jahoda, Marie; Deutsch, Morton; and Cook, Stewart W. Research Methods in Social Relations, Revised Edition. New York: Holt, Rinehart and Winston, 1959.

The American Heritage Dictionary of the English Language. New York: Houghton Mifflin Co., 1970.

Tull, Donald S. and Albaum, Gerald S. Survey Research. New York: Intext Educational Publishers, 1973.

_____.and Hawkins, Del I. Marketing Research. New York: MacMillan Publishing Co., Inc., 1976.

Walters, C. Glenn. Consumer Behavior. Homewood, Ill.: Richard D. Irwin, Inc., 1974.

Watt, Bernice K. and Merrill, Annabel L. Composition of Foods: Agriculture Handbook No. 8, Revised Edition. Washington: Agriculture Research Services of the U.S. Department of Agriculture, 1963.

Webster's Seventh New Collegiate Dictionary. Springfield, Mass.: G. and C. Merriam Co., 1972.

Winer, B. J. Statistical Principles in Experimental Design. New York: McGraw-Hill Book Co., 1962.

_____. Statistical Principles in Experimental Design, Second Edition. New York: McGraw-Hill Book Co., 1971.

Zaltman, Gerald and Burger, Philip C. Marketing Research: Fundamentals and Dynamics. Hinsdale, Ill.: The Dryden Press, 1975.

1970 Consus of Population, Volume 1, Characteristics of the Population. Washington: U.S. Department of Commerce, Social and Economic Statistics Administration, Bureau of the Census, 1973.

1975 Newport News City Directory. Richmond, Va.: Hill Directory Co., 1975.

Periodicals and Newspapers

Anderson, Norman H. "Scales and Statistics: Parametric and Nonparametric." Psychological Bulletin 58 (December 1961): 305-316.

Asam, Edward H. and Bucklin, Louis P. "Nutrition Labeling for Canned Goods: A Study of Consumer Response." Journal of Marketing 37 (April 1973): 32-37.

Beloian, Arletta. "Nutrition Labels: A Great Leap Forward." FDA Consumer, September 1973.

Bettman, James R. "Issues in Designing Consumer Information Environments." Journal of Consumer Research 2 (December 1975): 169-177.

Day, George S. "Assessing the Effects of Information Disclosure Requirements." Journal of Marketing 40 (April 1976): 42-52.

_____.and Brandt, William K. "Consumer Research and the Evaluation of Information Disclosure Requirements: The Case of Truth-in-Lending." Journal of Consumer Research 1 (June 1974): 21-32.

"Del Monte Living with New Labeling Rules." Business Week, February 3, 1973, p. 42.

Dunning, Neal H. "What Do Consumers Know About Nutrition?" FDA Consumer, June 1974.

_____. "Nutritional Labeling Status." Quarterly Bulletin 39 (1975): 43-48.

"FTC Won't Kill Food Ad Rule Proposal." Advertising Age, June 7, 1976, p. 1.

"FDA Picks JWT, Kaufman for Labeling, Drug Ad Campaign." Advertising Age, October 1, 1973, p. 70.

French, Warren A. and Barksdale, Hiram C. "Food Labeling Regulations: Efforts Toward Full Disclosure." Journal of Marketing 38 (July 1974): 14-19.

_____.and Schroeder, Leila O. "Packaging Information Legislation: Trends and Viewpoints." MSU Business Topics (Summer 1972): 39-44.

Fusillo, Alice. "Food Shoppers' Beliefs: Myths and Realities." FDA Consumer, October 1974.

Gensch, Dennis H. "Media Factors: A Review Article." Journal of Marketing Research 7 (May 1970): 216-225.

Gruber, Alin. "Purchase Intent and Purchase Probability." Journal of Advertising Research 10 (January 1970): 23-27.

"High Court Denies Cigaret Makers' Bid for Fines Protection." Advertising Age, June 7, 1976, p. 6.

Jacoby, Jacob; Speller, Donald E.; and Kohn, Carol A. "Brand Choice Behavior as a Function of Information Load." Journal of Marketing Research 11 (February 1974): 63-69.

_____; Speller, Donald E.; and Berning, Carol K. "Brand Choice Behavior as a Function of Information Load: Replication and Extension." Journal of Consumer Research 1 (June 1974): 33-42.

Kilbourne, William E. "A Factorial Experiment on the Impact of Unit Pricing on Low Income Consumers." Journal of Marketing Research 11 (November 1974): 453-55.

Klinger, Lawrence E. "Update of Nutrient Labeling: Consumer Awareness, Use, and Attitudes." Food Product Development, June 1974, pp. 30-40.

"Legal Developments in Marketing." Journal of Marketing 40 (October 1976): 109-21.

Lenahan, R. J.; Thomas, J. A.; Taylor, D. A.; Call, D. L.; and Padberg, D. I. "Consumer Reaction to Nutrition Information on Food Product Labels." Search-Agriculture 2 (September 1972): 1-27.

Miller, George A. "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information." The Psychological Review 63 (March 1956): 81-97.

_____; Topel, David G.; and Rust, Robert E. "USDA Beef Grading: A Failure in Consumer Information?" Journal of Marketing 40 (January 1976): 25-31.

Monroe, Kent B. and LaPlaca, Peter J. "What are the Benefits of Unit Pricing?" Journal of Marketing 36 (July 1972): 16-22.

Pessemier, Edgar A. "An Experimental Method for Estimating Demand." Journal of Business (October 1960): 373-83.

Rossner, Robert. "Nutrition Labeling." Chain Store Age, October 1974, pp. 43-51.

Russo, J. Edward; Krieser, Gene; and Miyashita, Sally. "An Effective Display of Unit Price Information." Journal of Marketing 39 (April 1975): 11-19.

Stevan, Mary Ann. "What Shoppers are Concerned About." FDA Consumer, September 1974.

Summers, John O. "Less Information is Better?" Journal of Marketing Research 11 (November 1974): 467-68.

"Too Much Regulation? Mary Socks it to 'em at Economic Summit." Advertising Age, November 11, 1974, p. 44.

Trombetta, William L. and Wilson, Timothy L. "Foreseeability of Misuse and Abnormal Use of Products by the Consumer." Journal of Marketing 39 (July 1975): 48-55.

"U.S. Rules Set for Consumer Leasing Ads." Advertising Age, July 12, 1976, p. 118.

Wilkie, William L. "Analysis of Effects of Information Load." Journal of Marketing Research 11 (November 1974): 462-66.

_____.and Gardner, David M. "The Role of Marketing Research in Public Policy Decision Making." Journal of Marketing 38 (January 1974): 38-47.

_____.and Pessemier, Edgar A. "Issues in Marketing's Use of Multi-Attribute Models." Journal of Marketing Research 10 (November 1973): 428-41.

Winter, Frederick W. "Laboratory Measurement of Response to Consumer Information." Journal of Marketing Research 12 (November 1975): 390-401.

Interviews, Proceedings, and Reports

Brasted, Ellen. Riverside Hospital, Newport News, Virginia. Interview, December 9, 1975.

"Characteristics of Job Seekers." The Conference Board, Roadmaps of Industry, No. 1785, June 1976.

"Facts from FDA." U.S. Department of Health, Education and Welfare, DHEW Publication No. (FDA) 73-2036.

"Food and Food Products." Federal Register, Vol. 38, No. 148, August 2, 1973.

"Food Labeling." Federal Register Vol. 38, No. 49, March 14, 1973.

"Food Labeling." Federal Register Vol. 39, No. 116, June 14, 1974.

Darden, William R. and French, Warren A. "Product Label Information: Dimensions of Meaning and Evolution." Proceedings: American Marketing Association Fall Conference-1971, pp. 647-52.

Gallay, Ralph. "An Experimental Study to Investigate the Role of Nutrition as a Food-Purchase Motivator." Ph.D. dissertation, New York University, 1975.

Mayer, Charles S. and Brown, Rex V. "A Search for the Rationale of Non-Probability Sample Designs." Proceedings: American Marketing Association Fall Conference-1965, pp. 295-308.

"Nutrition Labeling." Unpublished Report, The J. Walter Thompson Co., December 6, 1974.

"Purchase Influence: Measure of Husband/Wife Influence on Buying Decisions." Unpublished Report, Haley, Overholser and Associates.

Stokes, Raymond C. Food and Drug Administration, Memphis, Tennessee. Interview, August 9, 1976.

_____. "Interim Report of the First Two Phases of CRI/FDA Nutritional Labeling Research Program." Unpublished Report, Consumer Research Institute, August 1972.