HOMEMAKERS' INTERPRETATIONS AND APPLICATIONS OF PERMANENT CARE LABELS

By

JANICE KAY HUFFMAN

Bachelor of Science in Home Economics Education

Iowa State University

Ames, Iowa

1968

Submitted to the Faculty of the Graduate College
of the Oklahoma State University
in partial fulfillment of the requirements
for the Degree of
MASTER OF SCIENCE
December, 1974

HOMEMAKERS' INTERPRETATIONS AND APPLICATIONS OF PERMANENT CARE LABELS

Thesis Approved:

Florence McKinney
Thesis Adviser

Elizabeth C. Hillier

Billie G. Murphy

N N Durham
Dean of the Graduate College

ACKNOWLEDGEMENTS

The author extends appreciation and gratitude to those who contributed to the completion of this study. Special acknowledgement goes to Dr. Florence McKinney, thesis adviser, for her guidance and encouragement; to Dr. Elizabeth Hillier who was instrumental in preparing the research proposal; to Dr. Billie Murphy for reading the thesis and making helpful suggestions; and to Miss Sue Herndon who stimulated interest in the topic and provided assistance throughout the study.

Thanks are expressed to the Department of Home Management, Equipment and Family Economics for the teaching assistantship which helped make graduate study possible.

The writer is indebted to the homemakers who willingly gave of their meeting time to provide the necessary information on laundry procedures.

To her husband, Wally, the writer gives special recognition. His advice on the data analysis and his understanding and patience all contributed to the completion of this endeavor.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Significance of the Problem

The cost of clothing consumes a significant portion of the American family's budget. Consumers spent about $296.00 per person on clothing and shoes in 1972, some $21 more than they spent in 1971. Part of this increase was caused by inflation, but there was an increase of nearly five percent in terms of dollars of constant value (13).

With such a large yearly investment being made in clothing, it is to the consumer's advantage to be able to select garments which require relatively inexpensive care and then to maintain these garments so that they retain their original size, shape and appearance for maximum wearing life. Rapid technological advances in the fabric and fiber industries have led to numerous man-made fibers, fiber blends, new methods of fabric construction, and a variety of finishes including durable press or permanent press, water repellent, soil repellent and soil release.

> There are now 19 man-made fibers with a total of 161 trade names. Those are just the fibers themselves, before the fabric makers start combining them with one another or with natural fibers. Add varying knitting and looming processes, different methods of dyeing, printing, and finishing, and it is estimated that there may be ten million kinds of fabric on the market today (23, p. 46).

Fibers are classified into generic groups. Each generic group contains fibers which are significantly different from those in other groups in chemical composition as well as in properties such as the ability to hold a press, launderability and serviceability (35). Generic names are established by the Federal Trade Commission, and a new generic classification, Novoloid, became effective in February, 1974 (19), illustrating the changing character of the textiles field. The performance and care required by a fabric are determined by a number of factors, namely the fiber content, the yarn structure, the method of construction, and the fabric finish (31).

With such a wide variety of products on the market, each having different care performance characteristics, it is "almost impossible for consumers to be informed about any one product, much less the entire range of products" (10, p. 23885). Trade names and generic names are not especially meaningful to consumers unless "they are accompanied by specific instructions as to how the garment can be properly cleaned and laundered" (35, p. 6). Therefore, many consumers have based their care knowledge on trial and error experiences with similar garments and mistakes are common occurrences (10). One of the most frequent reasons for the return of unsatisfactory merchandise to stores is damage resulting from washing or ironing by methods too severe for some fiber in the fabric (50).

The need for clear, concise labels indicating proper handling instructions for garments was recognized by the Federal Trade Commission (FTC) in December 1971. A trade regulation rule was issued, effective July 1972, requiring that articles of wearing apparel have permanent labels clearly stating instructions for care and maintenance.

Piece goods sold for the purpose of making wearing apparel must also be accompanied by care labels.

The FTC justified its care labeling rule by saying that

> because of the wide variety of textiles used in today's apparel, the consumer needs to be given proper care and maintenance procedures to avoid damaging the product through improper care; to choose the care that will give the best overall performance; and to be able to select apparel for purchase on the basis of inexpensive, yet effective care (3, p. 171).

Most women are pleased with the idea of care labels, but through experience have found some of them to be too brief to be entirely helpful. A man's shirt, for example, might be labeled "Machine Wash Warm" with no further information. Can it be bleached? Can it be dryer-dried? The basic wording used on labels is suggested in guidelines drawn up by clothing industry associations, but every manufacturer is free to choose the amount of information to be included on a specific label. Certain laundry practices are assumed to be common knowledge and are not included in the directions. The definitions of frequently used terms such as "Machine Wash," "Hand Wash," and "Chlorine Bleach" are also assumed to be generally known. White of Cornell University summarized the situation,

> we have a real problem in preventing the consumer from being confused further by care labels which are ambiguous, or which vary in terminology from one manufacturer to the next. If the instructions aren't consistent and clear, they will be ignored. Moreover, care labeling could be a farce, so much wasted motion, unless we are sure that the consumer can use care labeling instructions effectively (63, p. 28).

Statement of the Problem

Due to the increasing number of fiber and fabric choices available,

the average consumer today may not have enough knowledge of modern textiles to be certain of using the correct care procedures for his clothing. Recognizing this problem, the Federal Trade Commission has ruled that textile garments must have permanently affixed labels providing specific care instructions. However, if the consumer does not use these labels, or if he cannot understand them, their purpose will be defeated. Therefore, the problem of this study is the unknown degree of usefulness of instructions provided on care labels which are permanently attached to ready-made garments.

Objectives of the Study

In order to accomplish the purpose of this study, the following objectives were formulated:

1. To survey and review literature related to laundry practices and textile labeling.
2. To determine the extent that homemakers are influenced by the information on permanent care labels:
   a. when purchasing ready-made garments
   b. when selecting care procedures for ready-made garments.
3. To determine how formal education, laundry experience and total family income affect one's ability to interpret and apply the information given on permanent care labels.

Hypotheses of the Study

The general hypotheses tested were:

1. Educational level is positively related to a homemaker's ability to make correct garment care choices.

2. Laundry experience is positively related to a homemaker's ability to make correct garment care choices.
3. Total family income is positively related to a homemaker's ability to make correct garment care choices.
4. The presence of a permanent care label is positively related to a homemaker's ability to make correct garment care choices.

Limitations of the Study

This study was limited to a non-random sample of homemakers attending the February, March and April 1974 meetings of selected community groups in the vicinity of Stillwater, Oklahoma. Although an attempt was made to select permanent care labels varied in information content and representing a variety of kinds of garments, the number of labels used in the study was limited to five and all possible care and maintenance situations were not represented.

Definition of Terms

1. Automatic dryer--an appliance providing a mechanical means of drying fabrics by evaporation using a combination of heat, air flow and tumbling (41).
2. Automatic washer--a power driven machine for washing fabrics that fills with water at a selected temperature, washes, rinses, extracts water and stops--all after one setting of the controls without further attention by the operator (2).
3. Bleach--a laundry product used in the wash water for more effective soil and stain removal, to whiten fabrics and to remove color from some

soils and stains (41). Two types of bleach are used in home laundry procedures:

A. Chlorine bleach--a liquid or dry chemical product containing active chlorine, usually used in the washing solution in addition to detergent or soap to aid in soil and stain removal. Chlorine bleach should not be used on wool, silk, some spandex fibers, non-bleachfast colors, or fabrics having chlorine retentive resin finishes. Liquid chlorine bleaches are always solutions of sodium hypochlorite. The active ingredient in dry chlorine bleach is potassium dichloro-s-triozinetroine.

B. Oxygen bleach--a dry or liquid chemical product which releases oxygen rather than chlorine when added to water. Because the action is milder, oxygen-based bleaches can be used safely on a wider range of fabrics but they do not have the stain removal or whitening ability of chlorine bleaches. The bleaching agent that supplies the active oxygen may be sodium perborate, hydrogen peroxide or potassium monopersulfate.

4. Coin-operated dry cleaner--a self-service coin machine which uses a perchlorethylene solvent to remove stains and soil from garments. The cycle length is pre-set for approximately one hour.

5. Combination washer-dryer--a power driven machine for both washing and drying fabrics that combines the functions of an automatic washer and dryer in a continuous operation with one setting of the controls. This appliance can be operated as a washer only or as a dryer only (2).

6. Cycle--a sequence of operations of an automatic washer or automatic dryer which performs a complete home laundry function ending with machine shut-off (2).

A. Dryer cycle--a sequence of operations determined by the setting of controls, combining amount of heat, length of operating period, and length of cool down period when used (2).

(1) Permanent press cycle--a setting for drying permanent press and other easy-care fabrics. In addition to evaporating moisture, this setting provides a specific level of heat to relax the wear wrinkles from thermoplastic fibers, and a cool down period.

(2) Regular cycle--a pre-determined heat setting suitable for most machine dryable fabrics except permanent press. Also called "normal."

B. Washer cycle--a sequence of operations combining the water temperatures, agitation speed, spin speed, and elapsed time determined by the setting of the controls (2).

(1) Delicate cycle--a wash period designed for sheer fabrics, lace trimmed garments, knits and others of delicate construction. Gentle action may be achieved by a shortened wash period, slow agitation and spin speeds, or alternate agitation and soak periods.

(2) Permanent press cycle--a cycle which has a cool down procedure immediately following the wash period to minimize the formation of wrinkles. The final spin-drain segment is shortened to reduce wrinkling.

(3) Regular cycle--a cycle designed for sturdy fabrics which do not have permanent press characteristics. It commonly offers a choice of a full or partial fill of hot, warm or cold water; an agitation wash period at normal

speed that can be regulated in length; a deep rinse and a spin at normal speed.

7. Permanent Care Labeling Rule--a ruling of the Federal Trade Commission which became effective July 3, 1972, requiring all articles of clothing as well as apparel fabrics for home sewing to have appropriate care instructions which remain legible and affixed to the product for its useful life.

8. Permanent press--a finish applied to garments so that they require little or no ironing after laundering.

9. Professional dry cleaner--a person trained in clothing care procedures who works in a business where stains and soil are removed from garments brought in by customers. One or more of three solvents may be used to dry-clean fabrics: petroleum, perchlorethylene, and fluorocarbon.

Method of Procedure

The researcher employed the following procedure to achieve the stated objectives of this study:

First, a review of literature was made concerning laundry practices and textile labeling to identify common laundry problems, the uses made of labels by consumers, and the provisions and applications of the Permanent Care Labeling Rule. Research studies dealing with the ability to understand and interpret information were also surveyed.

Secondly, the instrument was developed to determine: (1) the personal background of respondents that provided the variables of educational level, laundry experience and income; (2) the extent permanent care labels are considered in the purchase of ready-made garments;

(3) the extent permanent care labels are consulted before refurbishing garments; and (4) homemakers' interpretations and applications of permanent care information to care and maintenance situations.

Thirdly, the instrument was administered to selected groups of homemakers and the data obtained were compiled and analyzed. Recommendations were made concerning ways of reaching consumers with garment care information and suggestions were made for improving permanent care labels to increase their usefulness.

Summary

This chapter has presented the significance of the problem, a statement of the problem, objectives of the study, limitations of the study, definition of terms, and method of procedure. Chapter II will present a review of literature used as a basis for the development of the questionnaire. The method and design of the study will be explained in Chapter III and an analysis of the data will be presented in Chapter IV. The summary, conclusions and recommendations will be found in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Through centuries of experience with fabrics woven of natural fibers such as cotton, silk, wool and flax, man learned about the proper cleaning techniques for these fabrics. However, fabric selection is no longer limited to such simple choices. With the development of man-made fibers, fiber blends, new methods of fabric construction and new finishing processes, decision-making about the purchase and care of textile products has become more complicated. Numerous educational and legislative efforts over the years have attempted to alleviate the consumer's confusion.

The revival of interest since the 1960s in the concept of consumerism has focused attention on the four basic consumer rights as expressed by President Kennedy in his 1962 consumer message to Congress: the right to be heard, the right to safety, the right to choose and the right to be informed. Awareness of the right to information is increasingly being reflected in executive, judicial, legislative and regulative bodies at local, state and national levels. It is easy to express the belief that the consumer has a right to be informed, but "How to conceptualize the idea of adequate information so as to develop criteria for action directed to insuring that the consumer does have adequate information, in fact, is not exactly clear" (34, p. 96). Howard (34) proposes that adequate consumer information

should be truthful, intelligible, relevant and complete. When the customer has enough information, he has confidence in judging the characteristics and qualities of goods and services and in making a choice which meets his individual needs.

> The value of information is a function of the expected opportunity loss (probability and cost) of suboptimal choices. If we accept the idea that 'optimality' exists in the eye of the beholder, the ultimate judge of the value of information is the consumer (48, p. 101).

In 1972 the Federal Trade Commission provided consumers with a new source of information for purchasing clothing when it issued the Permanent Care Labeling Rule. Designed to help consumers first at the point of sale and secondly when the garment requires refurbishing as part of the family wardrobe, the Rule requires that labels giving care and maintenance instructions be permanently attached to most garments and also provided with piece goods intended to be made into wearing apparel. However, for care labeling to be effective, consumers as well as dry cleaners and commerical laundries need to be able to understand and follow the directions supplied.

Recent Labeling Efforts

Until enactment of the Permanent Care Labeling Rule in 1972, only four legislative attempts had been made by Congress since 1940 to provide consumers with textile information to improve their decision-making process in the marketplace. The first legislation requiring fiber identification was the Wool Products Labeling Act which became effective in 1941. The purpose of this Act was "to protect producers, manufacturers, distributors, and customers from the unrevealed presence

of substitutes and mixtures in spun, woven, knitted, felted, or otherwise manufactured wool products" (44, p. 2). Products containing wool, except upholstery and floor coverings, are required to bear a label indicating the percentages and the generic names of all fibers present comprising five percent or more of the total. If less than five percent of a fiber is present and it has functional significance, it may be disclosed. The term "wool" refers to new wool or wool fibers reclaimed from knit scraps, broken threads and noils (short fibers combed out in the making of worsted yarns) (31). Wool recovered from mill remnants must be labeled "reprocessed" while wool reclaimed from discarded apparel must be labeled as "reused wool."

The Fur Products Labeling Act, which became effective in 1952, provided protection for fur purchasers. Fur labels are required to disclose these facts: the English name of the animal producing the fur; the country of origin; whether the fur is bleached, dyed, or artificially colored; whether it is composed of scrap pieces or waste fur; and the name or identification number of the manufacturer or distributor (44). These labels have helped to eliminate the racket of giving inexpensive furs impressive names in order to sell them at high prices.

In response to injuries resulting from women's "torch sweaters" and boys' cowboy chaps which flash burned, Congress passed the Flammable Fabrics Act in 1953. Apparel made of highly flammable fabrics was prohibited from being imported or sold in interstate commerce. The Act was amended in 1967 to cover all textile products, including interior furnishings. More significant was the establishment of procedures for authorizing the Secretary of Commerce to set additional

flammability standards "when it was found necessary to protect the public from 'unreasonable risk' of fire leading to death, personal injury, or significant property damage" (64, p. 9). The need for standards was to be based on research studies. In 1973 the standard setting procedures were shifted to the new Consumer Products Safety Commission.

As the number of fibers grew and as each fiber family expanded, the number of different names on labels caused the consumer to become very confused (31). The Textile Fiber Products Identification Act (TFPIA) became effective in 1960 in an effort to make it easier for the consumer to know what kind of fabric he is buying and to enable him to evaluate its advantages and disadvantages for the use he intends to make of it. Under this Act all textile products must carry a label stating the percentage of each fiber listed in order of predominance. Fibers representing less than five percent cannot be named unless they have some constructive value. The name of the manufacturer or distributor or his registered trade number must be listed. Also, when trademarks and trade names are used on labels, the generic name must appear in immediate conjunction with the trademark the first time it is used and must be in lettering of equal size and conspicuousness (31).

Representatives from the textile industry questioned the effectiveness of the TFPIA as early as 1958, when it was enacted, stating that care and performance information would be much more helpful to the consumer than fiber content. It was emphasized that the American housewife would be grateful for performance labeling that "would tell her how the textiles she bought would react to water or an iron at 100

degrees or 200, or 500 degrees, whether the color would survive contact with soap and sun" (50, p. 32).

Some retailers said rather than protect the public, the new law would compound confusion about the various types of fabrics. One retailer complained, "It's like warning the consumer--but in Chinese" (9, p. 84). As consumers had experience with the new law, the critics were proven correct. The majority of consumers did not learn the proper family (generic) names of the man-made fibers, and as a result, were unable to evaluate fabric characteristics any better than before the law was passed.

> Many truthful labels convey no meaning to shoppers simply because the shoppers don't understand what the label says. Their education in man-made textiles consists almost entirely of well advertised private trademarks or trade names, such as Dacron (Dupont's polyester fiber) and Acrilan (Chemstrand's acrylic fiber) (44, p. 4).

Legislating truthful labels is therefore not the solution to consumer textile problems. Another complication of the Textile Fibers Products Identification Act was that the labels were not required to be permanently attached to textile products. Much of the information provided on tags and packages was thrown away before the product was used. The February, 1968 issue of Consumer Reports (65) described the housewife's washday dilemma:

> You must be, among other things, a meticulous file clerk. The special washing or dry cleaning instructions on many articles of apparel, linen and so on must be carefully saved. Each tag or label must be annotated so that you will know weeks or months later which article it was originally attached to. On washday each item in the wash must be reassociated with its instructions which must be read, obeyed and refiled. All this assumes that the manufacturer has provided understandable instructions.

> The alternative is to do what most women do: Play Russian roulette, with the life of each textile possession as the stakes (p. 66).

Performance Standards

Performance has long been important to consumers. They expect colors to be fast, knits not to shrink excessively, wearing life to be satisfactory, and so on. A 1927 Journal of Home Economics article stated concern about the sale of misbranded articles and a desire for guarantees of fabric quality (5).

Burston (8) expresses the idea that necessity is the mother of standards. An outstanding example of fabric performance standards arising from need is the American Standard Performance Requirements for Textile Products L-22 developed by the American Standards Association (now the United States of America Standards Institute). The L-22 Standards were instituted in 1949 to meet the need for performance standards for rayon and acetate fabrics which were acquiring a bad reputation in the 1940s because many poor quality rayons and acetates were being manufactured.

Today the L-22 Standards are a collection of sixty-seven voluntary minimum performance requirements for fabrics designed for end uses in clothing and household textiles. They do not prescribe style, finish, or other manufacturing details of an article. Rather, they cover such characteristics as strength, dimensional stability, color fastness, finish retention, odor, delamination, durable press and stretch properties (4). Now under the sponsorship of The Fashion Institute of Technology, the L-22 Standards will be revised every five years to keep them up to date (31).

Standards are set by many organizations. A fiber manufacturer may not allow the use of his trademark unless certain criteria are met; a chemical manufacturer may not allow his trademark to be used unless the garment has certain properties, such as water repellency, that are up to his standards; and merchandising firms and testing laboratories also have symbols of endorsement. All of these standards are defined as performance by a certain test method (59).

Galbraith (25) reports that performance characteristics often mentioned as important in women's dresses include ability to hold shape, wrinkle resistance and color fastness. However, when asked what characteristics influence their purchase of a dress, women listed color, appearance of weave, and feel on the skin. Galbraith proposes that the discrepancy between the two answers results from the women's belief that performance characteristics such as color fastness, ability to hold shape and shrink resistance are standardized by the manufacturer. Therefore, they do not consider them carefully at the time of purchase.

Performance standards have been used widely by manufacturers in checking textile quality, but not extensively in labeling textile products. Consequently, consumers are not familiar with them (68). "Standardization is centered largely on the work of individual technical committees and organizations. Fractional effort has resulted in chaos and confusion on the part of the public" (56, p. 174).

Care Labeling Systems

In an effort to meet the need for fabric care information, the National Retail Merchants Association proposed a Sure Care Symbol plan

in the 1950s. The labels used pictorial symbols to describe laundering and dry cleaning procedures and were to be permanently affixed to textile products (22). Although attempts were made to educate consumers about their meaning, the symbols were not always simple and clear and therefore they did not receive wide acceptance (68).

In January 1966 Mrs. Esther Peterson, special assistant to the President for consumer affairs, appointed a 36-member Industry Advisory Committee on Textile Information regarding the care labeling of textile items. The Committee was composed of representatives of fiber, fabric and apparel manufacturers, retailers, dry cleaners and launders. The report and recommendations of this Committee were published in 1967 as A Voluntary Guide for Improved and Permanent Care Labeling of Consumer Textile Products. The report emphasized that many items have well-known care requirements and need no special attention, such as white cotton, plain-finish towels, sheets, underwear and socks; and men's or women's wool suits and overcoats (24). It was agreed that care instructions should be permanently attached where special handling is necessary to preserve the usefulness of the article or where there is some doubt about proper care procedure. The Committee felt that a glossary of simple care terms would be more useful than a system of symbols and they published a Glossary of Terms for Care Labeling for Textile Wearing Apparel which was to be used as a guide for permanent care labeling for all who wished to apply it (66).

Industry trade associations, such as the American Apparel Manufacturers Association, urged their members to adopt the plan, but participation was strictly voluntary. The Glossary was criticized for

being too complex, since it listed 28 different phrases for washing methods, for example, and 18 others for drying (3). Some manufacturers complied with the permanent care labeling system, particularly the large mail order catalog firms, but others declined, unwilling to take on the added trouble and expense of attaching the labels.

The Permanent Care Labeling Rule

Background

The voluntary actions by business and industry did not satisfy the Federal Trade Commission, which published in the Federal Register on November 4, 1969, a proposed trade regulation for care labeling of textile products (21). Two hearings were held in January and March, 1970, and opinions were invited.

Those opposed to the proposed regulation said that consumers already know how to care for textile products, that textiles not requiring special care do not need a label, and that permanent labels would increase the cost of articles, thus inhibiting the sale of low-priced clothing. Some manufacturers said they didn't know the care requirements of clothing they produced and did not want to assume responsibility for them. Others argued that lack of uniform standards made such labeling unfeasible (3, 10).

Interest in the care labeling issue was high. The FTC received over 750 letters from individuals and over 225 statements and letters from the textile industry, trade associations, consumer groups and other interested persons and organizations. Forty-six witnesses presented their views at the hearings. All but 36 letters from

individuals approved a care labeling program. The Neighborhood Cleaners Association, representing dry cleaners in New York, New Jersey and Connecticut, submitted a petition signed by about 47,000 consumers in favor of care labeling (10).

Supporters of permanent care labeling testified that it is difficult for even trained persons to identify fibers and predict garment performance. They emphasized that a substantial amount of garment damage results from incorrect care procedures and leads consumers to suffer financial losses.

Two opinion surveys were conducted especially for this rulemaking proceeding. In a study performed by George Washington University Law Center, 169 out of 170 responses approved the concept of care labeling. There was an indication in 120 of the responses that the consumer had actually had a garment damaged due to improper care. A second survey done by a consumer organization found 29 out of 38 respondents strongly favored care labeling. The results of other studies were reported by university and business representatives. The three most frequent kinds of damage found resulting from improper care were shrinkage, running colors, and ruining the material by heat (10).

Considering the testimony presented, the Federal Trade Commission concluded that, due to the wide variety of textiles used in apparel, consumers must be informed of proper care and maintenance procedures in order

> (1) to avoid possible damage to the product through improper care; (2) to use the care procedure which will give the best overall performance; and (3) to be able to select apparel on the basis that it can be cared for inexpensively yet effectively (10, p. 23889).

Therefore, the Federal Trade Commission issued a Trade Regulation Rule

on permanent care labeling December 10, 1971 which became effective July 3, 1972.

Rule Regulations

The Rule requires that most domestic and imported apparel and home sewing fabrics manufactured after July 3, 1972 have a permanent label giving care and maintenance directions. The care instructions must (1) inform the purchaser of regular care and maintenance procedures, (2) warn the purchaser of care methods normally applicable to similar articles that should not be used, (3) remain legible for the garment's useful life, and (4) be readily accessible to the user (24). Woven or printed labels may be sewn, glued, or fused onto the product. Care instructions may even be printed on the garment itself, as in men's shirts.

Nine different sets of care instructions have been devised by the Textile Distributors Association for home sewing fabrics. The appropriate care instructions are printed on the bolt end with a code number signifying the care technique. The sales clerk is to check the code number and give the consumer a corresponding label to sew into the finished garment (26).

Exemptions

Textile products which do not require routine cleaning and hats, gloves and footwear are exempt from the regulation. There are two possible exemptions which will be granted on petition to the FTC, one for apparel whose utility or appearance would be substantially impaired by a permanently attached label, and another for articles to

be sold for less than $3.00 and which are washable under all reasonably foreseeable circumstances (10). The FTC has interpreted the washable requirement to mean that the consumer can wash the garment in a machine at a hot water setting, use a hot dryer setting, and use chlorine bleach on white items (53).

Label Placement

The instructions are to be available to the buyer at the point of sale so that he can do comparison shopping. Therefore, if the label is hidden in a package, the instructions must also be on the package itself or on a package insert. Multi-piece items which are never sold separately and which all have the same care characteristics do not need to be labeled individually. The care label does not have to be attached to the garment in any specified place, but must be easy to find and read. It is also acceptable for care information to be incorporated into another label, such as one giving the brand name or fiber content.

Label Terminology

The FTC was deliberately vague in specifying requirements for care instructions in the hope that industry itself would develop a guide (53), but it is a difficult problem to determine adequate and correct care instructions.

> Today there are no standards against which to measure the change which 'care and maintenance' will cause in a garment. Since every refurbishing will cause some damage, it is even more difficult to specify how much change will cause the garment to be unsatisfactory from the consumer's point of view (54, p. 2).

In an attempt to comply with the Rule, the National Retail Merchants Association got together a group representing all phases of the textiles industry, including trade associations, and developed an industry guide which would be usable by manufacturers and others applying the information on care labeling (53). The Guide for Permanent Care Labeling outlines the fourteen most commonly used labels and other terms which may be combined with any basic label when appropriate. In addition, the Consumer Affairs Committee of the American Apparel Manufacturers Association (AAMA) has published a simplified one page Consumer Care Guide for Apparel which defines label terms and is intended to help consumers understand the brief instructions found on permanent care labels. The AAMA, the National Retail Merchants Association, and the American Retail Federation are encouraging apparel manufacturers to use the fourteen basic labels wherever possible so that consumers become familiar with standard care directions (54).

Besides stating appropriate care procedures the label must also indicate procedures which will damage the garment. For example, a label might state: "Machine wash warm. Line dry. Do not dry clean." However, if a positive statement is used such as "Hand wash only," it is not necessary to include negative instructions. The label gives the widest latitude of safety in its wording, and the consumer can use any gentler methods than those given. If a label says "Machine wash," the garment will not be harmed by hand washing; if hot water is recommended, warm or cold can be used. The principle of exception labeling is employed. This means that if there are no specified "don'ts," any method can be used. A garment with a label which reads only "Machine wash warm," for example, cannot be washed in hot water, but will not

be harmed by warm or cold water. Since there are no other precautions, the garment can be bleached and dried in any manner. It can also be ironed or pressed, commercially laundered or dry-cleaned (33). Under the Rule, white fabrics are considered chlorine bleachable unless otherwise indicated. However, since the FTC does not consider it normal care to use chlorine bleach on colored items, it is not necessary to warn against bleaching colored garments (53).

Spot care

The FTC recognizes that there are two kinds of garment care and maintenance: regular care required in the general use of the product, and spot care required for the removal of anything accidentally spilled on it. Regular care and maintenance instructions are intended for the consequences of normal and expected wear. Because particles of dust, grime, and soot adhere to different parts of the garment, the care instructions must relate to the whole garment. The Rule is designed to help consumers with this regular type of care.

When a foreign substance is spilled on a garment, the care required is usually very specific and suitable only for removing that particular substance. The procedure is also usually applied only to the stained area. The FTC decided that it was unreasonable to require a manufacturer to anticipate all substances which could be spilled on his product and prescribe spot care procedures. Therefore, spot care instructions are not included under the Rule. The consumer must rely on fiber content information provided by the Textile Products Fiber Identification Act to decide on adequate, safe spot removal techniques or leave the problem up to a professional dry cleaner.

Cost of Implementing the Rule

Costs of fulfilling Rule requirements involve more than the purchase price of the labels, although the cost of the labels themselves varies according to how they are made, their size, color and quantity in which they are bought (54). There is also the labor required to attach the label and the cost of testing apparel and evaluating the accuracy of care instructions. Some observers feel that a further, indirect cost may ultimately be the most expensive of all. Daniel Powderly (26), chairman of the Consumer Affairs Committee of the American Apparel Manufacturers Association, explained it this way:

> When care instructions are affixed to a garment, the manufacturer is giving an implied warranty that the care instructions will not substantially diminish the ordinary use and enjoyment of the article. This is equally true of the hang tags which are used today. The difference is going to lie in the permanency of the information and the increased militancy of the consumer in seeking redress when she believes she has been wronged (p. 44).

Before the Rule became effective, cost estimates ranged from one-half of one percent on higher priced garments to eight percent on lower priced ones (10).

Testing and Evaluation

The FTC placed responsibility for compliance with the Rule on the manufacturer of the finished article because he controls the factors that determine care performance: the fabric components, accessories, and final manufacturing process used. In specific cases this responsibility may be shifted to others who have controlled manufacture of the finished product (10).

For the manufacturer to be sure of the performance of the finished garment, he must pretest by cleaning at least one of every item in his production line. Such evaluation requires a standard testing method and criteria against which satisfactory and unsatisfactory performance can be measured (54).

In 1972 the Council on Technology of the American Association for Textile Technology, Inc. published A Guide for Garment Evaluation which offers one way to evaluate garment performance so that results will be consistent with retail and consumer requirements. The Guide consists of three parts: part one contains procedures for evaluating dimensional stability of fabric and sewing techniques; part two contains the essential standards and procedures of a garment evaluation program; and part three contains supplementary tests which could be conducted only by a fully equipped testing laboratory (1). Testing methods developed by the American Association of Textile Chemists and Colorists, the American Society of Testing and Materials, and the L-22--1968 standards are used in the Guide. The Apparel Performance Level Standards Committee of the AAMA is working on a more detailed and thorough document, but manufacturers are encouraged to use this Guide for the present.

Enforcement of the Rule

The FTC checks on Rule compliance through field offices and through complaints. The Rule states that care instructions should be clear, but says nothing about the fact that they should be accurate. One of the reasons for this is that the FTC does not have the facilities to test all of the garments to determine whether the instructions

are accurate (53). The greatest problem is the omission of labels, but in some cases where care labeling is inadequate, the FTC asks for proof of performance in the form of a laboratory analysis (29). When manufacturers do not comply, the emphasis is on corrective rather than punitive action. If cooperation is not achieved, the FTC finally can take the case to court where a judge determines the requirements of the Rule and the penalties involved (53). In 1973 the FTC consumer protection staff estimated that industry compliance with the Rule was over 90 percent (29).

Problems with the Rule

It has been suggested that it will take about five years for most of the problems to be worked out of the Care Labeling Rule (16). Consumers have found some labels too brief to be helpful. The major reason for this is that most labels are not large enough to give detailed instructions. Some manufacturers have not had the facilities or the time to pretest every garment they produce and solve the problem with overly brief directions. Others, aware that the manufacturer is liable for damaged garments, have practiced low labeling, recommending, for example, that a garment be dry-cleaned when it is actually washable (26).

The FTC assumes that any machine washable item is also dry-cleaned unless otherwise labeled, because many consumers regard dry cleaning as the safest method of refurbishment (53). The International Fabricare Institute maintains that this practice limits consumer choice because purchasers will not be aware that they have the alternative of dry cleaning the article (18). In this area, as in other instances of

exception labeling, consumers must be taught to understand not only what the label states, but to be aware of the meaning of excluded instructions. The assumptions that white items can be chlorine bleached but colored items cannot must also be conveyed to consumers.

In a press conference on permanent care labeling the FTC gave several examples of acceptable labels. One read, "Dry clean only; do not use petroleum solvents or the coin-operated method of dry-cleaning" (15, p. 3). There are three solvents used to dry-clean fabrics, all with a petroleum base. It is impossible to follow these instructions and the FTC later said it meant to say chlorinated rather than petroleum solvents (53) but this label appeared on many articles, indicating some garment makers were using it without testing the fabric for washability or dry-cleanability (40). Another confusing label brought to the attention of the International Fabricare Institute read, "Do not wash. Dry clean. Use a non-solvent based cleaning fluid" (14, p. 3). All cleaning fluids now used are solvent based, therefore this label does not give valid information. One manufacturer attempted to relieve himself of responsibility by using this label: "We cannot guarantee the washability or cleanability of any garment" (20, p. 56). Over 180 different versions of care labels are manufactured by one of the country's largest label makers, indicating that the consumer's choice is not yet simple (20).

Realizing that the Rule would require further clarification after consumers had experience with the labels, the FTC planned to review it eighteen months after its effective date (54). On April 2, 1974 written comments on the Rule were invited by the FTC to assist it in measuring the Rule's adequacy. The Commission was interested in obtaining

information on topics such as compliance with the Rule, its interpretation and enforcement, possible expansion of its coverage, uniform criteria for terms used in care instructions, and the necessity for changes to make the Rule more specific and thus more responsive to consumers' needs.

The Interpretation of Information

Although no research studies were located specifically investigating homemakers' interpretations of permanent care labels after the Permanent Care Labeling Rule became effective, several concerned with interpretation of information and with consumer knowledge and use of textile labeling were reviewed.

Experts rely on consumers' understanding of terminology when communicating with them. It has been suggested that "such experts may be overestimating the ability of the words they use to stimulate images in the minds of consumers" (67, p. 33). To determine consumers' understanding of textile terminology, Wauer (67) asked 16 members of the textiles and clothing faculty at Iowa State University and 30 mothers to describe 12 fabrics, all of which might be used for girls' winter school skirts. Consumers' descriptions of weave or method of construction, fiber content, fabric name and weight were consistently different from those of the home economists, indicating that consumers and home economists might have trouble understanding each other when they tried to communicate about fabrics.

Burley (7) asked a group of equipment home economists to answer questions about a particular automatic washer instruction book as they thought consumers would respond to them. When the responses of the

home economists and consumers were compared, the home economists' assumed perceptions were significantly different from the consumers' actual perceptions regarding the operating instruction book.

A third study exploring consumers' understanding of information was done by Yard (69) and concerned 100 Wisconsin home economists' predictions of 400 Milwaukee homemakers' understanding of 18 home economics terms used in extension news releases issued from the Department of Agricultural Journalism at the University of Wisconsin. The results showed that home economists consistently underestimated the homemakers' actual understanding of the home economics terms. However, only slightly more than half of the terms tested were understood by 50 percent of the homemakers, suggesting that the level of understanding of home economics terminology by the public may be less than is desirable for significant communication.

Each of these studies illustrates the difficulties professionals have in predicting how consumers will interpret information. Other researchers have concentrated on determining what information consumers want on garment labels and how they make use of the information provided.

Consumer Use of Labels

King (39) sampled the mothers of seventh grade girls enrolled in home economics classes. Every respondent of the sample of 105 said she read labels on garments or household textile items she bought, and all said they looked for washing and cleaning instructions on those labels. Only about 65 percent saved removable labels from purchased items, so it would appear that although the homemakers were label

conscious, any necessary care information must be committed to memory or left to chance if labels are not preserved for future reference. Less than one-third of the respondents had problems with new fibers and fabrics, but 55 percent mentioned that "new things had resulted in some unfortunate experiences" (p. 60).

Drake and Grimes (17) interviewed 992 randomly selected urban Texas women and found that over half of them usually looked for labels when purchasing dresses while only one-fifth paid little or no attention to labels. No distinction was made in the questionnaire between sewn-in labels and hangtags. The proportion of women looking for or asking for labels increased as the educational level rose. Women in the youngest (under 30) and the oldest (over 50) age groups looked for labels less often than those in the intermediate groups. When asked what label information they considered most helpful, 82 percent were concerned with care information stating whether a garment should be washed or dry-cleaned. Other information used most frequently were washing instructions (67 percent), fiber content (44 percent), brand (22 percent), shrinkage (20 percent), size (17 percent) and colorfastness (16 percent). An important finding of this study was that women were encountering problems understanding the content of labels. Eighty-nine percent preferred to get information at the time of purchase either from the label only (49 percent) or from both the label and a salesperson (40 percent). Consumers depending entirely on the salesperson (11 percent) rarely or never looked for labels. Those with less than a high school education depended on salespersons more frequently than did respondents with more education.

The researchers also interviewed retail store managers and dress manufacturers about reasons for consumer complaints. Iron temperatures that were too hot and improper use of bleach were mentioned as the leading causes of fabric damage leading to returns. Lack of care information is one reason for improper laundry procedures.

A 1962 Good Housekeeping survey of 1,963 magazine readers showed that one woman out of three usually did not find all of the information she needed on clothing labels and tags (41). Of those sampled, 91 percent indicated that they read clothing labels when shopping, and many expressed a desire for sewn-in tags which would not get lost or separated from the garment.

While interviewing consumers in 1968 concerning labeling preferences for ladies' slacks, Hardin (30) found that 64 out of the sample of 100 responded that care instructions were more important on a label and 36 said that fiber content was more important. The majority also preferred a sewn-in cloth tag to a hangtag and wanted the information all on one label. Hardin suggested that although consumers may indicate certain preferences in labeling, their actual use may not be consistent with their preferences. Some shoppers said they wanted an informative label, but when asked to choose between two labels which one they preferred, actually selected one on the basis of color or size.

Honchul (32) found in a sample of 300 randomly selected shoppers that men were more apt than women to never observe care labels when purchasing garments. Of those individuals who stated they always looked for a label, the majority were 21 to 30 years old but the majority of respondents who stated they never looked for care labels

were also in this age group. Education alone did not account for one's use of labels. Respondents with a high school diploma all said they always looked for labels but 3.7 percent with bachelor's degrees never looked for a label. When a garment needed cleaning for the first time, 72.6 percent of the sample reported they looked for care instructions before deciding on the method to use. Fiber content was checked by 17 percent of the respondents before they decided on care procedures.

Brannon's (6) study also indicated that consumers use labels as an aid in making purchasing decisions. Nearly 90 percent of the subjects reported that they usually looked for size, care and washing instructions on the label when buying clothing. Design or style, price and care were more frequently considered in their final choice than brand name or fiber content.

At the time the FTC was holding hearings to determine the need for care labeling, Poschman (57) interviewed low income consumers to ascertain if they favored such a program. One of the reasons experts supported the Rule was that loss of textile products due to improper care procedures is especially important economically to this group. Thirty-five women living in a public housing project were interviewed. Two-thirds of the sample used their own past experience as their sole source of care information, while labels, hangtags and packaging were used by 23 percent. The homemakers expressed a strong negative response to a need for more care information. About 70 percent did not feel they needed any additional care information, and as the amount of washing per week increased, the desire for care information decreased. Only one-fourth of the sample felt permanent care labels should be on

all textile items, but many homemakers thought it would be useful to have labels on special items.

Research on Laundry Procedures

Although studies indicate a large percentage of homemakers look at care labels, they do not always follow the instructions. Fiber content was found by Muscetti (49) to be the most important factor influencing homemakers' interpretations of washing instructions on winter skirt labels. No matter what the manufacturer's washing instructions said, when a skirt was made of all wool or contained a high percentage of wool, the respondents generally preferred to have it dry-cleaned. However, a majority stated they would follow washing instructions for skirts made entirely of man-made fibers or for those containing a high percentage of man-made fibers. The study implied that appearance was more important to the consumer of winter skirts than ease or expense of care.

Kightlinger's (38) research revealed that of 100 homemakers questioned, 92 followed care directions in the selection of a method of care, but only 69 of the 92 followed the directions without modification. Responses to questions on the care of permanent press garments showed that most of the homemakers had limited knowledge of proper care procedures. They were not familiar with the recommended care techniques for blended fabrics which contained fibers requiring special treatment.

McMillan (46) also found a lack of knowledge about newer fabrics and finishes. She asked 154 Indiana homemakers to give instructions for washing six items in an automatic washer. Included in the study

were pillowcases, blue jeans, a slip, a wool skirt, knit slacks, and a permanent press shirt. The first three items are frequently part of family laundry while the last three are of fibers or finishes relatively new to home laundering. The participants were most knowledgeable about correct laundry procedures for cotton pillowcases, the item made of a natural fiber without a finish, and least knowledgeable about those for a man's permanent press shirt, the example of a synthetic blend with a finish. Rinse temperature settings, spin speed, bleach and fabric softener seemed to cause the most problems in establishing correct laundry procedures. The homemaker's knowledge of laundry practices was positively related to the number of persons she washed clothes for. No relationship was found between age, years of laundry responsibility or annual family income and knowledge of laundry procedures.

When asked where they learned to wash clothes, the answer "mother taught me" was selected most frequently. Trial and error was the second most frequent response. Over 90 percent said they used information on labels when deciding how to wash clothes. However, in spite of the tendency to use labels, it appears that many homemakers do not have sufficient knowledge to get optimum laundering results when caring for newer fabrics and finishes.

In her 1965 study of laundry procedures, Carlson (12) asked homemakers using self-service laundries where they learned to care for the newer fabrics. Two-thirds of the homemakers reported using labels as important sources of information. Other information sources mentioned were family, figured out for oneself, neighbors, magazines, and

friends. The under 20 age level said they most often used the home economics teacher.

Fiber was considered less frequently than color, soil or durability when sorting garments for washing. The majority of homemakers did not make any adjustments in washing or drying their laundry to provide for proper care of different fabrics and finishes. Hot temperature settings as well as the regular cycle and time were generally used for both the washer and dryer. When asked if they would like help with any laundry problems, information was most frequently requested about dingy white fabrics and about how to care for different fabrics.

Norwick (63), chairman of the American Standards for Testing and Materials subcommittee on chemical performance test methods for textiles, observed the tendency to disregard instructions in this way:

> Consumers toss many things into the wash together, whether or not they know that the process is the optimum for each and every item in that wash. They do it as a matter of economy, practicality, or to save time (p. 29).

In an article about consumer complaints, Rogers (58) expressed a similar idea.

> Consumers resent having to wash deep-shaded items separately for 'the first time or two.' One-fourth of the families in one survey washed colored as well as white textiles at the hot setting of their washing machine, (145°F). Approximately the same number used bleach on colored clothes (p. 28).

Before permanent care labeling became mandatory, Joyner (37) sampled 110 women shoppers about their use of voluntary permanent care labels in casual dresses. Over 74 percent of the consumers indicated they often looked for a permanent care label when shopping, and 58.2

percent said that a permanent care label "often" aided in their final choice. Responses to questions concerning consumer use of permanent care labels revealed a majority used the labels as indicated. The label was "often" read before laundering by 88.2 percent of the consumers and only 1.8 percent said they "never" read the labels before laundering. However, when asked if they were satisfied with the results when they followed the instructions given on the labels, only 50 percent reported they were "often" satisfed.

Joyner suggested that this lack of satisfaction might indicate

> the consumer does not fully understand the care terms on permanent care labels. It might also indicate the consumer does not interpret the label as the manufacturer intended, thus making modifications in instructions, which cause dissatisfaction with the laundered garment (p. 47).

Another possibility is that the consumer is not being educated to read the label and follow instructions as they appear on the label.

Since it became effective, the importance and meaning of the Permanent Care Labeling Rule has been publicized by magazines, newspapers, government publications, extension programs, consumer educators, home economists, and many others.

One report of a specific program to inform consumers about permanent care labeling legislation was found. The University of Wisconsin Extension Service worked with 140 teenage participants in the 1973 Wisconsin Junior State Fair Clothing Preview to develop an awareness and understanding of the provisions of the Permanent Care Labeling Rule and the 1973 Flammability Standard for Children's Sleepwear (42). On a pretest, only five of the teenagers replied that they had sewn a permanent care label into their award-winning garment and very few

knew the labels or the law existed, although it had been in effect for over a year.

Four days of various activities allowed the girls to examine labels for information and to discuss the most significant aspects of the legislation. Postquestionnaires showed increased awareness, but even after this intensive exposure to permanent care labeling, the girls were confused about exceptions to the Rule. The legislation will be beneficial only when consumers are aware of it, understand it, and know how to use it. Yet, few consumers have experienced such an extensive educational effort as these Wisconsin teens.

Summary

Included in Chapter II has been a review of literature concerning the background, development and implementation of the Permanent Care Labeling Rule. Other textile labeling efforts, provisions of the Rule, and problems consumers may have in understanding the Rule have been presented.

Also included in Chapter II has been a discussion of the information consumers indicate they want on garment labels and of the application that is made of information provided. Several research studies were included in the review. Literature concerning homemakers' knowledge of correct laundry procedures was also summarized.

Chapter III will describe the method and design of this study.

CHAPTER III

METHODOLOGY

The purpose of this study, as indicated in Chapter I, was threefold. The primary purpose was to determine how the variables of formal education, laundry experience and income affect one's ability to interpret and apply the information provided on permanent care labels in ready-made garments. In addition, the study was designed to determine the sources of information consumers use to learn about clothing care procedures. Also investigated were consumer awareness of the Permanent Care Labeling Rule and the utilization of permanent care label information by consumers when they are purchasing ready-made garments and selecting care procedures for these garments.

The design of the study, a description of the population and sample, the instrument for data collection, and the statistical procedure for data analysis are discussed in this chapter.

Population and Sample

The population for this study consisted of homemakers who were members of organized groups. Due to time limitations and the complexity of the instrument, it was necessary to contact the respondents in a group situation. The sample consisted of non-randomly selected homemakers attending the regularly scheduled February, March and April, 1974 meetings of church, community, extension and young homemakers

groups in the vicinity of Stillwater, Oklahoma. An attempt was made to obtain the cooperation of organizations which would provide variety in terms of the variables to be studied. Eleven different groups were sampled and over 200 questionnaires were administered. A total of 181 questionnaires were usable and they provide the data to be analyzed in this study.

Design of the Study

The instrument was designed to give information about the type of laundry equipment used by the homemaker, her laundry experience, her knowledge and use of permanent care labels, her use of information sources, and certain demographic data.

The main body of the instrument consisted of a comparison of ten different fabric samples. To select fabric samples for the study, the researcher visited retail stores in the Stillwater, Oklahoma area to observe the fiber content, fabric construction and care label instructions of frequently stocked ready-made garments. Five garments of different fiber contents were chosen to be used for the study and piece goods having the same fiber contents, construction processes, and similar care instructions as the ready-made garments were located and purchased.

The fabric samples were selected to provide a variety of construction techniques, fiber contents, colors, and recommended care procedures. They were not intended to be representative of a typical family's wash, although all fabrics included in the study are commonly available both in ready-made garments and as piece goods.

The page containing the first five samples was distributed with the questionnaire. Each fabric sample was numbered and the fiber content was given. It was emphasized that each fabric sample represented the garment indicated; for example, sample one represented a woman's blouse made of 65% triacetate and 35% polyester (Appendix A).

Following the fabric samples was a separate page of ten questions for each sample and each respondent was asked to place a check in the blank that best indicated the care procedures that she would use for that specific garment. The factors used to determine knowledge of care procedures were the general care method for the garment, wash temperature, rinse temperature, washer cycle, drying procedure, dryer setting, use of bleach, sorting, and choice of dry cleaning methods. The questions were the same for all samples, and the respondents were instructed to answer every question about each sample. Even if they indicated they would dry-clean the garment, they were asked to choose the washing procedures they would follow if they were forced to launder it.

After answering the questions about the first five fabric samples, the respondents were asked to return the sample sheet to the researcher. They were then given a second sheet of fabric samples numbered six to ten. These samples were identical in fiber and construction to the first samples, but they were of different colors and were ordered differently. For each of the second set of fabric samples the respondents were given the fiber content, the type of garment it represented, and a label with care instructions. The respondents then answered exactly the same questions they had completed for the first set of five samples without care labels.

This study concentrated on consumer use of care labels in ready-made garments under the assumption that all consumers purchase some articles of clothing and will eventually experience permanent care labels, but not all consumers sew. Therefore, labels typically found in ready-made garments were used with fabric samples six through ten. The Guide for Permanent Care Labeling (27) and the Consumer Care Guide for Apparel (15) were consulted to achieve standard terminology. These guides were also used to select the terminology for the laundry procedure questions about each sample. In particular, the Guide for Permanent Care Labeling uses the term "Regular" to encompass other terms that may appear on some washers and dryers such as Automatic Dry, Timed Dry and Special Normal. A Gentle or Delicate cycle indicates low speed agitation, or permanent press on a dryer (27).

Faculty members in the Division of Home Economics at Oklahoma State University acted as a panel of experts to determine the "best" care procedures for the fabric samples, i.e. the methods which would allow the consumer to achieve maximum appearance and wearing life for the garments.

The respondents were also asked to answer a series of questions about the sources of information they used to learn about clothing care procedures and about their utilization of permanent care label information. For these questions they were asked to check one of five possible answers: always, sometimes, seldom, never, or does not apply.

Data Collection

After the first draft of the instrument was developed, it was tested with a class of 33 married home economics seniors to determine

clarity of the questions. Minor changes were made in the instrument from the suggestions and comments of the pre-test group.

The instrument was then administered to the cooperating club groups. The researcher was present to explain the instrument and to answer questions at nine of the meetings. For two organizations the questionnaire was explained to the group president who then administered it to the members during the regular meetings.

Statistical Treatment of the Data

The multiple regression model is used to analyze the data for factors affecting the choices of "best" care procedures. The regression model assumes a causal relationship between a dependent variable and one or more independent variables. A variable is called dependent because it is functionally dependent on other variables. In the regression model, the observed changes in the dependent variable are explained by changes in the independent (explanatory) variables. One feature of multiple regression analysis is that it allows the researcher to estimate the effect of one independent variable on the dependent variable while holding the other independent variables constant. Thus, it is possible to separate the effect of one explanatory variable from the effects of the others.

Estimation of the multiple regression model is basically a method of finding the best fitting line for a body of data. The performance of the regression model is evaluated in terms of (1) the agreement of signs of $\hat{B}_i$ with prior expectations, (2) the statistical significance of $\hat{B}_i$, and (3) the explanatory power of the regression model.

The explanation of the statistical treatment of the data is based on the discussion of the linear regression model in Mendenhall (47). Appendix B contains a further explanation of the procedure for estimating the coefficients of the multiple regression model by the least squares method and for testing hypotheses about the coefficients of the model.

The following regression model was used in this study to attempt to explain the proportion of "best" answers on the experiments about garment care:

$$P_i = B_o + B_1X_{1_i} + B_2X_{2_i} + B_3X_{3_i} + B_4L_i + u_i$$

where

i denotes an observation, a particular respondent,

P_i denotes the dependent variable, the proportion of best garment care answers selected in a group of experiments,

X_{1_i} denotes the homemaker's educational level,

X_{2_i} denotes the homemaker's laundry experience,

X_{3_i} denotes the household's total income,

L_i is a dummy variable and denotes the presence or absence of permanent care labels. It equals one if labels are present, zero if labels are not present.

B_1-B_4 denote the coefficients of the independent variables and give the marginal effect on the proportion of "best" answers due to a change in a particular independent variable.

B_o denotes the intercept.

u_i denotes the error term (a disturbance).

The hypotheses formulated in Chapter I can now be interpreted in terms of the B coefficients in the model.

One of the basic objectives of the educational system is to teach persons how to obtain information and how to interpret this information. A rise in educational level should increase awareness of available information. Therefore, the researcher expects to find that an increase in homemakers' educational levels increases the proportion of "best" answers on the fabric sample experiments. The sign of B_1 is thus hypothesized to be positive.

Experience with a variety of fabrics, fibers, finishes, construction techniques and laundry problems should result in increased laundry skill. The measures of laundry experience used in this study are years of laundry experience and number of loads of laundry washed per week. It is hypothesized that laundry experience is positively related to the proportion of "best" garment care choices, and thus B_2 will be positive.

Household income is expected to be positively related to the cost of garments being purchased. For the person buying more expensive clothing, errors in garment care will lead to larger financial losses than for the person purchasing cheaper clothing. The higher the level of household income, the larger is the expected loss from ignorance about garment care. Therefore, the proportion of "best" choices made by a homemaker is expected to be positively related to her household income, and B_3 is anticipated to be positive.

The central problem of this study is to determine whether homemakers can make better laundry choices when they have a label than when they do not. Therefore, B_4 is hypothesized to be positive,

indicating that the presence of permanent care labels makes a difference in the proportion of "best" garment care answers selected by homemakers.

Summary

Chapter III included a description of the population and sample, an explanation of the design of the study, the method for collecting data, and the statistical procedure to be used to analyze the data. Chapter IV will present the data analysis and results of the study.

CHAPTER IV

ANALYSIS OF THE DATA

This study was designed to investigate the effects of permanent care labels and selected socio-economic factors on homemakers' laundry procedures. Consumer awareness and utilization of permanent care labeling were studied. The analysis of the data in this chapter attempts to explain the proportion of "best" garment care procedures selected by homemakers using the five independent variables of educational level, loads of laundry washed per week, years of laundry experience, label presence and total family income.

Description of Homemakers Participating in the Study

The sample for this study consisted of 181 non-randomly selected homemakers attending the February, March and April 1974 meetings of church, community, extension and young homemakers groups in the vicinity of Stillwater, Oklahoma.

Table I shows the distribution of the women participating in the study by age level. Over 54 percent were 20 to 49 years old, the age groups where there are most likely to be children at home. One would expect homemakers in these groups to be doing more laundry than those under 20 years of age (1 percent) or those 50 years of age and older (45 percent).

TABLE I

DISTRIBUTION OF HOMEMAKERS BY AGE LEVEL

Age Level	Frequency	Percent
Under 20	2	1.11
20 through 29	32	17.68
30 through 39	34	18.79
40 through 49	32	17.68
50 through 59	24	13.26
60 and over	57	31.49
Total	181	100.01

Only four percent of the homemakers had not completed high school. A total of 24 percent ended their formal education with high school and 34 percent had attended some college. College graduates with bachelor's degrees composed 27 percent of the sample, while 12 percent had advanced degrees. These results are presented in Table II.

TABLE II

DISTRIBUTION OF HOMEMAKERS BY EDUCATIONAL LEVEL

Educational Level	Frequency	Percent
8th Grade or Less	1	0.55
Some High School	7	3.87
High School Graduate	43	23.75
Some College	61	33.70
College Graduate	48	26.52
Advanced Degree	21	11.60
Total	181	99.99

Of the 181 persons sampled, 86 percent were married, as shown in Table III. Homemaking was a full-time occupation for 73 percent of the women, but Table IV reveals that over one-fourth were combining home responsibilities with employment or schooling.

TABLE III

DISTRIBUTION OF HOMEMAKERS BY MARITAL STATUS

Marital Status	Frequency	Percent
Single	7	3.87
Married	156	86.19
Separated or Divorced	1	0.55
Widowed	17	9.39
Total	181	100.00

TABLE IV

DISTRIBUTION OF HOMEMAKERS BY OCCUPATIONAL STATUS

Occupational Status	Frequency	Percent
Full Time Homemaker	133	73.48
Employed Part Time (Less Than 20 Hours Per Week)	13	7.18
Employed Full Time (20 to 40 Hours Per Week)	29	16.02
Student-Homemaker	5	2.76
No Response	1	0.55
Total	181	99.99

Table V shows that total family incomes of less than $5,000 a year were reported by 12 percent of the homemakers. About 34 percent had incomes under $10,000, while 26 percent were in the $10,000 to $14,999 range and 38 percent earned over $15,000 annually.

TABLE V

DISTRIBUTION OF HOMEMAKERS BY TOTAL FAMILY INCOME

Income	Frequency	Percent
Under $5,000	22	12.16
$ 5,000 to $ 7,999	17	9.40
$ 8,000 to $ 9,999	23	12.71
$10,000 to $14,999	47	25.97
$15,000 or Over	68	37.57
No Response	4	2.21
Total	181	100.02

The data concerning ownership of laundry equipment as related by the respondents are shown in Table VI. Both an automatic washer and an automatic dryer were owned by 70 percent of the women. An automatic washer only was owned by 13 percent, but no one who did not own an automatic washer owned an automatic dryer. Only four percent owned wringer washers and 10 percent did not own any laundry equipment.

Table VII shows that laundry was done at home by 85 percent of the homemakers. The laundromat was used by 11 percent, a figure which corresponds closely with the number of women who did not own laundry equipment.

TABLE VI

DISTRIBUTION OF TYPE OF LAUNDRY EQUIPMENT OWNED BY HOMEMAKERS

Equipment Owned	Frequency	Percent
Wringer Washer Only	7	3.87
Automatic Washer Only	23	12.71
Automatic Dryer Only	0	0.00
Combination Washer-Dryer	4	2.21
Automatic Washer and Automatic Dryer	127	70.17
Wringer Washer and Automatic Washer	1	0.55
None	19	10.50
Total	181	100.01

TABLE VII

DISTRIBUTION OF LOCATION OF LAUNDRY FACILITIES USED BY HOMEMAKERS

Location	Frequency	Percent
Home	155	85.64
Laundromat	20	11.05
Friends' or Relatives'	0	0.00
Home and Laundromat	3	1.66
Laundromat and Friends' or Relatives'	1	0.55
Do Not Do Own Laundry	2	1.11
Total	181	100.01

Laundry was done for three or fewer persons in 53 percent of the households sampled. This is reasonable, since 44 percent of the respondents were 50 years of age or older. About 29 percent of the homemakers did laundry regularly for four persons and 17 percent did laundry for five or more persons. These results are shown in Table VIII.

TABLE VIII

DISTRIBUTION OF NUMBER OF PERSONS FOR WHOM LAUNDRY IS DONE IN HOUSEHOLD

Number of Persons	Frequency	Percent
One	17	9.39
Two	60	33.15
Three	19	10.50
Four	53	29.28
Five	18	9.95
Six	10	5.53
Other*	3	1.66
Do Not Do Our Own Laundry	0	0.00
No Response	1	0.55
Total	181	100.01

*Two homemakers did laundry for seven persons and one homemaker did laundry for eight persons.

Another measure of laundry experience used in the study is the number of loads of laundry washed per week by the respondents, as reported in Table IX. Sixty-one percent of the homemakers washed 8 or fewer loads per week. About 29 percent of the women washed 9 to 16 loads weekly, while 9 percent did 17 or more loads of laundry.

Only four percent of the women reported laundering for themselves or their families for less than five years. Nearly the same number of homemakers had between 5 and 20 years of laundry experience as had 20 to 40 years of experience. The figures, reported in Table X, are 38 percent and 39 percent, respectively.

TABLE IX

DISTRIBUTION OF LOADS OF LAUNDRY WASHED PER WEEK BY HOMEMAKERS

Loads Per Week	Frequency	Percent
1 to 4	71	39.23
5 to 8	40	22.10
9 to 12	40	22.10
13 to 16	13	7.18
17 to 20	10	5.53
More Than 20	6	3.32
Don't Know	0	0.00
No Response	1	0.55
Total	181	100.01

TABLE X

DISTRIBUTION OF YEARS OF LAUNDRY EXPERIENCE OF HOMEMAKERS

Years	Frequency	Percent
Under 5	8	4.42
5 to 10	29	16.02
10 to 20	39	21.55
20 to 30	38	20.99
30 to 40	32	17.68
40 to 50	31	17.13
Other*	4	2.21
Total	181	100.00

*One person had 55 years of laundry experience and one person had 60 years of laundry experience. Two persons answered "other" but did not specify years of laundry experience.

Use of Labels as Information Sources

A comparison of the use of permanent care labels relative to alternative sources of garment care information was made. Table XI gives the distribution of information sources used by homemakers when learning care procedures for new garments. First the percentages are given for the frequency of use of each source of information based upon the total sample of 181 persons. A category is added for each information source to allow for non response. The numbers in parentheses were obtained by subtracting the non responses from the total of 181 persons and recalculating the percentages. On this section of the instrument the homemakers tended to indicate the information sources they used always or sometimes, but to leave the question blank if they seldom or never used a particular source. Therefore, the percent of no response answers for each information source could be added to the "Never" column. The data in Table XII and Table XIII are tabulated in the same manner.

The label was by far the most often used source of care information. It was used always or sometimes by 95 percent of the homemakers. Previous experience was also relied upon heavily, with 66 percent of the women indicating they always or sometimes picked a care method they thought would work and tried it out. The constant development of new fibers, fiber blends, and methods of fabric construction could quickly outdate one's garment care experience.

Other information sources frequently checked as being used always or sometimes were the store clerk, consulted by 44 percent of the respondents, and neighbors or friends, consulted by 35 percent of the

TABLE XI

DISTRIBUTION OF INFORMATION SOURCES USED BY HOMEMAKERS WHEN REFURBISHING NEW GARMENTS*

Information Source	Always Percent	Sometimes Percent	Seldom Percent	Never Percent	Does Not Apply Percent	No Response Percent
Extension Agent	2.21 (3.60)	7.74 (12.60)	6.10 (9.91)	43.65 (71.17)	1.66 (2.70)	38.67
Label	90.61 (94.25)	4.42 (4.59)	0.55 (0.57)	0.55 (0.57)	0.00 (0.00)	3.87
Home Economics Teacher	2.21 (2.68)	8.84 (10.74)	3.32 (4.03)	46.96 (57.05)	4.42 (5.37)	34.25
Laundromat Attendant	2.76 (4.17)	4.42 (6.67)	7.18 (10.83)	46.96 (70.83)	4.97 (7.50)	33.70
Neighbors or Friends	3.87 (5.65)	30.94 (45.16)	14.92 (21.77)	17.68 (25.81)	1.11 (1.61)	31.49
Mother	2.21 (3.51)	17.13 (27.19)	7.18 (11.40)	31.49 (50.00)	4.97 (7.89)	37.02
Other Relatives	1.11 (1.72)	14.92 (23.28)	8.84 (13.79)	35.36 (55.17)	3.87 (6.03)	35.91
Dry Cleaner	4.97 (7.09)	21.55 (30.71)	17.13 (24.41)	25.97 (37.01)	0.55 (0.79)	29.83
Store Clerk	10.50 (14.73)	33.15 (46.51)	16.02 (22.48)	11.60 (16.28)	0.00 (0.00)	28.73
Previous Experience	16.02 (20.57)	49.72 (63.83)	7.18 (9.23)	4.97 (6.38)	0.00 (0.00)	22.10

*The numbers in parentheses were obtained by subtracting the non responses from the total sample of 181 persons and recalculating the percentages.

TABLE XII

DISTRIBUTION OF LAUNDRY SORTING METHODS USED BY HOMEMAKERS

Sorting Garments For Washing By:	Always Percent	Sometimes Percent	Seldom Percent	Never Percent	Does Not Apply Percent	No Response Percent
Fiber	33.70 (38.60)	39.78 (45.57)	7.74 (9.09)	5.53 (6.33)	0.55 (0.63)	12.71
Color	67.96 (71.93)	24.86 (26.32)	1.66 (1.75)	0.00 (0.00)	0.00 (0.00)	5.53
Soil	25.97 (32.41)	40.33 (50.34)	11.60 (14.48)	1.66 (2.07)	0.55 (0.69)	19.90
Care Label Instructions	50.28 (56.52)	29.28 (32.92)	7.74 (8.70)	1.11 (1.17)	0.00 (0.00)	11.60
Other	0.00 (0.00)	1.11 (9.52)	1.11 (9.52)	0.55 (4.76)	8.84 (76.19)	88.40

TABLE XIII

DISTRIBUTION OF USE OF PERMANENT CARE LABELS BY HOMEMAKERS

Response to Question	Always Percent	Sometimes Percent	Seldom Percent	Never Percent	Does Not Apply Percent	No Response Percent
A. Before Laundering or Cleaning First Time?	87.29 (88.76)	10.50 (10.67)	0.55 (0.56)	0.00 (0.00)	0.00 (0.00)	1.66
B. Follow Instructions: For Washing?	67.40 (69.32)	28.73 (29.55)	1.11 (1.14)	0.00 (0.00)	0.00 (0.00)	2.76
For Drying?	54.14 (57.65)	35.91 (38.24)	3.32 (3.53)	0.55 (0.59)	0.00 (0.00)	6.10
For Dry Cleaning?	67.96 (72.78)	22.10 (22.35)	2.76 (2.96)	0.00 (0.00)	0.55 (0.59)	6.63
C. Satisfied With Results?	28.73 (29.71)	65.75 (68.00)	2.21 (2.29)	0.00 (0.00)	0.00 (0.00)	3.32
D. When Shopping?	77.35 (78.21)	16.02 (16.20)	3.32 (3.35)	2.21 (2.23)	0.00 (0.00)	1.11
E. Influence Final Choice?	54.70 (55.30)	38.67 (39.11)	3.32 (3.35)	1.66 (1.68)	0.55 (0.56)	1.11

homemakers. A dry cleaner was asked garment care advice always or sometimes by 26 percent of the respondents.

The consumers sampled in this study often took a guess about correct garment care procedures or asked easily accessible persons such as store clerks, neighbors and friends for information. It is likely that the persons consulted were no better informed than the homemaker herself.

Use of Labels When Laundering and Shopping

In order to determine how consumers utilize permanent care labels, the women sampled were asked a series of questions about their laundering and shopping habits. Table XII shows that color was of primary importance in sorting garments for washing, with 68 percent of the women responding that they always considered this garment characteristic. Care label instructions were always used by 50 percent of the sample. Fiber content was always used by 34 percent of the homemakers, and soil was always considered by 26 percent.

Over 87 percent of the homemakers stated that they always looked for a permanent care label before laundering or cleaning a garment for the first time. These results are summarized in Table XIII. When the homemakers were asked if they actually followed the label directions, 67 percent reported always following washing instructions, 54 percent reported always following drying instructions, and 68 percent reported always following dry cleaning instructions. Therefore, although the labels are used as guidelines, the information provided is not always utilized. Lack of satisfaction with results obtained when following label directions may be one reason they are not adhered to more

frequently. Of the 181 homemakers sampled, 29 percent were always satisfied when they followed the instructions on permanent care labels. However, 65 percent reported being sometimes satisfied with the results, and no one reported never being satisfied.

The effectiveness of the permanent care label is dependent upon utilizing information both when refurbishing garments and when making purchasing decisions. Over 93 percent of the respondents reported always or sometimes looking for permanent care labels when shopping for ready-made garments. The care instructions on the label always influenced the final purchase decisions for 55 percent of the women. Label content sometimes influenced 39 percent of the homemakers, and less than two percent of the respondents were never influenced by the permanent care label.

Since the Permanent Care Labeling Rule had been in effect about 18 months at the time of this study, two questions were asked to determine consumer awareness of permanent care labeling practices. These results are reported in Table XIV. About 96 percent of the homemakers stated that they or other family members owned garments having permanently attached care labels. However, only 66 percent knew that permanent care labels are now required in most ready-made garments, and over one-fourth of the sample believed that permanent care labels are not required. Consumers who do not realize that garments should be labeled may be overlooking an important source of information at point of purchase.

TABLE XIV

DISTRIBUTION OF HOMEMAKERS BY AWARENESS OF PERMANENT CARE LABELING

Responses to Question	Frequency	Percent
A. Own Permanent Care Labels?		
Yes	174	96.13
No	3	1.66
Don't Know	2	1.11
No Response	2	1.11
Total	181	100.01
B. Permanent Care Labels Required?		
Yes	119	65.75
No	50	27.62
Don't Know	10	5.52
No Response	2	1.11
Total	181	100.00

The Regression Analysis

The Data

The data for the regression analysis were obtained from the questionnaire completed by the homemakers. In addition to providing demographic data and information on laundry experience, the women answered a series of ten questions about how they would care for each of ten fabric samples which represented specific garments. For the first five samples the women were told the fiber contents. The second set of five fabric samples were identical in fiber and construction to the first five samples, but they were of different colors and were ordered differently. For these samples the homemakers were given the fiber contents and permanent care labels. The women were cautioned

that the researcher was interested in learning how they would care for the garments if they were part of the family laundry, regardless of whether or not the procedures selected agreed with the label instructions.

The opinions of a panel of experts from the Division of Home Economics at Oklahoma State University were used to establish the optimum care procedures for the five different fabric samples included in the study. The labels were used as a basis for the chosen care procedures, but four of the labels did not provide sufficient information to answer all of the questions. It is important to note that the principle of exception labeling, explained in Chapter II, is commonly used on permanent care labels and that the labels are supposed to give the widest latitude of safety in care procedures. In several instances, the care procedures recommended by the experts were gentler than those implied from the labels. For example, the label for the 100 percent acrylic sample read "Machine Wash, Warm." No wash cycle was given, so a regular cycle could be assumed. Because of the fabric construction, a delicate cycle was recommended by the experts. A homemaker would need to combine her knowledge of laundry practices with the label information to achieve optimum care results.

The care procedures recommended by the panel of experts are summarized in Appendix D and are intended to be the easiest, least expensive care methods which will prolong a garment's new appearance and its wearing life. These procedures are termed the "best" care methods throughout the study.

The Empirical Model

The regression model explained in Chapter III can be written in the following form, using alphabetical designations for the variables:

$$P_i = B_o + B_1 SCH + B_2 LOADS + B_3 LYEARS + B_4 INCOME + B_5 LABEL + u_i$$

where

i	denotes an observation, a particular respondent,
P_i	denotes the dependent variable, the proportion of "best" garment care answers selected in a group of experiments,
SCH	denotes the homemaker's educational level,
LOADS	denotes the number of loads of laundry washer per week,
LYEARS	denotes the number of years the homemaker has been doing laundry,
INCOME	denotes the household's total annual income,
LABEL	is a dummy variable and denotes the presence or absence of a permanent care label. It equals one if a label is present, zero if a label is not present,
$B_1 - B_5$	denote the coefficients of the independent variables. The coefficient of a variable gives the change in the proportion of "best" answers for a one unit change in the explanatory variable holding other explanatory variables constant.

B_o denotes the intercept,

u_i denotes the error term (a disturbance).

Construction of the Empirical Measures of Variables Used in the Model

In coding the data from the instruments, a one was used to indicate the answers which were chosen by a homemaker, a zero was used to indicate the answers which were not chosen, and eights were used for all questions to which a homemaker did not respond. The eights were changed to zeros for constructing the dependent variable.

To obtain the proportion of "best" answers for each individual fabric sample, the number of "best" answers chosen were summed and then divided by nine, the maximum number of possible "best" answers for each sample. Question "J" about dry cleaning procedures was not included in the regression analysis because none of the samples required this care procedure and yet either cleaning method was acceptable for all samples.

The average proportion of "best" answers selected for the group of unlabeled samples was obtained by summing the proportions of "best" answers chosen for samples one through five and dividing by five, the number of samples in the group. The average proportion of "best" answers selected for the five labeled samples was obtained in the same manner. Since each homemaker completed the experiments for both the unlabeled and labeled samples, each questionnaire yielded the proportion of "best" answers on the group of unlabeled experiments and on the group of labeled experiments (i.e., effectively two observations on the dependent variable). The two observations per questionnaire

were pooled together to give a total of 362 observations in the regression model. This procedure permits the estimation of the effect of labeling while holding other factors constant. Pooling doubles the sample size and increases the degrees of freedom which helps in finding significant results.

For each independent variable (educational level, number of loads washed per week, years of laundry experience, and total family income) the class intervals were combined to yield one continuous variable. This reduced the number of coefficients to be estimated. The procedure is explained in detail in Appendix C.

Summary Statistics of Individual Variables

Table XV compares the proportion of "best" answers selected by homemakers for the five samples without permanent care labels with the proportion of "best" answers selected for five identical samples where permanent care labels were present. For each of the samples, the presence of a permanent care label increased the mean proportion of "best" care procedures chosen. The greatest increase was in the 80 percent wool, 20 percent nylon sample. Woolen garments have traditionally been dry-cleaned, and even when washing instructions are included, consumers prefer this care method to control shrinkage and felting, as reported by Muscetti (49). Therefore, lacking any care information for the unlabeled sample in this study, many homemakers chose to dry-clean it. When given a care label stating laundering directions, the proportion of "best" answers rose 16 percent, indicating that more homemakers were willing to try laundering the fabric.

TABLE XV

COMPARISON OF PROPORTION OF "BEST" ANSWERS SELECTED BY HOMEMAKERS FOR SAMPLES WITH LABELS AND SAMPLES WITHOUT LABELS*

Samples Without Labels			Samples With Labels		
Sample	Mean	Standard Deviation	Sample	Mean	Standard Deviation
Sample 1 65% triacetate 35% polyester	0.742	0.149	Sample 6 100% acetate	0.809	0.183
Sample 4 65% polyester 35% cotton	0.700	0.177	Sample 10 65% triacetate 35% polyester	0.779	0.134
Sample 5 100% acetate	0.606	0.165	Sample 8 100% acrylic	0.767	0.126
Sample 3 100% acrylic	0.691	0.146	Sample 7 65% polyester 35% cotton	0.743	0.153
Sample 2 80% wool 20% nylon	0.555	0.220	Sample 9 80% wool 20% nylon	0.724	0.236
N = 181					

* Samples are arranged from highest to lowest mean score.

The permanent care label for the 100 percent acetate sample gave very complete care instructions, so it is reasonable to expect a high proportion of "best" answers for this experiment. Evidently the label content agreed with the homemakers' knowledge of laundry procedures, because the proportion of "best" answers rose from a mean of 61 percent without a label to a mean of 81 percent with a label, making it the labeled sample with the highest proportion of "best" answers.

For two of the experiments, the proportion of "best" answers rose only four percent when the fabrics were labeled. The 65 percent triacetate, 35 percent polyester sample had the highest proportion of "best" answers, 74 percent, in the unlabeled experiments. This result was surprising to the researcher, because fabrics of this fiber content are not as common in the marketplace as fabrics of 65 percent polyester, 35 percent cotton, the normal combination for permanent press fabrics. The mean proportion of "best" answers on the 65 percent polyester, 35 percent cotton experiment was 70 percent for the unlabeled sample and 74 percent for the labeled sample.

There was a rise of 7 percent in the proportion of "best" answers for the labeled 100 percent acrylic sample over the unlabeled sample. Because of its wool-like properties and knit construction, there was some hesitancy to wash the fabric, but the presence of the label instructions seemed to encourage homemakers to use this care method.

Table XVI gives the means and standard deviations for the variables appearing in the regression model. The sample means indicate a high average educational level and an average of about 25 years of laundry experience. The women averaged washing eight loads of clothing per week and mean total family income was $12,506.

TABLE XVI

MEANS AND STANDARD DEVIATIONS OF VARIABLES
IN THE EMPIRICAL MODEL

Variable	Mean	Standard Deviation
Probability of "Best" Answers for All Unlabeled Samples	0.659	0.103
Probability of "Best" Answers for All Labeled Samples	0.765	0.110
SCH: Years of Formal Education	14.268	2.067
LOADS: Loads of Laundry Washed per Week	7.743	5.247
LYEARS: Years of Laundry Experience	25.290	14.260
INCOME: Total Family Income ($)	12,505.524	5,219.884

N = 181

Correlation Coefficients of Variables

Table XVII summarizes the correlation coefficients of the variables used in the model. The range of values for correlation coefficients is between -1.00 and +1.00. These results are useful for examining the simple relationships between two variables when the other variables are not held constant.

TABLE XVII

CORRELATION COEFFICIENTS OF VARIABLES IN MODEL

	LOADS	LYEARS	LABEL	INCOME	P*
SCH	-0.011	-0.056	0.000	0.333	0.114
LOADS		-0.430	0.000	0.328	0.063
LYEARS			0.000	-0.084	0.028
LABEL				0.000	0.446
INCOME					0.107
N = 362					

*P denotes the proportion of "best" garment care choices made by homemakers.

The proportion of "best" care procedures is positively correlated with all explanatory variables. Of particular interest is the correlation between the proportion of "best" answers and the presence of

fabric care labels (0.446). These results suggest that labels can help homemakers make more correct care choices.

Results from the Regression Analysis

The results from fitting the regression equation to the collected data are shown in Table XVIII. The results are quite good. All of the signs of the coefficients are positive and the R^2 values of .22 and .21 are strong for data composed of individual observations.

Regression equation I includes all of the independent variables that were hypothesized to be important in explaining the proportion of "best" answers selected. The positive sign of the education variable (SCH) suggests that an increase in the number of years of formal education increases the proportion of "best" garment care choices made by homemakers. One of the objectives of education is to broaden the individual's awareness of information sources and then to teach him the skills required to understand and use the information collected. Therefore, persons with higher educational levels can be anticipated to be more skillful in locating desired information and in utilizing this information than persons of lower educational levels. In this study the homemakers were required to combine the label instructions with their practical laundry experience to decide on the care procedures they would use for the fabric samples. Women with higher educational levels may be less hesitant to buy garments having unfamiliar fiber contents or finishes and as a result they are more experienced in caring for a variety of clothing than women having lower educational levels.

TABLE XVIII

ESTIMATION OF REGRESSION EQUATIONS EXPLAINING PROPORTION OF "BEST" ANSWERS

Regression Equation	I	II	III
Coefficients of:			
SCH	0.005822 (2.012)[a] [0.0450][b]	0.006898 (2.558) [0.0109]	0.006592 (2.443) [0.0150]
LOADS	0.001746 (1.388) [0.1661]	0.002208 (1.879) [0.0611]	
LYEARS	0.000595 (1.367) [0.1724]	0.000639 (1.474) [0.1412]	
LABEL	0.105832 (9.542) [0.0001]	0.105832 (9.541) [0.0001]	0.105832 (9.5135) [0.0001]
INCOME	0.000001 (1.024) [0.3067]		
INTERCEPT	0.531514 (12.090)	0.527030 (12.047)	0.564637 (14.371)
R^2	.22	.22	.21
Degrees of freedom	356	357	359

[a] t-ratios, ratio of coefficient to standard error, are in parentheses.

[b] the significance levels for a two-tailed test are in brackets.

The variables used as measures of laundry experience are the number of loads washed per week (LOADS) and years of laundry experience (LYEARS). These two variables were selected because loads of laundry washed per week have a definite life-cycle pattern. Persons with many years of laundry experience are unlikely to be washing a substantial number of loads per week, while young homemakers with children are usually washing large quantities of laundry but do not have as many years of experience. The advantage of regression analysis is that the effects of one variable can be examined independently of the effects of the other. In equation I the coefficients of both variables are positive, but the number of loads washed weekly (LOADS) has a slightly greater marginal effect on the proportion of "best" answers than does the number of years of experience (LYEARS). These findings suggest that the length of time a homemaker has been doing laundry is less important in choosing care procedures than the amount of laundry she is currently washing. Women washing for a family including children are likely to have a wide variety of garments in the laundry basket which require different care techniques. Thus, they may be forced to keep up-to-date on fabrics and finishes.

The presence of a permanent care label (LABEL) is the most important factor influencing a homemaker's ability to care for clothing. When all other variables are held constant, the positive sign and large value of the LABEL coefficient indicate that giving a homemaker a permanent care label increases her proportion of "best" answers by 11 percent. Assuming the labels are accurate, these findings support the contention that increasing information aids decision-making. Accurate care labels can minimize the effects of low educational levels

or lack of laundry experience in achieving satisfactory care results. The homemakers in this study looked for labels when buying and caring for garments and had a tendency to follow label instructions. Thus, precise permanent care labels can decrease garment failures caused by improper care techniques.

The final variable in regression I is total family income (INCOME). This variable is included because household income is positively related to the cost of clothing purchased and as a result, higher income persons would have greater expected losses from improper care procedures than lower income persons. The sign of the coefficient of INCOME is positive as hypothesized but an increase in total family income has only a very slight effect on the proportion of "best" garment care choices, i.e., a $1,000 increase in total family income increases the proportion of "best" care procedures selected by 0.001. The small t value indicates that the coefficient of INCOME is significantly different from zero at only the 31 percent level. The large probability of Type I Error limits the degree of confidence in the positive coefficient of INCOME and suggests that the coefficient of INCOME is not different from zero. Therefore, there is little support for the general hypothesis that income is positively related to a homemaker's ability to make correct garment care choices.

Because INCOME is a weak explanatory variable, it is eliminated in regression equation II. With the removal of INCOME the coefficients and t values for three of the variables become larger and yet equation II explains the same amount of variation in the dependent variable (proportion of "best" answers) as does equation I, as evidenced by the identical R^2 values.

The t value for the coefficient of educational level (2.558) indicates that the positive coefficient of SCH is significantly different from zero at the one percent level. Therefore, there is substantial support for the general hypothesis that educational level is positively related to the homemaker's ability to make correct garment care choices. A one year increase in number of years of formal education raises the percentage of "best" answers by 0.7.

One component of laundry experience, the number of loads washed per week (LOADS) has a coefficient which is significant at the six percent level. The coefficient of the second component of laundry experience, the number of years of laundry experience (LYEARS), is significant at the 14 percent level. The LYEARS measure of laundry experience is not as strong as the LOADS measure. Therefore, there is mild support for the general hypothesis that laundry experience is positively related to a homemaker's ability to make correct care choices.

The LABEL variable has the same large explanatory power as in equation I. The t value (9.541) shows that the coefficient of LABEL is significantly different from zero at better than the one percent level. Therefore, the general hypothesis that the presence of a permanent care label is positively related to a homemaker's ability to make correct garment care choices is strongly sustained. Based on over-all performance, regression equation II is considered to be the most satisfactory regression equation for estimating the relationships of the independent variables to the proportion of "best" garment care answers.

In equation III the effects of the two most important explanatory variables are examined. All explanatory variables are eliminated except educational level (SCH) and label presence (LABEL). These variables explain almost as much of the variation in the dependent variable (proportion of "best" answers) as the more elaborate models in equations I and II, as evidenced by the R^2 value which was reduced by only 0.01.

Preferences for Dry Cleaning Methods

Dry cleaning is a care alternative for many garments. Homemakers may choose to dry-clean certain washable items because they feel that this method will keep the clothing new-looking longer. In the last few years, the prominence of coin-operated dry cleaning establishments has rapidly increased. The researcher was interested in learning if consumers have a tendency to use the coin-operated dry cleaner, perhaps as a cost cutting measure, or if they prefer using a professional dry cleaner to refurbish garments.

The results in Table XIX suggest that professional dry cleaning services are strongly preferred, because at least 55 percent of the homemakers stated they would use a professional for all fabric samples. In some cases, the presence of permanent care labels seemed to affect dry cleaning decisions. When the 65 percent triacetate, 35 percent polyester sample had no label, 71 percent of the homemakers stated they would send it to a professional dry cleaner. Upon learning from the label that the sample was washable, 10 percent of the women changed to the coin-operated method. This effect was reversed for the 100 percent acetate sample. Without a label about 56 percent of the

TABLE XIX

DISTRIBUTION OF DRY CLEANING METHODS PREFERRED
BY HOMEMAKERS FOR SAMPLES

Samples Without Labels	Coin-Operated Dry Cleaner Frequency	Percent	Professional Dry Cleaner Frequency	Percent	No Response Frequency	Percent
Sample 1 65% triacetate 35% polyester	48	26.52	129	71.27	4	2.21
Sample 2 80% wool 20% nylon	47	25.97	130	71.82	4	2.21
Sample 3 100% acrylic	61	33.70	115	63.54	5	2.76
Sample 4 65% polyester 35% cotton	73	40.33	101	55.80	7	3.87
Sample 5 100% acetate	73	40.33	101	55.80	7	3.87

TABEL XIX (Continued)

Samples With Labels	Coin-Operated Dry Cleaner Frequency	Percent	Professional Dry Cleaner Frequency	Percent	No Response Frequency	Percent
Sample 6 100% acetate	56	40.33	119	65.75	6	3.32
Sample 7 65% polyester 35% cotton	70	38.67	104	57.46	7	3.87
Sample 8 100% acrylic	60	33.15	114	62.98	7	3.87
Sample 9 80% wool 20% nylon	50	27.62	127	70.17	4	2.21
Sample 10 65% triacetate 35% polyester	63	34.81	113	62.43	5	2.76

women stated they would use a professional dry cleaner. After reading the label, over 65 percent of the homemakers planned to use a professional dry cleaner. Perhaps the detailed instructions for this sample made the homemakers realize that the garment required more special care than they had originially anticipated.

A comparison of the remaining unlabeled and labeled samples shows little change in dry cleaning preferences. After reading the label, a slightly larger percentage of women preferred to take the 65 percent polyester, 35 percent cotton sample to a professional dry cleaner than had chosen to do so without a label. However, a higher number of women were willing to use the coin-operated dry cleaning method for this sample than for any of the other labeled samples.

Generally, consumers selected the coin-operated method for easy-care garments and preferred the professional dry cleaner for garments requiring gentler handling. When in doubt about the proper care method due to the absence of a label, the homemakers used the services of a professional dry cleaner.

Summary

The instrument completed by 181 homemakers provided the data for this study. Consumer awareness and utilization of permanent care labels were investigated. At the time of the study, the Permanent Care Labeling Rule had been in effect about 18 months. The label was by far the most often consulted source of care information. It was used always or sometimes by 95 percent of the homemakers. About 66 percent knew that permanent care labels are now required in most ready-made garments, but over one-fourth of the sample believed that

permanent care labels are not required. When given a care label stating laundering directions, the proportion of "best" answers chosen by homemakers increased. The proportion of "best" answers for the 100 percent acetate sample rose 20 percent from a mean of 61 percent without a label to a mean of 81 percent with a label, the greatest increase among the ten fabric samples.

Regression analysis was used to determine the relationships between the proportion of "best" fabric care procedures chosen by homemakers and the following five selected independent variables: educational level, loads of laundry washed per week, years of laundry experience, total family income and label presence. The coefficients of the variables were all positive, indicating that increasing the size of any one of them would increase the proportion of "best" answers, holding other variables constant. The two most important factors influencing the homemaker's correct care choices were educational level and the presence or absence of a permanent care label. The positive sign of the education variable (SCH) suggests that an increase in the number of years of formal education increases the proportion of "best" care choices. The presence of a permanent care label is a very strong explanatory variable and raises the proportion of "best" answers by about 11 percent.

Chapter V will contain the implications of the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Over the past few decades the development of man-made fibers, fiber blends, new methods of fabric construction and new finishing processes have complicated decision-making about the purchase and care of textile products. Recognizing a lack of consumer information about garment care procedures, the Federal Trade Commission issued the Permanent Care Labeling Rule in 1972. This rule is designed to aid consumers both at the point of sale and when the garment requires refurbishing. The Rule requires that labels giving care and maintenance instructions be permanently attached to most garments and also provided with piece goods intended to be made into wearing apparel. For care labels to be effective, consumers must have confidence in the accuracy of the information supplied and be able to understand and apply this information.

Several studies were completed before the enactment of the Permanent Care Labeling Rule which investigated the type of information desired on clothing labels and consumer use of labels provided. However, a need was indicated to study consumer utilization and interpretation of permanent care garment labels after the Rule had been enacted and persons had an opportunity to experience the new labels.

The purposes of this study were: (1) to determine the extent homemakers are influenced by permanent care labels when purchasing and caring for ready-made garments and (2) to investigate the relationships between the variables of educational level, laundry experience, total family income and label presence or absence and a homemaker's ability to make correct garment care decisions.

An instrument was developed to obtain data on sources of garment care information, socio-economic characteristics and laundry procedures of homemakers. Each individual indicated the care procedures she would use for five unlabeled fabric swatches and five labeled fabric swatches, all representing garments. These responses were used to measure a homemaker's ability to select "best" clothing care procedures. The sample was limited to 181 non-randomly selected homemakers attending regularly scheduled meetings of church, community, extension and young homemakers groups in the vicinity of Stillwater, Oklahoma.

Regression analysis was used to explain relationships between the proportion of "best" garment care procedures selected by homemakers and the five independent variables.

Conclusions

The permanent care label was the source of garment care information used most often by the homemakers in this study. It was used always or sometimes by 95 percent of the women. Previous experience was relied upon always or sometimes by 66 percent of the homemakers, who indicated that they tried out care methods they thought would work. The briefness of most present permanent care labels necessitates combining label content with acquired laundry knowledge.

Over 87 percent of the women stated that they always looked for a permanent care label before laundering or cleaning a garment for the first time. However, when asked if they followed the label directions, 67 percent of the women reported always following washing instructions, 68 percent reported always following dry cleaning instructions and 54 percent reported always following drying instructions. The labels were used as guidelines, but in many instances the homemakers seemed to feel that satisfactory results could be achieved by using other methods. One reason for not following the directions more often may be disappointment with results. When following label instructions, 29 percent of the homemakers reported always being satisfied and 65 percent reported sometimes being satisfied.

The permanent care label is intended to be an aid both in the store when the garment is being purchased and at home when it is being cared for. Nearly all of the homemakers, 96 percent, knew that they or other family members owned garments containing permanent care labels. When shopping, 93 percent of the homemakers reported always or sometimes looking for permanent care labels. A permanent care label always influenced the purchasing decisions of 55 percent of the women, and less than two percent were never influenced by the label. At the time of this study, the Permanent Care Labeling Rule had been in effect over a year and a half. Of the 181 women sampled, 66 percent knew that permanent care labels were required on most ready-make garments, but one-fourth believed they were not mandatory. Due to lack of awareness, a substantial number of consumers may be overlooking an important source of information.

When questioned about dry cleaning preferences, a majority of the homemakers tended to use a professional dry cleaner for both unlabeled and labeled samples. There was greater willingness to use the coin-operated method for easy-care fabrics than for garments requiring gentler handling or more complicated care procedures. If in doubt about correct care methods, homemakers relied upon the services of a professional.

Overall, the study was successful in explaining the proportion of "best" garment care answers with the empirical model containing selected socio-economic variables. All of the independent variables have positive signs, which is consistent with the hypotheses formulated in Chapter I. The two most significant variables are educational level and label presence. Homemakers with more education are assumed to be more efficient at processing information and reaching decisions. In this study, educational level is significant at the one percent level, indicating that women with more years of education are better able to make correct garment care choices than women with fewer years of education.

A permanent care label is one source of textile information and is the most important factor influencing a homemaker's ability to make garment care decisions. When homemakers combined the label information with their knowledge of laundry procedures, the proportion of "best" answers increased by about 11 percent. The women in this study tended to use the information provided on care labels. The findings suggest that accurate, specific labels can help reduce garment failures resulting from incorrect care techniques.

Recommendations

The length and construction of the instrument used for this study made a random survey impractical. Because of the nature of the groups participating, the distribution of some of the variables was atypical of the general population of homemakers in Oklahoma. Thus, the study would have been improved by sampling a group of women more representative of the population in age, education, income and laundry experience levels. A few of the intervals were too large on the instrument. It would have been particularly helpful to scale the income variable so that the categories of "Under $5,000" and "Over $15,000" were further divided. Questions 8 to 15 about information sources and the use of permanent care labels may have yielded more precise information if the response alternatives of "Always," "Usually," "Rarely," and "Never" had been used rather than "Always," "Sometimes," "Seldom," and "Never." These alternatives were suggested by a few of the respondents who felt that the categories of "Always" and "Sometimes" were too limiting.

A further study might let half of the women select care procedures for unlabeled samples and the other half select care procedures for labeled samples. This procedure would eliminate any learning which occurred in going from unlabeled to labeled experiments. Another study might investigate the understanding that young people have of the words and phrases recommended by textile trade organizations to be used on permanent care labels. College freshmen responsible for their own laundry could be used as subjects.

The recommendations for improvement of the study can be summarized as follows:

1. survey of a more representative group
2. incorporation of more precise response alternatives.

Recommendations for further study include:

1. use of a control group
2. investigation of young peoples' understanding of care labeling terms.

The recommendations for the immediate use of the findings of this study are discussed below.

All families must care for clothing. Most homemakers consider doing laundry a chore, but they are interested in getting good results. They not only want clean clothing, they want garments to maintain their new-looking appearance. Wherever the instrument was administered, it provoked a great deal of discussion. Homemakers wanted to compare their laundry procedures with those of their friends. They asked the researcher many questions about garment care methods. Some of the women volunteered that "They had never really stopped to think about their laundry practices before."

Information on new fibers and fabrics and the correct care procedures for them could easily be incorporated into the programs of a variety of women's groups. Short radio and television "spots" could also be developed to help consumers understand label terminology.

The general instructions on most permanent care labels do not supply enough information to enable the user to properly care for the items. Consumers must exercise their own judgment about cycle setting, bleaching, and other alternatives. Labels are consulted by a large number of women and there is a tendency to follow directions supplied. Thus, more specific labels based on uniform performance

standards could further help reduce garment failures from improper care procedures. The potential value of care labels as purchasing guides was emphasized by several homemakers in this study who commented, after reading the label of the 100 percent acetate sample, that they would never buy a garment which needed such gentle care. Prior knowledge of care requirements can alleviate consumer disappointment with clothing purchases.

SELECTED BIBLIOGRAPHY

1. American Association for Textile Technology, Inc. A Guide for Garment Evaluation. New York: American Association for Textile Technology, Inc., 1972.

2. Association of Home Appliance Manufacturers. Home Laundering Terms. Chicago: Association of Home Appliance Manufacturers, 1972.

3. "At Last! Permanent Care-Labels." Consumer Reports, XXXVII (March, 1972), 170-72.

4. Baker, Cameron A. "Revised Textile Standards Aid Consumers, Retailers, and Manufacturers." The Magazine of Standards, XXXIX (July, 1968), 207-9.

5. Baker, Lillian. "Labels Used on Clothing." Journal of Home Economics, XIX (April, 1927), 215-18.

6. Brannon, Jo Ann. "Practices and Problems in Buying Ready-Made Clothing as Reported by Selected Homemakers." (Unpublished Master's thesis, Oklahoma State University, 1965).

7. Burley, Linda Ellen. "Assumed vs. Actual Perceptions of Consumers as related to an Automatic Washer Instruction Book." (Unpublished Master's thesis, Iowa State University, 1972).

8. Burston, William. "The Retailer's Viewpoint." Modern Textiles, XLII (January, 1961), 41-2.

9. "Cabalistic Labels for Textiles." Business Week, No. 1590 (February 20, 1960), 84.

10. "Care Labeling of Textile Wearing Apparel." Federal Register, XXXVI (December 16, 1971), 23883-91.

11. "Care Labeling of Wearing Apparel." Family Economics Review, (March, 1972), 23.

12. Carlson, Jean Kempton. "Procedures Used and Reactions to the Use of Self-Service Laundry Facilities by Selected Homemakers in Emporia, Kansas." (Unpublished Master's thesis, Oklahoma State University, 1965).

13. "Clothing and Textiles: Supplies, Prices and Outlook for 1973." Family Economics Review, (March, 1973), 12.

14. "Confusing Labels." Fabrics-Fashions/Fact-Fiction. Silver Spring, Maryland: International Fabricare Institute, Spring, 1973.

15. Consumer Affairs Committee of the American Apparel Manufacturers Association. Consumer Care Guide for Apparel. New York: American Apparel Manufacturers Association, 1972.

16. "Current Labeling Situation." Fabrics-Fashions/Fact-Fiction. Silver Spring, Maryland: International Fabricare Institute, Winter, 1972.

17. Drake, Phyllis and Mary Anna Grimes. "Labeling of Ready-Made Street Dresses." Bulletin 943. College Station, Texas: Texas Agricultural Experiment Station, November, 1959, 3-15.

18. "Drycleaning Industry States Its Position on FTC Permanent Care Labeling Rule." Fabrics-Fashions/Fact-Fiction. Silver Spring, Maryland: International Fabricare Institute, Summer, 1972.

19. Federal Trade Commission. News Summary, No. 2. Washington, D.C.: Federal Trade Commission, 1974.

20. Fichtner, Margaria. "Labels Tell How to Care--or Do They?" Chicago Tribune, (January 15, 1974), 56.

21. Fortess, Fred. "Consumer Legislation as Related to the Textile Industry." American Association for Textile Technology Technical Review and Register, X (1970), 38-44.

22. Freedman, Ephraim. "American Standard Performance Requirements for Textile Fabrics." American Dyestuff Reporter, L (July 24, 1961), 36-48.

23. Furness, Betty. "The Cost of Living." McCalls, XCVIII (October, 1970), 46-9, 118.

24. Fynn, P. J. "The Industry Advisory Committee on Textile Information." American Dyestuff Reporter, LV (January 2, 1967), 8-10.

25. Galbraith, Ruth Legg. "Consumer Buying Habits." American Dyestuff Reporter, LV (February 28, 1966), 170-1.

26. "Good News for the Consumer--Permanent Care Labeling." Forecast for Home Economics, XVII (May, 1972), F44-5.

27. Guide for Permanent Care Labeling. New York: National Retail Merchants Association, 1971.

28. "Guide to Making the Best Use of Garment-Care Labels." Good Housekeeping, CLXXVI (June, 1973), 166.

29. "Happy Birthday, Care Labeling." Consumer Alert. Washington, D.C.: Federal Trade Commission, April, 1973.

30. Hardin, Martha Belle. "Labeling of Ladies' Slacks: Kinds of Labels and Information." (Unpublished Master's thesis, Oklahoma State University, 1969).

31. Hollen, Norma and Jean Saddler. Textiles. 4th ed. New York: The MacMillan Company, 1973.

32. Honchul, Donna Eugenia. "Uses and Preferences of Consumers Regarding Care Labels in Clothing." (Unpublished Master's thesis, Florida State University, 1972).

33. "How the New Clothes Labels Can Help You." Redbook, CXXXIX (September, 1972), 62,66.

34. Howard, John A. "Conceptualizing Adequacy of Information." Proceedings: Third Annual Conference, Association for Consumer Research. College Park, Maryland, Nov. 3-5, 1972, 96-100.

35. "Importance of Textile Labels." Good Housekeeping, CLXX (April, 1970), 6.

36. Johnson, Albert E. "The Need for an International Claims Policy." American Dyestuff Reporter, LVIII (January 13, 1969), 28-33.

37. Joyner, Carolyn. "Use of Voluntary Permanent Care Labels in Casual Dresses by 110 Women in Knoxville, Tennessee Prior to July, 1972." (Unpublished Master's thesis, The University of Tennessee, 1972).

38. Kightlinger, Ellen M. "Consumer Knowledge of Textile Labeling." (Unpublished Master's thesis, Colorado State University, 1968).

39. King, Shirley. "Factors Which Influence the Homemaker's Understanding and Use of Textile Label Information." (Unpublished research paper, The University of Wisconsin-Stout, 1972).

40. "Labels Can Be Confusing." Fabrics-Fashions/Fact-Fiction. Silver Spring, Maryland: International Fabricare Institute, Fall, 1972.

41. "Labels: How Good, How Useful?" Good Housekeeping, CLV (July, 1962), 129-31.

42. Landry, Lenore L. and Eldora E. Keske. "Educating Teens on Textile Legislation." Journal of Home Economics, LXVI (January, 1974), 34-8.

43. Lemmon, Jean and Charlotte Garner, ed. The Maytag Encyclopedia of Home Laundry. 4th ed. Racine, Wisconsin: Western Publishing Company, Inc., 1973.

44. Look for That Label. Consumer Bulletin, no. 6. Washington, D.C.: U.S. Government Printing Office, 1971.

45. Mack, Pauline Beery and George Sims Wham. "New Standards for Textiles." Journal of Home Economics, LII (June, 1960), 435-6.

46. McMillan, Helen Marian. "An Analysis of Laundry Knowledge, Practices and Washer Control Panel Preferences of a Select Group of Homemakers." (Unpublished Master's thesis, Purdue University, 1972).

47. Mendenhall, William and James E. Reinmuth. Statistics for Management and Economics. Belmont, California: Duxbury Press, 1971.

48. Mittelstaedt, Robert A. "Consumer Protection and the Value of Information." Proceedings: Third Annual Conference, Association for Consumer Research. College Park, Maryland, Nov. 3-5, 1972, 100-106.

49. Muscetti, Kathleen Marie. "Homemakers' Interpretation of Washing Instructions on Labels of Winter Skirts." (Unpublished Master's thesis, Iowa State University, 1961).

50. "Naming Textiles Is Not Enough--Consumers Want to Know About Performance." Consumer Bulletin, XLII (June, 1959), 32-3.

51. "New Labels That Take the Guesswork Out of Clothing Care." Good Housekeeping, CLXXV (July, 1972), 134.

52. "Now You Can Tell When to Wash and When to Dry-Clean Your Clothes!" Consumer Bulletin, LV (September, 1972), 2.

53. "Permanent Care Labeling." Modern Textiles, LIII (August, 1972), 35-42.

54. "Permanent Care Labeling Now in Effect." Textile Topics. New York: Celanese Fibers Marketing Company, Fall, 1972.

55. "Permanent Care Labels--Part One." Fabrics-Fashions. Bulletin FF-219. Silver Spring, Maryland: International Fabricare Institute, 1973.

56. Peyton, Donald M. "Standardization and Consumerism." Magazine of Standards, XXXIX (June, 1968), 174-7.

57. Poschman, Lee Ann. "Textile Care Labeling." (Unpublished Master's thesis, University of Maryland, 1972).

58. Rogers, Willie Mae. "What the Consumer Wants in Textiles." American Dyestuff Reporter, LVI (January 2, 1967), 26-9.

59. Stearns, E.I. "AATCC Test Methods and the American Housewife." American Dyestuff Reporter, LVI (January 2, 1967), 30-2.

60. Stern, Louis L. "Consumer Protection Via Increased Information." Journal of Marketing, XXXI (April, 1967), 48-52.

61. Tesi, A. Frank. "AATCC Test Methods--A Basis for Consumer Performance Standards." American Dyestuff Reporter, LV (February 28, 1966), 160-62.

62. "Testing and Consumer Legislation." American Dyestuff Reporter, LVII (March 11, 1968), 17-21.

63. "Textile Committee Working on Fabric Care Labeling Definitions and Tests." Materials Research and Standards, XII (July, 1972), 27-9.

64. Textile Industry Product Safety Committee. Fabric Flammability: What the Consumer Should Know. Washington, D.C.: Textile Industry Product Safety Committee, 1973.

65. "This is No Way to Wash the Clothes." Consumer Reports, XXXIII (February, 1968), 66-7.

66. "Voluntary Guide for Permanent Care Labeling." Modern Textiles, XLVII (November, 1967), 26-7.

67. Wauer, Mary Roberts. "Consumers' and Home Economists' Fabric Descriptions." Journal of Home Economics, LVII (January, 1965), 33-5.

68. Whitlock, Mary C. "Labeling Textiles and Textile Products." Journal of Home Economics, LVII (February, 1965), 121-2.

69. Yard, Ila Ziebell. "Comprehension of Home Economics Terminology by Homemakers and Professional Home Economists." (Unpublished Master's thesis, University of Wisconsin, 1972).

APPENDIXES

APPENDIX A

INSTRUMENT USED FOR DATA COLLECTION

Questionnaire

DIRECTIONS: Please indicate the most appropriate response to each question by placing a check (✓) in the blank(s).

1. What type of laundry equipment do you own?

____wringer washer
____automatic washer
____automatic dryer
____combination washer-dryer
____none

2. Where is your laundry done?

____at home
____at laundromat
____at friends' or relatives'
____do not do our own laundry

3. For how many persons is laundry done in your household?

____1
____2
____3
____4
____5
____6
____other (specify number)
____do not do our own laundry

4. How many loads of laundry are done per week?

____1 to 4
____5 to 8
____9 to 12
____13 to 16
____17 to 20
____More than 20
____don't know

5. How long have you been doing laundry for yourself or your family?

____under 5 years
____5 to 10 years
____10 to 20 years
____20 to 30 years
____30 to 40 years
____40 to 50 years
____other (specify)

6. Are you

____a full time homemaker
____employed part time (less than 20 hours per week)
____employed full time (20 to 40 hours per week)
____a student-homemaker

7. What is your marital status?

____single
____married
____separated or divorced
____widowed

Note: The instrument contained ten copies of this page, one for each of the fabric samples in the study.

DIRECTIONS: Given the fabric sample representing a garment place a check (√) in the blank that best indicates the care procedures you would use for each garment. Answer every question, regardless of your response to a preceding statement.

QUESTIONS FOR SAMPLE ____

A. How would you care for this garment?

____automatic washer ____wash by hand ____dry clean

B. If you used an automatic washer, what wash water temperature would you use?

____hot ____warm ____cold

C. What rinse water temperature would you use?

____warm ____cold

D. What washer cycle would you use?

____regular ____delicate ____permanent press

E. How would you dry this garment?

____automatic dryer ____hang to dry ____dry flat

F. What dryer setting would you use?

____regular ____permanent press or delicate

G. If the garment were very dirty would you use bleach?

____yes ____no

H. What kind of bleach would you use?

____chlorine ____oxygen ____none ____other (specify)

I. Would you wash the garment:

____alone or with like colors

____with a mixed load of laundry (mixture of fibers and colors)

J. If you took the garment to a dry cleaner, would you take it to a

____coin-operated dry cleaner ____professional dry cleaner

DIRECTIONS: Place a check (✓) in the block(s) that best suits your answer. Please answer each part of every question.

	Always	Some-times	Sel-dom	Never	Does Not Apply
8. In sorting garments for washing, they are sorted by:					
Fiber----------					
Color----------					
Soil----------					
Care label instructions------					
Other (specify)----------					
9. How do you learn to care for a new garment you are unsure about?					
ask extension agent----------					
read label----------					
ask home economics teacher---					
ask laundromat attendant-----					
ask neighbors or friends-----					
ask mother----------					
ask other relatives----------					
ask dry cleaner----------					
ask store clerk----------					
pick a method I think will work based on previous experience and try it out----					
10. When you shop for ready-made garments do you look for a permanent care label?--------					
11. If there is a permanent care label in the garment, does the label content influence your final choice?----------					
12. Do you look for a permanent care label before laundering or cleaning a garment for the first time?----------					
13. Do you follow the instructions on permanent care labels:					
A. For washing?----------					
B. For drying?----------					
C. For dry cleaning?--------					
14. When you follow instructions on permanent care labels are you satisfied with the results?--					

15. Do you or members of your family own garments with permanent care labels?

____yes ____no ____don't know

16. Are garments being manufactured now REQUIRED to have permanent care labels?

____Yes. Permanent care labels are required.

____I don't know if manufactured clothes are required to have permanent care labels.

____No. Permanent care labels are not required.

17. Approximately how old are you?

____under 20
____20 through 29
____30 through 39
____40 through 49
____50 through 59
____60 and over

18. What grade of school did you finish?

____8th grade or less
____some high school
____high school graduate
____some college
____college graduate
____advanced degree
____other (specify)

19. Which of the income groups listed below best describes the Total Combined Annual Family Income of all the members of your family who live in your household?

____under $5,000
____$5,000 to $7,999
____$8,000 to $9,999
____$10,000 to $14,999
____$15,000 or over

DIRECTIONS: The fabric samples on the left represent the garments indicated. For example, SAMPLE 1 represents a woman's blouse of 65% triacetate and 35% polyester. Please answer the questions on the following pages indicating the care procedures you would use for each garment. There is a separate page of questions for each sample.

FABRIC SAMPLES

SAMPLE I

woman's blouse
65% triacetate
35% polyester

SAMPLE 2

woman's skirt
80% wool
20% nylon

SAMPLE 3

woman's slacks
100% acrylic

SAMPLE 4

girl's dress
65% polyester
35% cotton

SAMPLE 5

shirt
100% acetate

DIRECTIONS: Given the fabric sample on the left representing the garment indicated and a permanent care label, place a check (√) in the blanks that best indicate the care procedure you would use for each garment. There is a separate page of questions for each sample.

	FABRIC SAMPLES	LABELS	
SAMPLE 6		Machine Wash Separately. Delicate cycle. Remove promply. Use cold water with cold water soap. No bleach. Do not twist or wring. Tumble dry. Delicate setting. Remove promptly. Cool iron for touch up if necessary.	shirt 100% acetate
SAMPLE 7		Machine Wash Warm Tumble Dry Remove Promptly	girl's dress 65% polyester 35% cotton
SAMPLE 8		Machine Wash Warm Line Dry	woman's slacks 100% acrylic
SAMPLE 9		Machine Wash Warm Delicate Cycle Line Dry	woman's skirt 80% wool 20% nylon
SAMPLE 10		Machine Wash Warm Tumble Dry Remove Promptly	woman's blouse 65% triacetate 35% polyester

DEFINITIONS OF TERMS USED IN INSTRUMENT

The following definitions were explained to the respondents when directions were given for completing the instrument:

Always: Place a check in this block if you use this information all the time when performing the activity specified in the question.

Sometimes: Place a check in this block if you use this information some of the time when performing the activity specified in the question.

Seldom: Place a check in this block if you use this information little or rarely when performing the activity specified in the question.

Never: Place a check in this block if you do not use this information at all when performing the activity specified in the question.

Does Not Apply: Place a check in this block if the question is not pertinent to your situation.

APPENDIX B

A DISCUSSION OF THE MULTIPLE REGRESSION MODEL

A DISCUSSION OF THE MULTIPLE REGRESSION MODEL

The multiple regression model is used to analyze the data for factors affecting the choices of "best" care procedures. The standard linear regression model is:

$$Y = B_o + B_1X_1 + B_2X_2 \ . \ . \ . + B_kX_k + u$$

where

- Y denotes the dependent variable,
- X_i's denote the independent (explanatory) variables,
- B_i denotes the coefficient for X_i and represents the change in Y in response to a unit change in X_i when all other X's are held constant,
- B_o denotes the Y intercept, the value of Y when all independent variables are zero, and
- u denotes the error term. Error terms are random variables that are assumed to be independent and normally distributed with zero mean and uniform variance of σ^2. The error term actually captures the effects of excluded explanatory variables which are of secondary importance.

The objective in estimating the regression model is to locate the line which gives the best prediction of Y for given values of the X's. In this study, the principle of least squares is used to find the best fitting line. This principle minimizes the sum of squares of the

deviations of the observed values of Y from those predicted. Expressed mathematically, the objective is to minimize

$$SSE = \sum_{i=1}^{n} (Y_i - \hat{Y}_i)^2$$

where

Y_i denotes the observed value of the dependent variable,

$\hat{Y}_i$ denotes the predicted value of the dependent variable, $\hat{B}_o + \hat{B}_1 X_1 + \hat{B}_2 X_2 \ . \ . \ . + \hat{B}_k X_k$, where hats denote the estimated values of the B's, and

SSE denotes the sum of squares of deviations of the observed values of the dependent variable from the predicted values of the dependent variable, commonly called the sum of squares for error.

The performance of the regression model is evaluated in terms of (1) the agreement of signs of $\hat{B}_i$ with prior expectations, (2) the statistical significance of $\hat{B}_i$, and (3) the explanatory power of the regression model.

In this study, the direction of the marginal effects or the signs of the $\hat{B}_i$'s are more important than the absolute size of the estimated coefficients. The expected signs of $\hat{B}_i$ are explained in the section outlining the specific regression model used (page 44).

The statistical significance originates in the tests of hypotheses on B_i. A test of particular importance is the test of the hypothesis that Y and X_i are not linerally related against the alternative that they are linerally related. The test of this hypothesis is formalized as a null hypothesis that $B_i = 0$ with the alternative being $B_i \neq 0$.

Given the assumptions of the regression model and the above null hypothesis, the statistic

$$t = \frac{\hat{B}_i}{S_{\hat{B}_i}}$$

where

$\hat{B}_i$ denotes the estimator for B_i, the coefficient of the independent variable X_i and

$S_{\hat{B}_i}$ denotes the standard error of B_i, or the standard deviation of $\hat{B}_i$,

has a Student's t distribution with n - k degrees of freedom where n is the number of observations and k is the number of B_i's estimated. The calculated value of t is obtained when the actual sample values for $\hat{B}_i$ and $S_{\hat{B}_i}$ are substituted into the equation. The tabulated critical value of t for the rejection region is determined from the alternative hypothesis; α , the probability of Type I error; and the number of degrees of freedom. In performing the test on the coefficients, the calculated value of t is compared with the critical value of t to see if it falls in the rejection region. When the calculated value of t falls in the rejection region, doubt is shed on the validity of the null hypothesis and the null hypothesis is rejected. However, there is an α x 100 percent probability of Type I Error, that is, that the null hypothesis will be rejected when in fact it is true. If the calculated t does not fall in the rejection region, then there is not sufficient evidence to reject the null hypothesis.

The summary statistic known as the multiple correlation coefficient is defined to measure the extent of variation in the dependent variable that is explained by the independent variables.

Conventionally, instead of the multiple correlation coefficient, its square (R^2) is reported with regression equations because R^2 seems to give a more meaningful interpretation of the strength of the relationship between Y and X than the correlation coefficient, R.

The square of the multiple correlation coefficient is defined as:

$$R^2 = \frac{\text{variation of the dependent variable explained by the regression equation}}{\text{total variation of the dependent variable}}$$

or, mathematically,

$$R^2 = 1 - \frac{SSE}{\sum_{i=1}^{n} (Y_i - \bar{Y})^2}$$

where

R^2 denotes the square of the multiple correlation coefficient,

Y_i denotes the dependent variable,

$\bar{Y}$ denotes the mean of the dependent variable, and

SSE denotes the sum of squares for error.

In interpreting results, the R^2 indicates the percent of the variation in the dependent variable explained by the independent variable in the regression equation. The R^2 values lie in the interval between zero and one. An R^2 value approaching one indicates a very large percentage of the variation in the dependent variable is explained by the independent variables. Thus, the model is viewed as performing well.

APPENDIX C

TRANSFORMATION OF THE DATA FROM CLASS RANGES TO SINGLE VALUES

TRANSFORMATION OF THE DATA FROM CLASS RANGES TO SINGLE VALUES

The class intervals for the independent variables of educational level, number of loads washed per week, years of laundry experience and total family income were assigned a single value to convert the ranges for each variable into a single continuous variable. This was done to reduce the number of coefficients to be estimated. The median value for each class range of a particular question was used, except for the first and last categories of certain variables. Individuals in the loads of laundry categories (LOADS) were assumed to be washing the following number of loads per week: 1 to 4 loads, 3; 5 to 8 loads, 6.5; 9 to 12 loads, 10.5; 13 to 16 loads, 14.5; 17 to 20 loads, 18.5; and more than 20 loads, 22.

The values assigned to years of laundry experience (LYEARS) were: under 5 years, 2.5; 5 to 10 years, 7.5; 10 to 20 years, 15.5; 20 to 30 years, 25.5; 30 to 40 years, 35.5; 40 to 50 years, 45.5; and other, 55. The value for "other" was determined from the information in Table X. For the income variable (INCOME) the following values were used: under $5,000, $3,500; $5,000 to $7,999, $6,500; $8,000 to $9,999, $9,000; $10,000 to $14,999, $12,500; and over $15,000, $18,000. Persons in the educational level (SCH) categories were assumed to have these years of education: 8th grade or less, 7 years; some high school, 10 years; high school graduate, 12 years; some college, 14 years; college graduate, 16 years; and advanced degree, 17 years. The

researcher learned from comments made that the women checking "advanced degree" had master's degrees. All respondents specifying "other" were placed in one of the previous categories.

APPENDIX D

PANEL OF EXPERTS' CHOICES OF "BEST" FABRIC CARE PROCEDURES FOR SAMPLES

PANEL OF EXPERTS' CHOICES OF "BEST" FABRIC CARE

PROCEDURES FOR SAMPLES

Sample	Question	Answer
Samples 1 and 10	A	Automatic Washer
	B	Warm
	C	Cold
	D	Delicate
	E	Automatic Dryer
	F	Permanent Press or Delicate
	G	No
	H	None
	I	Alone or With Like Colors
Samples 2 and 9	A	Automatic Washer
	B	Warm
	C	Warm
	D	Delicate
	E	Hang to Dry
	F	Permanent Press or Delicate
	G	No
	H	None
	I	Alone or With Like Colors
Samples 3 and 8	A	Automatic Washer
	B	Warm
	C	Cold
	D	Delicate
	E	Hang to Dry
	F	Permanent Press or Delicate
	G	No
	H	None
	I	Alone or With Like Colors
Samples 4 and 7	A	Automatic Washer
	B	Warm
	C	Cold
	D	Permanent Press
	E	Automatic Dryer
	F	Permanent Press or Delicate
	G	No
	H	None
	I	Alone or With Like Colors

Samples	Question	Answer
Samples 5 and 6	A	Automatic Washer
	B	Cold
	C	Cold
	D	Delicate
	E	Automatic Dryer
	F	Permanent Press or Delicate
	G	No
	H	None
	I	Alone or With Like Colors

VITA

Janice Kay Huffman

Candidate for the Degree of

Master of Science

Thesis: HOMEMAKERS' INTERPRETATIONS AND APPLICATIONS OF PERMANENT CARE LABELS

Major Field: Home Management, Equipment and Family Economics

Biographical:

Personal Data: Born in Mason City, Iowa, April 10, 1945, the daughter of Frank T. and Helen Davenport; married to Wallace E. Huffman, 1968.

Education: Graduated from Mason City High School, Mason City, Iowa, June, 1964; received the Bachelor of Science degree from Iowa State University, Ames, Iowa, with a major in Home Economics Education, May, 1968.

Professional Experience: Home Service Representative, Peoples Gas Company, Chicago, Illinois, July, 1968 to August, 1972; Graduate Teaching Assistant in Home Management, Equipment and Family Economics Department, Division of Home Economics, Oklahoma State University, 1973-1974.

Professional Organizations: American Home Economics Association, Oklahoma Home Economics Association, Omicron Nu, Phi Upsilon Omicron.