ATTITUDES TOWARD RAYON AS AN APPAREL FIBER AS EXPRESSED BY DEPARTMENT STORE RESIDENT APPAREL BUYERS IN THE SOUTHEASTERN UNITED STATES

by

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APPROVAL PAGE

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It was the purpose of this study to determine attitudes toward rayon as an apparel fiber as expressed by department store resident apparel buyers in the southeastern United States. Buyers were identified by the demographic characteristics of age, sex, income and education.

The buyers were further segmented within demographic groupings. It was hypothesized that within the groups of buyers there were no differences in opinion toward the rayon properties of care, durability, and comfort nor were there differences in buyers' overall opinions of rayon as an apparel fiber.

The survey sample population was 511 resident apparel buyers for a major network of department stores located throughout the Southeast. The data were collected by a mailed questionnaire. Of the 511 buyers mailed questionnaires, 269 responded for a 53% response rate.

The data were analyzed by analysis of variance and cross-tabulation. The significance level for all computed statistics was 5%.

The general conclusion reached was that the buyers possessed an unfavorable attitude toward rayon as an apparel fiber. Age was the only demographic characteristic studied that showed significant differences in opinion. Buyers less than age 35 had significantly different attitudes than buyers age 35 and older. The two groups possessed unfavorable opinions with the difference found in the degree of disfavor.

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INTRODUCTION AND LITERATURE REVIEW

Demand for textile fibers is at an all-time high. In the next few years world consumption is projected to exceed more than 40 million metric tons of textile fibers (Fiber Forecast, 1976). Not only is the world's population increasing, in spite of advances in birth control, but per capita consumption of textile fiber is also on the increase.

As the population increases not only will this boost demand for fiber production but will call for greater acreage alloted for the production of foodstuffs. This means that eventually cotton land must yield to foodcrops as available tillable crop land becomes more scarce. As cotton production diminishes the search for a cellulosic fiber must turn to rayon. The cellulosic raw materials required for the production of rayon can be produced on marginal land unsuitable for row crop production. Not only can cellulose for rayon be produced on land unsuitable for cotton production but can even be produced more efficiently with a greater yield per acre than cotton (Think Rayon, 1975). A recent study by Kurt

Salmons Associates for FMC* Corporation shows cost advantages of rayon over cotton when comparing costs in converting fiber to finished fabrics ("Second Generation H-W-M Rayon," 1976).

Another argument for rayon over cotton is the seasonal nature of cotton production. Cotton is a seasonal crop and unfavorable growing seasons can cause serious fluctuation in cotton quality or availability. On the other hand wood pulp from forests can be harvested almost on a year-round basis and is not susceptible to seasonal production as is cotton. This further stabilizes raw material costs for rayon.

The displacement of cotton by foodcrops alone should not cause the textile industry to turn to rayon. The increasing cost and scarcity of petrochemicals may force a search for substitute fibers away from synthetic fibers which rely on petrochemicals for formulation. Petroleum and its derivatives are not replenishable. Trees for producing cellulosics are, however, replenishable in a relatively short period of time (Seidel, 1978). Rayon also has major ecological advantages over synthetic fibers by possessing complete and rapid biodegradability ("Courtaulds considers," 1977). Also, it has another environmental advantage over cotton in that rayon

* Now Avtex Fibers, Inc.

does not present the hazard of byssinosis during the manufacturing process as does cotton (Klapper, 1978).

To support the increased use of rayon over cotton is the introduction of the newer high performance crimped rayons which closely resemble cotton in fiber and fabric properties (Muller, Barch, & Daul, 1976).

All of the aforementioned reasons point to a logical shift to rayon as demand for textile fibers increases. However, the history of rayon may be a barrier to this shift. It is the history of rayon which is in part the reason for undertaking this study. Over the years the rayon fiber for various reasons has developed a suspected poor reputation as an apparel fiber. In 1907 this first man-made fiber was marketed as an artificial silk (American Enka Company, 1972). However, as the consuming public soon became aware, this product was not similar in every way to silk. In an attempt to overcome consumer resistance to "artificial silk," rayon was introduced in 1926 as the generic name for certain regenerated cellulosics. In 1934 Courtaulds marketed the world's first viscose rayon staple.

This rayon was different from the rayon of today but unfortunately there is apparently great resistance to rayon as an apparel fiber. This resistance is believed due to several

reasons. Among them are buyer association of the generic term rayon with the poor performance of viscose rayon in past decades. Over the years a superior rayon has been developed but during these years newer synthetic fibers with outstanding performance properties were being produced to compete with rayon. The editors of American Fabrics have suggested that further reason for the poor rayon image is more than the actual past undesirable properties in the fiber itself; due to low costs of production, rayon was widely used in poorly constructed fabrics for a low price market (Cellulosics, 1969). Still another factor contributing to the widely held low esteem of rayon was the promotion of rayon throw-away "paper dresses" which further emphasised the low cost of the products ("Paper Dresses," 1967).

Recent conversations with representatives of Avtex Fibers, Inc. and Courtaulds Ltd. suggest a resistance to rayon at the professional buyer level. That is, those representatives of retail operations who buy the goods for resale in their respective department stores and apparel specialty shops are the major obstacles to a resurgence of rayon in the domestic apparel markets.

In an attempt to overcome this supposed resistance, fiber producers and ITT Rayonier, Inc. in 1978 initiated a campaign

in the apparel trade media. The thrust for this campaign was toward utilization of rayon in high fashion apparel because of rayon's desirable physical properties and competitive price.

In the past six to eight years, research and development emphasis has been placed on modification of viscose rayon to obtain more cotton-like properties ("Think Rayon," 1975), and flame resistance and dye variations (Hughes, et al., 1976). A new high wet modulus (H-W-M) rayon, with the bulk and hand of cotton, has been developed by ITT Rayonier, Inc. (Muller, et al., 1976). This fiber is not commercially produced by Rayonier but the technology to produce it under the trademark PRIMA is licensed by Rayonier.

Avtex Fibers, the largest domestic producer of rayon ("New Fiber Company," 1976), believes the new rayons can now compete successfully with cotton in apparel if the resistance at the buyer level can be overcome. Their belief is based not only on the desirable physical properties of the new rayons but is based on the economics of fiber production as well. In support of the economic issue is a study commissioned by FMC ("Fiber to Finished Fabric," 1976). This study found that in converting fibers to finished fabrics of 100% rayon and polyester/rayon blends, there are considerable cost

savings when compared to conversion of 100% polyester, 100% cotton, and cotton/polyester blends. Part of the cost savings is due to the large amounts of waste generated in cotton fabric production ("Turnabout," 1966).

Why, if rayon has fiber properties comparable to cotton, and if rayon can be produced more cheaply than cotton, is rayon not increasing its share of the market at the expense of cotton? One of the answers was presumed to be the resistance to rayon based on its past rather than its present. A solution, in addition to heavy promotional and educational efforts, is to overcome possible negative attitudes toward the generic term "rayon."

Past attempts to presuade the Federal Trade Commission to allow a name change for rayon have been unsuccessful (Cellulosics, 1969). There is little reason to believe the FTC would be receptive to another petition at this time. Therefore, to overcome any negative attitudes the professional buyer may have toward rayon, the fiber producer and the converter must have a clear understanding of the buyer's perception of rayon. Once the producers understand who the resisting force is and just what are the causes of this resistance, then an educational campaign can more effectively be initiated to increase the market share.

Thus, the general aim of this study was to supply the industry with answers to some of the previous questions.

Statement of the Problem

For the purpose of this study the researcher chose male and female department store buyers to determine their attitudes toward rayon as an apparel fiber. The purposes were to determine if there is any resistance to rayon and if there are significant relationships existing among age, sex, income, and education levels of buyers and their attitudes toward rayon.

Study Objectives

The specific objectives of this study were as follows:

1. To determine professional apparel buyers' attitudes toward rayon properties.
    a. Care
    b. Comfort
    c. Durability
    d. Cost
2. To compare/contrast attitudes toward rayon fabrics with those held toward cotton, polyester, and cotton/polyester blends.
3. To develop a demographic profile of the professional buyer who holds favorable/unfavorable attitudes toward rayon.

a. Age

b. Sex

c. Marital status

d. Household income

e. Education

4. To develop recommendations for the rayon industry to improve the competitive position of rayon in apparel.

Hypotheses

The following null hypotheses were tested:

Hypothesis I. Buyers under age 35 do not have significantly different attitudes toward rayon than do those age 35 and older.

A. Between age groups of buyers under 35 and buyers 35 or older there is no difference in the change in opinion during the past five years.

B. Buyers under age 35 do not have significantly different attitudes toward the durability of rayon than do those age 35 and older.

C. Buyers under age 35 do not have significantly different attitudes toward the comfort properties of clothing made of rayon than do those age 35 and older.

D. Buyers under age 35 do not have significantly different attitudes toward the care properties of clothing made of rayon than do those age 35 and older.

Hypothesis II. Buyers with some college education do not have significantly different attitudes toward rayon than do those buyers with no college education.

A. Buyers with some college education do not have significantly different attitudes toward the durability of rayon than do those buyers with no college education.

B. Buyers with some college education do not have significantly different attitudes toward the comfort properties of clothing made of rayon than do those buyers with no college education.

C. Buyers with some college education do not have significantly different attitudes toward the care properties of rayon than do those buyers with no college education.

Hypothesis III. Female buyers do not have significantly different attitudes toward rayon than do male buyers.

A. Female buyers do not have significantly different attitudes toward the durability of rayon clothing than do male buyers.

B. Female buyers do not have significantly different attitudes toward comfort properties of rayon clothing than do male buyers.

C. Female buyers do not have significantly different attitudes toward the care properties of rayon clothing than do male buyers.

Hypothesis IV. Buyers with household annual incomes of $15,000 or more do not have significantly different attitudes toward rayon than do those buyers with household annual incomes of less than $15,000.

CHAPTER II

PROCEDURE

This study was undertaken to determine retail buyer attitudes toward rayon as an apparel fiber as expressed by department store resident apparel buyers in the southeastern United States.

Selection of Subjects

In selecting a sample to represent the population of retail apparel buyers in the Southeast, an attempt was made to obtain a listing of such buyers. Considerable difficulty was encountered in obtaining a thorough list of current names and addresses. Due to employee turnover and the lack of a central source of names from various companies, it was not a feasible endeavor.

For the purpose of this study the researcher selected male and female apparel buyers employed by the Belk and Leggett department stores. Belk/Leggett department stores are located in 17 states of the southeastern United States. The Belk/Leggett stores do not comprise a chain in the traditional sense as the stores are in most cases separate

companies although members of the Belk or Leggett families are majority stockholders in each of the 400 stores.

Although there is a common thread of ownership running through the stores, there is a large degree of autonomy in each store and a resulting wide variation in the nature of each store. The individual stores subscribe to the services of Belk Stores Services, Incorporated located in Charlotte, North Carolina. Belk Stores Services, Inc. regularly sponsors merchandise shows which resident buyers from the individual stores may attend to view and select the merchandise available from vendors for resale at the retail level.

The buyers who attend these merchandise shows register their names and the stores they represent. Since the Belk/Leggett stores comprise the largest single network of department stores in the Southeast and are represented in markets of various sizes with store sizes ranging from less than 10,000 square feet to as large as 450,000 square feet, their buyers were selected as a sample representative of buyers for southeastern department stores. To obtain the sample the names and addresses of buyers attending the mens' and womens' 1978 fall apparel shows were collected from the show registration forms. These names formed a sample population of 511

male and female buyers representing virtually every store in the Belk/Leggett network.

Questionnaire Preparation

A questionnaire was prepared for use in a mail survey of the 511 Belk/Leggett buyers. The instrument was designed with the aim of limiting the questions to a minimum to enhance respondent completion of the questionnaire. Care was also given to assure a thorough exploration of the areas of concern (see Figures 1a and 1b).

The questionnaire was divided into three areas. First, 15 statements relating to apparel made of rayon were offered for respondent consideration. The respondent was directed to select how each statement related to his or her own feelings about rayon based on personal experience with clothing made of rayon. Three of the statements related to comfort properties. Five statements pertained to the care of apparel made of rayon and five related to its durability. One statement concerned the price-value relationship, and the fifteenth was associated with the buyer's personal versus professional purchase of rayon fabric clothing.

Buyers were instructed to mark in the appropriate space how the statements expressed their personal opinions of

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7. Tightly bound copy with print lost in spine _____
8. Computer printout pages with indistinct print _____
9. Page(s) _____ lacking when material received, and not available from school or author _____
10. Page(s) _____ seem to be missing in numbering only as text follows _____
11. Poor carbon copy _____
12. Not original copy, several pages with blurred type _____
13. Appendix pages are poor copy _____
14. Original copy with light type _____
15. Curling and wrinkled pages _____
16. Other _____

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Figure 1a

RESEARCH QUESTIONNAIRE

Please complete BOTH SIDES of the following questionnaire. The questionnaire is NOT to be signed. All answers are anonymous. This questionnaire and the survey methodology have been designed to assure that no one will know your identity.

Questions 1 through 15 relate to statements about clothing. Please check the block that best expresses your feelings about the statement based on your personal experiences.

Statement	Your Response to Statement	Strongly Agree	Agree	Have No Decision	Disagree	Strongly Disagree
1. Clothing made of rayon feels good against my skin.	Do you . . .					
2. Clothing made of rayon cannot be washed in water but must be dry cleaned.	Do you . . .					
3. When I think of clothing made of rayon, I think of clothing that is easy to take care of.	Do you . . .					
4. Clothing made of rayon readily absorbs perspiration.	Do you . . .					
5. Clothing made of rayon is as easy to take care of as clothing made of cotton.	Do you . . .					
6. When compared to clothing made of cotton, rayon clothing lasts longer because it is stronger and tougher.	Do you . . .					
7. Seams in clothing made of rayon are equal to or more durable than seams in clothing made of cotton.	Do you . . .					
8. Clothing made of rayon has a tendency to shrink when laundered.	Do you . . .					
9. Clothing made of rayon fades easily.	Do you . . .					
10. Clothing made of rayon is uncomfortable.	Do you . . .					
11. Rayon is a poor fiber to use in apparel because clothing made from rayon wears out quickly.	Do you . . .					
12. White clothing made of rayon cannot be bleached.	Do you . . .					
13. Clothing made of rayon stretches out of shape easily.	Do you . . .					
14. Rayon is used primarily in cheap clothing of poor quality.	Do you . . .					
15. I am less likely to buy clothing made of rayon for resale in the store than I am for my personal use.	Do you . . .					

PLEASE TURN THE PAGE OVER AND COMPLETE THE REVERSE SIDE.

Figure 1b

In answering questions 16 through 21 please place a check by the ONE answer that is your first choice.

16. If I were to choose for myself clothing to wear during hot weather, clothing made of the following fabric would be my first choice of those listed (indicate by number one):
_____ 100% Polyester _____ 100% Nylon _____ 100% Wool
_____ 100% Rayon _____ 100% Cotton

16a. To indicate your second choice to Question 16 above, place a number two in the space above to indicate your second choice.

17. To me, rayon is most similar in all ways to:
_____ Polyester _____ Nylon _____ Wool _____ Cotton _____ Silk

18. If I were to choose for myself clothing to wear during hot weather, I would choose the following fabric blend as my FIRST CHOICE for that clothing. (A blend being a combination of two or more different fibers.)
_____ Cotton/polyester blend
_____ Rayon/polyester blend
_____ Wool/polyester blend
_____ Cotton/nylon blend
_____ Rayon/nylon blend
_____ Wool/nylon blend
_____ None of the above

19. I have in the past twelve months purchased for myself clothing made either of 100% rayon or a rayon blend.
_____ Yes _____ No _____ Do Not Remember

20. My present opinion of clothing made of rayon or rayon blends is:
_____ Favorable _____ Unfavorable _____ No Opinion

21. During the past five years my opinion of rayon as a clothing fiber has:
_____ Become more favorable _____ Become less favorable _____ Not Changed

Questions 22 through 27 are asked to help in analysis of the research only. Please place a check in the space by the answer that best describes yourself. Remember that all completed questionnaires are anonymous.

22. As a Belk/Leggett Buyer, I buy primarily clothing for:
_____ Men _____ Women _____ Both Men and Women

23. My sex is: _____ Female _____ Male

24. My age is: _____ Less than 18 _____ 18 to 24 _____ 25 to 34
_____ 35 to 49 _____ 50 to 64 _____ 65 or older

25. My total combined household income (both husband and wife if married) per year from all sources is:
_____ less than $6,000. _____ $10,000. - $14,999. _____ $20,000. - $24,999.
_____ $6,000. - $9,999. _____ $15,000. - $19,999. _____ more than $25,000.

26. My last year completed in school was: _____ less than 8th grade; _____ some high school
_____ high school graduate or equivalent; _____ some college; _____ college graduate;
_____ master's degree or above.

27. I am: _____ Married _____ Single _____ Divorced _____ Widowed

THANK YOU VERY MUCH FOR YOUR HELP. PLEASE PLACE IN THE ENVELOPE AND MAIL TODAY. DON'T FORGET TO MAIL THE POST CARD SEPARATELY. AGAIN, THANK YOU SO VERY MUCH.

apparel containing rayon. They were asked to check if they strongly agreed, agreed, had no decision, disagreed, or strongly disagreed with each statement.

The second division of the questionnaire was designed to determine the preferential status of rayon and rayon blends when given a choice of other fabrics. The buyers were asked which fiber most closely resembles rayon in all ways. They were then polled to determine whether their opinions of rayon were favorable or not and if their opinions had changed during the previous five years.

The balance of the questions were used to determine the demographic characteristics of the responding buyers.

Pretest

The questionnaire was refined several times to improve the format for ease of reading and tabulation. When a final version was selected, 20 buyers were chosen as recipients of questionnaires for pretest purposes. The pretest was used to identify any problems with word choice, awkward sequencing, question structuring, or incomplete responses.

Of the 20 test questionnaires mailed to buyers, fourteen were returned within ten days. There were no problem areas and the response rate was satisfactory. The returned

completed questionnaires were then saved for tabulation with the questionnaires returned in the main body of the survey.

Data Collection and Methodology

After successful completion of the pretest, the balance of the 511 questionnaires were sent to the remaining members of the sample population. Careful consideration was given to methodology with emphasis on a high rate of full response. To encourage a high rate, several techniques were employed. First, a cover letter was prepared to describe the purposes of the study and to solicit a response. To indicate Belk sanction of the project, Belk Stores Services, Inc. letterhead stationery was used (see Figure 2). Another technique employed was the hand addressing of all envelopes with the buyer's name as part of the address. To further encourage participation, a commemorative postage stamp was placed on the envelope. Also included in the package was a pre-addressed return envelope which had been metered for return postage. This metered postage was used to eliminate postal cancellation markings and assure anonymity of the respondent's location. This anonymity guarantee was used to encourage full response to the personal questions asked in compiling the demographic information. Since there was no means

Figure 2

Belk Stores Services, Inc. / 308 East Fifth Street / P. O. Box 27[illegible] / Charlotte, N[illegible] / Telephone [illegible]

Director of Strategic Research

November 10, 1978

Dear Belk/Leggett Buyer:

A little over a year ago I joined the staff of Belk Stores Services in a marketing research capacity. At the present time I am completing my doctoral degree requirements from the University of North Carolina at Greensboro. For my dissertation research project, I am studying buyer attitudes toward various textile fibers used in fabric for wearing apparel. I am writing to ask for your assistance in this research. Enclosed is a questionnaire, a prepaid envelope, and a prepaid return postcard. Would you please complete the questionnaire and return it promptly to me in the envelope provided?

All questionnaires will be anonymous. I will have no way of knowing who fills out a specific questionnaire. To further assure this confidentiality, I have used a metered return envelope rather than a stamped one so there will be no return cancellation postmark. This means I will not even know the city from which the envelope is mailed. For statistical analysis, I will need to know who has and who has not participated in the survey. To help me keep track of this, please mail the enclosed postcard indicating you have completed and mailed the questionnaire. The postcard can be mailed the same day or the day after the questionnaire has been mailed.

It is felt that your response to the questionnaire will be very valuable and will give me an accurate source of information for my dissertation. Your assistance in this matter which is so important to me will be greatly appreciated. The next time you are in Charlotte at Belk Stores Services, come by and tell me I owe you a cup of coffee!!!

Very truly yours,

Fred H. Campbell
Director of Strategic Research

FHC:ls

Enclosures

New York Office: 111 West 40th Street / Telephone [illegible]

of identifying respondents from the questionnaire, there was a need for determining which buyers had participated and which had not. To accomplish this, a prestamped, pre-addressed postal card was included with the questionnaire. Each buyer was asked to fill out the card and return it separately when he/she had completed and returned the questionnaire (see Figure 3). This allowed the identification of who had participated and offered an opportunity for follow-up had there been a low response rate. It also allowed the geographic plotting of the respondents' locations (see Figure 4).

Figure 3

Acknowledgment of Participation

DEFEAT
MUSCULAR DYSTROPH
SUPPORT MDA

FRED H. CAMPBELL
DIRECTOR OF STRATEGIC RESEARCH
BELK STORES SERVICES, INC.
P. O. BOX 31788
CHARLOTTE, N. C. 28231

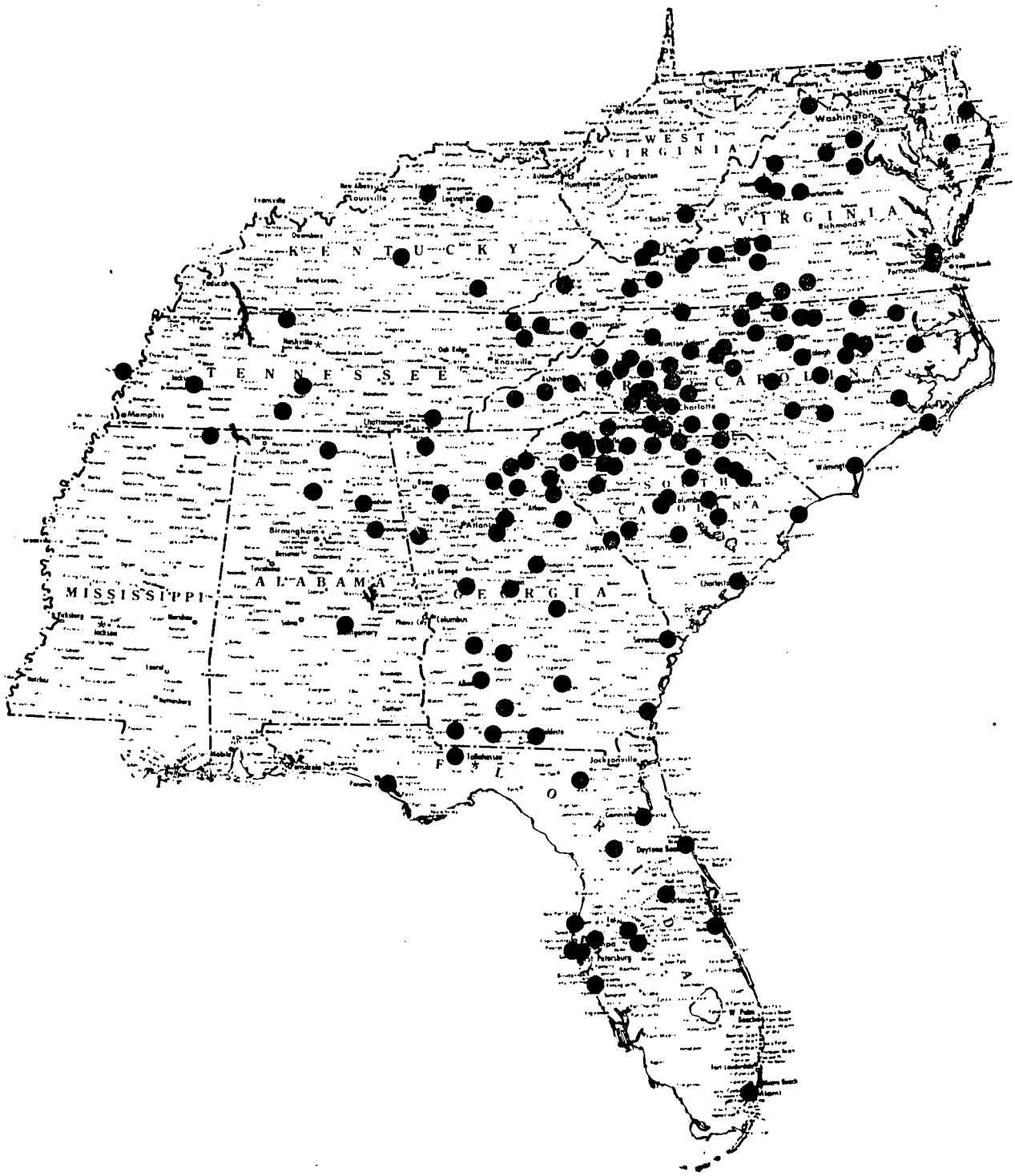
I have completed and returned the questionnaire.

Name Bob Conrad

City Thomaston, Ga.

Figure 4

Geographic Location of Respondents



CHAPTER III

PRESENTATION OF DATA

The stated objectives of this study were to determine retail department store buyers' attitudes toward rayon as an apparel fiber and to prepare demographic profiles of those with favorable or unfavorable attitudes. The premise for these objectives was the belief that once buyers were more precisely segmented by demographic characteristics, more effective educational and promotional programs could be prepared and implemented to enhance both retail buyer and public acceptance of rayon as a desirable fiber.

Using the Belk/Leggett buyers as representative buyers, 511 questionnaires were mailed to gather the data.

The data obtained after 30 days were analyzed using an analysis of variance (ANOVA) and chi square analysis. The significance level for all computed statistics was 5%.

Description of Subjects

Of the 511 buyers mailed questionnaires, 269 responded in 30 days with completed questionnaires for a 53% response rate. Table 1 presents demographic information on the 269 respondents.

Table 1

Demographic Information Concerning Buyers Participating as Survey Sample

Demographic Information	Number	Percent
SEX		
Male	155	58
Female	113	42
Non Response	1	0
AGE		
18-24	27	10
25-34	100	37
35-49	73	27
50-64	66	25
65 or older	2	1
Non Response	1	0
PERSONAL STATUS		
Married	208	77
Single	39	15
Divorced	15	6
Widowed	7	3
EDUCATION		
Less than Eighth Grade	1	0
Some High School	3	1
High School Grad	86	32
Some College	113	42
College Grad	59	22
Masters or above	6	2
Non Response	1	0
HOUSEHOLD INCOME		
Less than $6,000	5	2
$6,000 - $9,999	24	9
$10,000 - $14,999	47	18
$15,000 - $19,999	68	25
$20,000 - $24,999	57	21
More than $25,000	55	20
Non Response	13	5

Tabulation of Responses to Individual Questions

Following is a discussion of frequency counts relating to the responses given each statement by the buyers. For the narrative discussion that follows, percentage figures have been rounded to the nearest whole number for ease of reading. The tables present these figures rounded to the nearest tenth of one percent. A no-response means there was no answer selected.

When asked in question 1 if buyers believed clothing made of rayon felt good against their skin, 44% of the 266 valid responses agreed or strongly agreed to the statement. This contrasted with 17% having no decision and 39% who disagreed or strongly disagreed (see Table 2).

Question 2 related to the launderability of rayon. Of those responding, 36% agreed or strongly agreed that rayon cannot be washed in water but must be dry-cleaned. Disagreeing with this incorrect statement were 57% of all respondents (see Table 3).

Relating to the care of rayon, question 3 asked buyers whether they agreed that clothing made of rayon is easy to take care of. In agreement were 21% of the respondents, but 71% disagreed (see Table 4).

Table 2

Question 1

Clothing made of rayon feels good against my skin.

Buyer Response	Absolute Frequency	Relative Frequency (Pct)	Adjusted Frequency (Pct)	Cumulative Frequency (Pct)
Strongly Agree	8	3.0	3.0	3.0
Agree	110	40.9	41.4	44.4
No Decision	45	16.7	16.9	61.3
Disagree	92	34.2	34.6	95.9
Strongly Disagree	11	4.1	4.1	100.0
No Response	3	1.1	0.0	100.0
Total	269	100.0	100.0	

Table 3

Question 2

Clothing made of rayon cannot be washed in water but must be dry-cleaned.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	20	7.4	7.4
Agree	77	28.6	36.1
No Decision	19	7.1	43.1
Disagree	131	48.7	91.8
Strongly Disagree	22	8.2	100.0
Total	269	100.0	

Table 4

Question 3

When I think of clothing made of rayon, I think of clothing that is easy to take care of.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	2	0.7	0.7
Agree	55	20.4	21.2
No Decision	22	8.2	29.0
Disagree	150	55.8	84.8
Strongly Disagree	40	14.9	99.6
Total	269	100.0	

Closely associated with comfort is the ability of a fiber to absorb perspiration. To assist in determining whether buyers consider rayon fabric comfortable, they were asked if they felt clothing made of rayon readily absorbs perspiration. Nearly 60% of the buyers responded by disagreeing that rayon fabric readily absorbs perspiration (see Table 5).

Table 5

Question 4

Clothing made of rayon readily absorbs perspiration.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	8	3.0	3.0	3.0
Agree	59	21.9	22.2	25.2
No Decision	47	17.5	17.7	42.9
Disagree	121	45.0	45.5	88.3
Strongly Disagree	31	11.5	11.7	100.0
No Response	3	1.1	0.0	100.0
Total	269	100.0	100.0	

Another question pertaining to rayon's care properties was question 5. This question added another dimension by comparing the care of clothing made of rayon with cotton clothing. Of all buyers responding, 71% disagreed with the idea that rayon clothing is as easy to take care of as clothing made of cotton (see Table 6).

Table 6

Question 5

Clothing made of rayon is as easy to take care of as clothing made of cotton.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	3	1.1	1.1
Agree	64	23.8	24.9
No Decision	11	4.1	29.0
Disagree	137	50.9	79.9
Strongly Disagree	54	20.1	100.0
Total	269	100.0	

Question 6 asked the buyer to compare the strength and durability of rayon with that of cotton. Over 62% of the buyers responding to this question rejected the idea that clothing made of rayon lasts longer than clothing made of cotton (see Table 7).

While question 6 pertained to the strength and toughness of clothing made of rayon as opposed to clothing made of cotton, question 7 specifically addressed the strength of seams in clothing made of rayon versus seams in cotton clothing. Sixty two percent disagreed with the statement that seams in clothing made of rayon are equal to or more durable than seams in clothing made of cotton (see Table 8).

Table 7

Question 6

When compared to clothing made of cotton, rayon clothing lasts longer because it is stronger and tougher.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	4	1.5	1.5	1.5
Agree	64	23.8	23.9	25.4
No Decision	30	11.2	11.2	36.6
Disagree	131	48.7	48.9	85.4
Strongly Disagree	39	14.5	14.6	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

Table 8

Question 7

Seams in clothing made of rayon are equal to or more durable than seams in clothing made of cotton.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	2	0.7	0.7
Agree	60	22.3	23.0
No Decision	41	15.2	38.3
Disagree	115	42.8	81.0
Strongly Disagree	51	19.0	100.0
Total	269	100.0	

Relating to the launderability of rayon was question 8 which asked the buyers if they agreed with the statement: Clothing made of rayon has a tendency to shrink when laundered. Close to 59% of the buyers agreed with this statement (see Table 9).

Table 9

Question 8

Clothing made of rayon has a tendency to shrink when laundered.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	28	10.4	10.4	10.4
Agree	129	48.0	48.1	58.6
No Decision	32	11.9	11.9	70.5
Disagree	77	28.6	28.7	99.3
Strongly Disagree	2	0.7	0.7	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

When asked if clothing made of rayon fades easily more buyers were in disagreement with the statement (41%), but a large number (24%) had no opinion (see Table 10).

Number 10 was a statement regarding the comfort of clothing made of rayon. This question was asked to specifically answer the question about comfort, but was also used as a

Table 10

Question 9

Clothing made of rayon fades easily.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	6	2.2	2.3	2.3
Agree	87	32.3	32.8	35.1
No Decision	63	23.4	23.8	58.9
Disagree	106	39.4	40.0	98.9
Strongly Disagree	3	1.1	1.1	100.0
No Response	4	1.5	0.0	100.0
Total	269	100.0	100.0	

cross-check for question 1. To this the response showed 147 or 55% disagreed with the concept of comfortable rayon clothing (see Table 11).

Table 11

Question 10

Clothing made of rayon is uncomfortable.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	5	1.9	1.9
Agree	69	25.7	27.5
No Decision	48	17.8	45.4
Disagree	137	50.9	96.3
Strongly Disagree	10	3.7	100.0
Total	269	100.0	

Another question used to determine buyer attitudes toward the durability of clothing made from rayon was question number 11. Buyers were asked to respond to the statement: Rayon is a poor fiber to use in apparel because clothing made from rayon wears out quickly. To this 116 or 43% disagreed (see Table 12).

Question 12 referred to the bleachability of rayon. Many of today's garments made of synthetic fibers have care labels which warn the consumer to refrain from using bleach. This

Table 12

Question 11

Rayon is a poor fiber to use in apparel because clothing made from rayon wears out quickly.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	9	3.3	3.4	3.4
Agree	92	34.2	34.3	37.7
No Decision	51	19.0	19.0	56.7
Disagree	110	40.9	41.0	97.8
Strongly Disagree	6	2.2	2.2	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

question was asked to determine if buyers believed rayon fabrics must not be bleached or, if like cotton fabrics, they may be bleached. Table 13 shows 169 or 63% wrongly thought white rayon fabrics could not be bleached while 24% were unsure.

Table 13

Question 12

White clothing made of rayon cannot be bleached.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	26	9.7	9.7	9.7
Agree	143	53.2	53.6	63.3
No Decision	64	23.8	24.0	87.3
Disagree	31	11.5	11.6	98.9
Strongly Disagree	3	1.1	1.1	100.0
No Response	2	0.7	0.0	100.0
Total	269	100.0	100.0	

Regarding shape retention of garments, buyers were asked in question 13 what they believed about rayon clothing. To this 43% agreed that rayon clothing stretches out of shape easily. Nearly 40% disagreed that rayon clothing has poor shape retention.

Table 14

Question 13

Clothing made of rayon stretches out of shape easily.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	21	7.8	7.8
Agree	95	35.3	43.1
No Decision	46	17.1	60.2
Disagree	103	38.3	98.5
Strongly Disagree	4	1.5	100.0
Total	269	100.0	

Question 14 was asked to determine the price/value association buyers had for garments containing rayon. The results of the question show 36% agreed that rayon is used primarily in cheap clothing of poor quality while 50% disagreed with that idea (see Table 15).

With the possibility that buyers' attitudes toward rayon may influence different purchase patterns in their roles as consumers, they were asked if they were less likely to purchase rayon clothing for resale in the store than for personal consumption. To question 15 there was a fairly even split in answers with 41% agreeing they would be less likely to buy rayon for resale than for themselves. Nearly 44% disagreed with that statement (see Table 16).

Table 15

Question 14

Rayon is used primarily in cheap clothing of poor quality.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Strongly Agree	17	6.3	6.3	6.3
Agree	79	29.4	29.5	35.8
No Decision	39	14.5	14.6	50.4
Disagree	115	42.8	42.9	93.3
Strongly Disagree	18	6.7	6.7	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

Table 16

Question 15

I am less likely to buy clothing made of rayon for resale in the store than I am for my personal use.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Cum Freq (Pct)
Strongly Agree	12	4.5	4.5
Agree	98	36.4	40.9
No Decision	41	15.2	56.1
Disagree	111	41.3	97.4
Strongly Disagree	7	2.6	100.0
Total	269	100.0	

When determining comfort in clothing for hot weather, there should be a close relationship between perspiration absorption as looked at in question 4 and the fiber content in apparel as asked about in questions 16 and 16a. Buyers responding to question 16 by far chose 100% cotton as the 100% fiber content fabric they would choose for wear during hot weather. Second choice was 100% polyester (see Tables 17 and 18).

Table 17

Question 16

If I were to choose for myself clothing to wear during hot weather, clothing made of the following fabric would be my first choice of those listed.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
100% Polyester	53	19.7	19.9
100% Rayon	0	0.0	0.0
100% Nylon	2	0.7	0.8
100% Cotton	210	78.1	78.9
100% Wool	1	0.4	0.4
No Response	3	1.1	0.0
Total	269	100.0	100.0

The fiber content preferred in a blended fabric for hot weather apparel as asked in question 18 was cotton-polyester (see Table 19).

Table 18

Question 16a

If I were to choose for myself clothing to wear during hot weather, clothing made of the following fabric would be my second choice of those listed.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
100% Polyester	134	49.8	59.3
100% Rayon	40	14.9	17.7
100% Nylon	11	4.1	4.9
100% Cotton	38	14.1	16.8
100% Wool	3	1.1	1.3
No Response	43	16.0	0.0
Total	269	100.0	100.0

Table 19

Question 18

If I were to choose for myself clothing to wear during hot weather, I would choose the following fabric blend as my FIRST CHOICE for that clothing. (A blend being a combination of two or more different fibers.)

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Cotton-Polyester	226	84.0	85.0
Rayon-Polyester	2	0.7	0.8
Wool-Polyester	25	9.3	9.4
Cotton-Nylon	6	2.2	2.3
Rayon-Nylon	1	0.4	0.4
Wool-Nylon	1	0.4	0.4
None of Above	5	1.9	1.9
No Response	3	1.1	0.0
Total	269	100.0	100.0

For a while rayon was promoted as an "artificial silk." With that background, it was deemed important to determine how buyers perceive rayon when compared to other fibers. More buyers (44%) thought rayon to be most similar to nylon. Silk was second in comparison with only 27% of the buyers selecting rayon as most similar to silk (see Table 20).

Question 19 was closely related to question 15. Number 19 asked if buyers had purchased within the past year for their personal use clothing made of rayon or a rayon blend. To this 72% responded with a negative answer (see Table 21).

Table 20

Question 17

To me, rayon is most similar in all ways to:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Polyester	24	8.9	9.4
Nylon	112	41.6	44.1
Wool	23	8.6	9.1
Cotton	26	9.7	10.2
Silk	69	25.7	27.2
No Response	15	5.6	0.0
Total	269	100.0	100.0

Table 21

Question 19

I have in the past twelve months purchased for myself clothing made either of 100% rayon or a rayon blend.

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Yes	57	21.2	21.3
No	191	71.0	71.5
Do Not Remember	19	7.1	7.1
No Response	2	0.7	0.0
Total	269	100.0	100.0

Question 20 was a summary question of buyer attitudes toward rayon as an apparel fiber. It asked buyers their present opinion of clothing made of rayon or rayon blends. To this question 65% of the respondents stated their opinion at that time was unfavorable (see Table 22). When asked if their opinion had changed during the previous five years, 45% said their opinion had not changed; 32% said their opinion had become more favorable, and 23% said their opinion had become less favorable (see Table 23).

Table 22

Question 20

My present opinion of clothing made of rayon or rayon blends is:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Favorable	64	23.8	24.2
Unfavorable	172	63.9	65.2
No Opinion	28	10.4	10.6
No Response	5	1.9	0.0
Total	269	100.0	100.0

Figure 1 presented a demographic profile of the sample respondents. In addition to those characteristics, it was learned from question 22 that the buyers were almost evenly

Table 23

Question 21

During the past five years my opinion of rayon as a clothing fiber has become:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
More Favorable	86	32.0	32.2
Less Favorable	60	22.3	22.5
Not Changed	121	45.0	45.3
No Response	2	0.7	0.0
Total	269	100.0	100.0

divided in their buying roles with 42% buying clothing primarily for men; 42% buying primarily for women and the balance, 16%, buying both mens' and womens' apparel for resale (see Table 24).

Table 24

Question 22

As a Belk/Leggett Buyer, I buy clothing primarily for:

Buyer Response	Absolute Freq	Relative Freq (Pct)
Men	113	42.0
Women	112	41.6
Both Men & Women	44	16.4
Total	269	100.0

Questions 23 through 27 were asked in preparing demographic information about the research participants. For a closer look at these data see Tables 25 through 29.

Table 25

Question 23

My sex is:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Female	113	42.0	42.2
Male	155	57.6	57.8
No Response	1	0.4	0.0
Total	269	100.0	100.0

Table 26

Question 24

My age is:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
18 to 24	27	10.0	10.1	10.1
25 to 34	100	37.2	37.3	47.4
35 to 49	73	27.1	27.2	74.6
50 to 64	66	24.5	24.6	99.3
65 or Older	2	0.7	0.7	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

Table 27

Question 25

My total combined household income (both husband and wife if married) per year from all sources is:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Less Than 6,000	5	1.9	2.0	2.0
6,000 - 9,999	24	8.9	9.4	11.3
10,000 - 14,999	47	17.5	18.4	29.7
15,000 - 19,999	68	25.3	26.6	56.3
20,000 - 24,999	57	21.2	22.3	78.5
More Than 25,000	55	20.4	21.5	100.0
No Response	13	4.8	0.0	100.0
Total	269	100.0	100.0	

Table 28

Question 26

My last year completed in school was:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)	Cum Freq (Pct)
Less than 8 Grade	1	0.4	0.4	0.4
Some High School	3	1.1	1.1	1.5
High School Grad	86	32.0	32.1	33.6
Some College	113	42.0	42.2	75.7
College Grad	59	21.9	22.0	97.8
Masters or Above	6	2.2	2.2	100.0
No Response	1	0.4	0.0	100.0
Total	269	100.0	100.0	

Table 29

Question 27

I am:

Buyer Response	Absolute Freq	Relative Freq (Pct)	Adjusted Freq (Pct)
Married	208	77.3	77.3
Single	39	14.5	14.5
Divorced	15	5.6	5.6
Widowed	7	2.6	2.6
Total	269	100.0	100.0

CHAPTER IV

RESULTS OF HYPOTHESES TESTS

The research project focused on the attitudes of buyers toward the use of rayon in apparel. Specifically there was an interest in determining if there were some identifiable differences in those buyers who had a favorable opinion and those who did not. It was believed that once identifiable characteristics were determined, recommendations could be made to the rayon industry which would allow the industry to design special educational programs and promotional campaigns. By this form of market segmentation buyers holding unfavorable and/or unfounded opinions could be identified and efficiently reached. To effectively accomplish segmentation and attain the goals of the research, the general hypotheses were based on objectively determinable buyer demographics such as age, sex, education, and income.

In addition to determining an overall general opinion held toward rayon by various groups of buyers, it was necessary to determine more specifically their attitudes toward the rayon apparel properties of care, comfort, and durability. Such findings give the rayon industry greater insight into what areas need particular attention.

To obtain an overall opinion toward rayon as expressed by the buyers and to test the four primary null hypotheses, the researcher employed analysis of variance and crosstabulation techniques. In each of the crosstabulation exercises one variable was related to another single variable. That is, one demographic characteristic was crosstabulated with a single answer from a question asked about a particular rayon property. Analysis of variance used a different application by combining scores from all questions relating to a given rayon property. For identification of those questions used in ANOVA for each rayon property see the following page and Appendix H.

The previously mentioned scores were obtained by assigning numerical values to each possible answer. For example, to determine if buyers' overall opinions were generally favorable or unfavorable, values of one to five were assigned to each of the possible answers for the first 14 questions. Five was the highest possible value for an answer in strong agreement to a positive, true statement about rayon. When the 14 scores were combined for each buyer it was shown that a buyer with a higher combined score had a more favorable overall opinion of rayon than did a buyer with a lower score.

Properties Tested

Durability

Attention was directed to durability in questions 6, 7, 9, 11 and 13 (see Figure 1A). These questions were raised regarding fadeability, stretch recovery, strength of seams, durability comparisons of rayon and cotton, and the life span of rayon apparel.

Comfort

To learn opinions regarding comfort properties, buyers were asked about rayon fabrics' feel against the skin; rayon fabrics' ability to absorb perspiration; a direct question on comfort, and two questions to determine relative choice of fibers for wear in hot weather (see questions 1, 4, 10, 16, 16a, and 18).

Care

To discover opinions about the care properties, specific questions were asked about launderability and bleachability. Two direct questions were also asked about ease of care (see questions 2, 3, 5, 8, and 12 in Figure 1A).

Results of Hypotheses Tests

Hypothesis I

Buyers under age 35 do not have a significantly different attitude toward rayon than do those age 35 and older.

This hypothesis was tested in part by crosstabulating variables of age and opinion. Conclusions were drawn from the answers to questions 20 and 24. As seen in Table 30, it was found that buyers less than 35 years old had a collectively more favorable opinion of rayon than those 35 and older. With this finding having a significance level of .0001, the null hypothesis was readily rejected (see Table 30).

Table 30

Crosstabulation of Age by Opinion

	Count Row Pct Col Pct Tot Pct	Opinion Favorable	Unfavorable	No Opinion	Row Total
Age	Less Than 35	41 * 32.8%** 64.1%*** 15.6%****	65 52.0% 38.0% 24.7%	19 15.2% 67.9% 7.2%	125 47.5%
	35 and Older	23 16.7% 35.9% 8.7%	106 76.8% 62.0% 40.3%	9 6.5% 32.1% 3.4%	138 52.5%
	Column Total	64 24.3%	171 65.0%	28 10.6%	263 100.0%

Chi Square = 17.86539 with 2 Degrees of Freedom
Significance = .0001

* Number Answering (Count)
** Percentage of that Row
*** Percentage of that Column
**** Percentage of Total

This rejection of the null hypothesis was confirmed by an analysis of variance (see Table 31).

Table 31

Analysis of Variance
Opinion by Age (Less than 35, 35 and Older)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	1918.2122	1918.2122	40.812	.0000
Within Groups	266	12502.4297	47.0016		
Total	267	14420.6406			

Hypothesis IA

> Between groups of buyers under 35 and buyers 35 or older, there is no significant difference in the change in opinion during the past five years.

Not only did the younger group of buyers have more favorable attitudes, but as shown in Table 32, their opinions had become more favorable during the preceding five years than had the opinions of the older group, thus causing hypothesis IA to be rejected.

Hypotheses IB, IC, and ID

> Buyers under age 35 do not have significantly different attitudes toward the durability of rayon than do those age 35 and older.

> Buyers under age 35 do not have significantly different attitudes toward the comfort properties of clothing made of rayon than do those age 35 and older.

Table 32

Crosstabulation of Age by Opinion Change

	Count Row Pct Col Pct Tot Pct	Opinion Change More Favorable	Less Favorable	Not Changed	Row Total
Age	Less Than 35	50 39.4% 58.1% 18.8%	22 17.3% 36.7% 8.3%	55 43.3% 45.8% 20.7%	127 47.7%
	35 and Older	36 25.9% 41.9% 13.5%	38 27.3% 63.3% 14.3%	65 46.8% 54.2% 24.4%	139 52.3%
	Column Total	86 32.3%	60 22.6%	120 45.1%	266 100.0%

Chi Square = 6.85165 with 2 Degrees of Freedom
Significance = .0325

Buyers under age 35 do not have significantly different attitudes toward the care properties of clothing made of rayon than do those age 35 and older.

In addition to the study of age versus overall opinion, there were tests of the relationship between age of buyer and opinions about the durability, comfort, and care of clothing containing rayon. Analysis of variance showed there were significant differences between the two age groups in all three analyses. As a result, hypotheses IB, IC, and ID were rejected (see Tables 33, 34, and 35).

Hypothesis II

Buyers with some college education do not have significantly different attitudes toward rayon than do those buyers with no college education.

Based on crosstabulation of education level of buyers and their expressed opinions of rayon the null hypothesis was rejected (see Table 36). It was found that buyers with some or more college education did have a more favorable attitude toward rayon than did those buyers with no college education. However, both groups had unfavorable opinions of rayon.

Analysis of variance (see Table 37) confirmed the rejection of the null hypothesis.

Hypothesis IIA

Buyers with some college education do not have significantly different attitudes toward the durability of rayon than do those buyers with no college education.

Table 33

Analysis of Variance
Durability by Age (Less than 35, 35 and Older)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	147.0043	147.0043	25.945	.0000
Within Groups	266	1507.1331	5.6659		
Total	267	1654.1372			

Table 34

Analysis of Variance
Comfort by Age (Less than 35, 35 and Older)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	65.6421	65.6421	13.338	.0003
Within Groups	266	1309.0938	4.9214		
Total	267	1374.7358			

Table 35

Analysis of Variance
Care by Age (Less than 35, 35 and Older)

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	262.4554	262.4553	24.413	.0000
Within Groups	266	2859.7119	10.7508		
Total	267	3122.1672			

Table 36

Crosstabulation of Education by Opinion

	Count Row Pct Col Pct Tot Pct	Education No College or Less	Some College or More	Row Total
Opinion	Favorable	22 34.4% 24.4% 8.4%	42 65.6% 24.3% 16.0%	64 24.3%
	Unfavorable	57 33.3% 63.3% 21.7%	114 66.7% 65.9% 43.3%	171 65.0%
	No Opinion	11 39.3% 12.2% 4.2%	17 60.7% 9.8% 6.5%	28 10.6%
	Column Total	90 34.2%	173 65.8%	263 100.0%

Chi Square = .37960 with 2 Degrees of Freedom
Significance = .8271

Table 37

Analysis of Variance
Opinion by Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	350.9510	350.9509	6.649	.0105
Within Groups	266	14040.1094	52.7824		
Total	267	14391.0586			

The preceding null hypothesis was accepted based on analysis of variance (see Table 38). There was no significant difference in attitudes between the two groups.

Table 38

Analysis of Variance
Durability by Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	19.6727	19.6727	3.210	.0743
Within Groups	266	1630.2234	6.1287		
Total	267	1649.8960			

Hypothesis IIB

Buyers with some college education do not have significantly different attitudes toward the comfort properties of clothing made of rayon than do those buyers with no college education.

Again, analysis of variance determined the null hypothesis should be accepted (see Table 39). There was no significant difference in attitudes between the two groups. Education level in this case did not have any effect on buyer opinion of comfort properties.

Hypothesis IIC

Buyers with some college education do not have significantly different attitudes toward the care properties of rayon than do those buyers with no college education.

Table 39

Analysis of Variance
Comfort by Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	.8727	.8727	.168	.6821
Within Groups	266	1380.8826	5.1913		
Total	267	1381.7551			

Table 40, illustrating the results of an analysis of variance, indicates the null hypothesis should be accepted. This means there was no significant difference in opinions toward the care properties of rayon as expressed by those buyers with some college and those with no college education.

Table 40

Analysis of Variance
Care by Education

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	28.0393	28.0393	2.417	.1212
Within Groups	266	3085.7839	11.6007		
Total	267	3113.8230			

There were apparently differences in the general opinions held by the two groups with different education levels but no differences between the groups in their specific opinions of rayon's durability, comfort, and care properties.

Hypothesis III

> Female buyers do not have significantly different attitudes toward rayon than do male buyers.

Based on crosstabulation analysis of buyer sex and the answers to question 20, the null hypothesis was accepted. There was no significant difference in male and female buyer opinions toward rayon (see Table 41). Contrary to the findings from question 20, it was found there were significant differences in male and female buyer opinions toward the individual properties imparted by rayon in apparel.

By analysis of variance based on the computed values assigned to combined answers for individual questions, the research presented a conflict with the findings from the crosstabulation of questions 20 and 23 (see Table 42). This does not suggest that one of the tests was in error but does suggest that when giving attention to the individual fiber properties perhaps more or less serious thought was entertained in answering the questions.

Table 41

Crosstabulation of Opinion by Sex

	Count Row Pct Col Pct Tot Pct	Sex Female	Male	Row Total
Opinion	Favorable	29 45.3% 26.4% 11.0%	35 54.7% 22.7% 13.3%	64 24.2%
	Unfavorable	72 41.9% 65.5% 27.3%	100 58.1% 64.9% 37.9%	172 65.2%
	No Opinion	9 32.1% 8.2% 3.4%	19 67.9% 12.3% 7.2%	28 10.6%
	Column Total	110 41.7%	154 58.3%	264 100.0%

Chi Square = 1.39756 with 2 Degrees of Freedom
Significance = .4972

Table 42

Analysis of Variance
Opinion by Sex

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	935.5872	935.5872	18.425	.0000
Within Groups	266	13507.2773	50.7792		
Total	267	14442.8633			

Hypothesis IIIA

Female buyers do not have significantly different attitudes toward the durability of rayon clothing than do male buyers.

By analysis of variance this null hypothesis was rejected. It was found that there was a significant difference between male and female opinions on the durability of rayon (see Table 43).

Table 43

Analysis of Variance
Durability by Sex

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	126.6784	126.6784	22.301	.0000
Within Groups	266	1510.9502	5.6803		
Total	267	1637.6284			

Hypothesis IIIB

Female buyers do not have significantly different attitudes toward comfort properties of rayon clothing than do male buyers.

The previous hypothesis was rejected based on analysis of variance. It was shown there was a significant difference of opinions toward the comfort properties of apparel containing rayon. To observe the results of the test see Table 44.

Table 44

Analysis of Variance
Comfort by Sex

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	.0	.0	.0	1.0000
Within Groups	266	1374.7351	5.1682		
Total	267	1374.7351			

Hypothesis IIIC

Female buyers do not have significantly different attitudes toward the care properties of rayon clothing than do male buyers.

According to Table 45, hypothesis IIIC was rejected. It was found there was a significant difference in male and female opinions toward the care of rayon apparel.

Table 45

Analysis of Variance
Care by Sex

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	403.5998	403.5996	39.598	.0000
Within Groups	266	2711.1648	10.1923		
Total	267	3114.7644			

Hypothesis IV

> Buyers with household annual incomes of $15,000 or more do not have significantly different attitudes toward rayon than do those buyers with household annual incomes of less than $15,000.

In testing hypothesis IV, the objective was to see if more affluent buyers with greater personal purchasing power might have more favorable or less favorable attitudes toward rayon. Since question 25 was concerned with household income and not per capita income, question 27 was used to determine if the responding buyer was unmarried. If the buyer was unmarried, the income figure could probably have been considered per capita. If question 27 showed the buyer was married, this increased the likelihood the answer to question 25 included income combined with another member of the household such as an employed spouse.

Regardless of whether the respondent was married or unmarried, the hypothesis was accepted. Likewise crosstabulation and analysis of variance both called for acceptance of the hypothesis (see Tables 46-49).

Further Analysis

Although not treated as an hypothesis, attention was given to whether buyers did or did not consider rayon to be like silk or cotton. As stated earlier in the body of this

Table 46

Crosstabulation of Married Buyer Income
by Opinion

	Count Row Pct Col Pct Tot Pct	Opinion Favorable	Unfavorable	No Opinion	Row Total
Income	Less than $15,000	27 19.3% 67.5% 14.1%	98 70.0% 74.2% 51.0%	15 10.7% 75.0% 7.8%	140 72.9%
	$15,000 and More	13 25.0% 32.5% 6.8%	34 65.4% 25.8% 17.7%	5 9.6% 25.0% 2.6%	52 27.1%
	Column Total %	40 20.8%	132 68.8%	20 10.4%	192 100.0%

Chi Square = .75572 with 2 Degrees of Freedom
Significance = .6853

Table 47

Crosstabulation of Unmarried Buyer Income
by Opinion

	Count Row Pct Col Pct Tot Pct	Opinion Favorable	Unfavorable	No Opinion	Row Total
Income	Less than $15,000	22 38.6% 100.0% 36.7%	31 54.4% 91.2% 51.7%	4 7.0% 100.0% 6.7%	57 95.0%
	$15,000 and More	0 .0% .0% .0%	3 100.0% 8.8% 5.0%	0 .0% .0% .0%	3 5.0%
	Column Total	22 36.7%	34 56.7%	4 6.7%	60 100.0%

Chi Square = 2.41486 with 2 Degrees of Freedom
Significance = .2990

Table 48

Analysis of Variance
Opinion by Married Buyer Income

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	73.9573	73.9573	1.358	.2453
Within Groups	193	10510.5813	54.4590		
Total	194	10584.5352			

Table 49

Analysis of Variance
Opinion by Unmarried Buyer Income

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	1	78.5374	78.5374	1.350	.2500
Within Groups	59	3433.2296	58.1903		
Total	60	3511.7668			

project, rayon was once marketed as an artificial silk. This marketing effort was conducted years ago. With the passage of the long period of time, it was considered that those persons over age 35 would be more likely to consider rayon as similar to silk. Also, the fact that rayon is a cellulosic fiber and has been shown by comparative performance tests in recent years to have become more similar to cotton, it was thought that perhaps rayon would have been considered by younger buyers to be most similar to cotton. By looking at Table 50, the reader can see that there was no significant difference in opinion between the two buyer age groups about what similarities they saw in rayon and other fibers. Of particular note is the fact that buyers of both age groups considered rayon to be most similar to nylon. Silk ranked second in their choice of similarity.

Table 50

Crosstabulation of Age by Rayon Similarity to Other Fibers

	Count / Row Pct / Col Pct / Tot Pct	Fibers					
		Polyester	Nylon	Wool	Cotton	Silk	Row Total
Age	Less than 35	15 12.0% 62.5% 5.9%	50 40.0% 45.0% 19.8%	10 8.0% 43.5% 4.0%	18 14.4% 69.2% 7.1%	32 25.6% 46.4% 12.6%	125 49.4%
	35 and Older	9 7.0% 37.5% 3.6%	61 47.7% 55.0% 24.1%	13 10.2% 56.5% 5.1%	8 6.3% 30.8% 3.2%	37 28.9% 53.6% 14.6%	128 50.6%
	Column Total	24 9.5%	111 43.9%	23 9.1%	26 10.3%	69 27.3%	253 100.0%

Chi Square = 7.15529 with 4 Degrees of Freedom
Significance = .1279

CHAPTER V

CONCLUSIONS

The general conclusion reached from this study was that retail buyers possess an unfavorable opinion of rayon as an apparel fiber. Not only were their opinions of rayon in general unfavorable, but their attitudes toward the individual care, comfort, and durability properties were also unfavorable.

In attempting to develop a demographic profile of buyers with favorable opinions as opposed to buyers with unfavorable opinions, it was found that the only demographic characteristics which distinguished the two groups to any extent were age and sex.

Younger buyers, those buyers less than age 35, were found to have a more favorable attitude toward rayon than those buyers age 35 and older. Regardless of that difference in the two age groups, both groups held negative attitudes toward rayon.

While both male and female buyer segments demonstrated no significant difference in their negative overall opinions of rayon apparel, there was a significant difference in their

opinions toward the individual rayon properties studied. It was found that the female buyers were significantly less negative than male buyers in their opinions of the care, comfort, and durability properties. The point must be made, however, that both sexes had unfavorable opinions of the properties possessed by rayon garments.

Thus, there were no distinguishing characteristics of buyers holding favorable attitudes as contrasted with buyers having unfavorable attitudes. The differences found were in the degrees of unfavorable opinions.

In addition to the conclusion that buyers have unfavorable attitudes toward rayon, it was found that there exist many misconceptions about rayon as used in apparel products. For example, it was the opinion of over 63% that white rayon fabric could not be bleached. In addition, nearly one-fourth were unsure about its bleachability. The rayon industry faces a task of overcoming such erroneous opinions.

The industry should be particularly concerned with buyer concepts of rayon clothing as clothing that is difficult to care for. Most buyers thought of rayon apparel as more difficult to take care of than cotton clothing. They thought rayon shrank readily when laundered and could not be bleached. Thirty six percent of the respondents thought rayon clothing

must be dry-cleaned. It is in this area of care properties that the rayon industry perhaps needs to promote the advantages of rayon as a cotton substitute. In short, the retail buyers' opinions of the care properties of rayon contribute as obstacles to market acceptance.

Fewer buyers found unacceptable the durability and comfort properties of rayon than did those voting against the care properties.

Rayon is most similar to cotton as an apparel fiber when all properties are considered. Yet, the survey showed buyers thought rayon was most similar to nylon, a fiber which is very different from rayon. This only magnifies the need for buyer and, perhaps, consumer education about the true values of rayon as an apparel fiber.

CHAPTER VI

RECOMMENDATIONS

This chapter directs attention to recommendations to the rayon industry for the promotion of rayon to the retail apparel trade. Additional recommendations are made for the further study of market acceptance of rayon as an apparel fiber.

Recommendations for Promotion

Since rayon was found to have a generally unfavorable image among department store apparel buyers in the Southeast, the rayon industry should develop a course of action to overcome its negative position.

The standard procedure in a situation such as this would be to identify specific market segments needing attention. As identified in this research project, the image perceived by all identifiable segments is substantially negative. This presents the problem of selecting segments needing the most attention rather than eliminating those with predisposed favorable opinions. The two major segments identified herein as needing attention the most are those buyers age 35 and older and male buyers.

For promotion purposes it would be difficult to select promotion media that would be targeted to older buyers. Furthermore, since all age groups held negative opinions, this is not recommended.

To reach male buyers as a separate market segment would likewise be difficult although more feasible than trying to reach age segments. Most male apparel is purchased by male buyers, but a large share of female apparel is also purchased by male buyers. By selecting trade media that reach menswear buyers, many male buyers could be contacted, but, as in reaching various age groups, the fact that both male and female buyers viewed rayon unfavorably indicates attempts should be made to communicate with both sexes.

One alternative, as always, is to do nothing. Statistics do indicate there is a more favorable opinion of rayon among younger buyers and their opinions are improving more than the opinions of the older buyers. However, with the increasing costs of rayon substitutes, increasing demand for food cropland, and the byssinosis problems associated with cotton, the time is appropriate for a strong rayon promotional effort.

Another consideration is the submission of a new petition to the Federal Trade Commission calling for a generic name change. The more favorable opinion held by buyers under age

35 as contracted with those of older buyers is evidence to some degree that the past performances of inferior rayons have damaged the perceptions of the newer high performance rayons. As long as people consider the modern rayons to be the same as the earlier fibers with the same name, there will be a stigma that will be difficult to remove.

After consideration of the alternatives, the best course of action appears to be a major promotional campaign with a different theme than that followed in the 1978 campaign. The 1978 effort was aimed at promoting rayon as a fashion fiber with emphasis on testimonial advertisements featuring internationally famous apparel designers.

The proposed effort should be developed around more practical concepts such as the attributes of rayon including the qualities of lower costs and improvements in performance. These are the areas where rayon is perceived to be inferior and consequently offer logical areas for promotion. If rayon were as inferior as the research shows the buyers think it is, then promotion of high qualities would be unethical if not illegal. The problems are the misconceptions buyers have about rayon. It is these misconceptions that must be corrected.

To supplement the promotion of the physical attributes of rayon, the industry should borrow or capitalize on ideas from the competition. Rayon has more than physical similarities to cotton. It, too, is not a synthetic fiber. It is a man-made fiber made from naturally occurring polymers (Moncrieff, 1975). Rayon should be promoted as a fiber produced from naturally occurring replenishable resources to distinguish it from synthetic fibers which are produced from non-replenishable resources. This use of the term "naturally occurring resources" would also give impetus to the competition with natural fibers such as cotton and wool.

Recommendations for Further Study

In addition to the recommendations proposed for the promotion of rayon to apparel buyers, it is recommended that the rayon industry conduct or sponsor research in the following areas:

1. To change buyer opinions it is not enough to know what those opinions are. It would be helpful to know why opinions are the way they are. For this reason further study should include the determination of why buyers have negative attitudes toward rayon.

2. Apparel buyers should be surveyed in other geographical areas of the United States to determine if more or less temperate climate areas foster different attitudes toward rayon. The fact the Southeast has historically been a cotton-producing area may lead to some bias against any cotton substitutes. Also, different climates may influence different attitudes toward apparel fabric content.
3. A third area for study would be to determine what opinions exist toward rayon in the various levels of textile and apparel manufacturing.
4. A logical extension of the previous study areas is the consumer market. It is assumed that consumers hold attitudes toward rayon similar to those held by resident retail buyers. Consumers may or may not be fiber content oriented when purchasing apparel for personal use. It is recommended that consumers who are not professional retail apparel buyers be studied for their opinions of rayon.

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APPENDIX A

U. S. rayon staple production has been rising since 1975
(Million lb)

Year	Production
1939	51
1947	228
1952	307
1957	425
1960	314
1965	648
1969	759 *
1970	607
1975	371
1976	488
1977	527
1978e	550

* Peak year. e-Estimate
Source: Textile Economics Bureau

APPENDIX B

Summary of Conversion Costs *
Fiber to Greige - Greige to Finished Combined
(Included is the effect of waste values
related to current fiber prices)

	Conversion Cost Per Yard			
	Fiber To Greige	Greige To Finish	Total	Cotton
Cotton	$.1593	$.0784	$.2377	100.0%
Polyester	$.1580	$.0693	$.2273	95.6%
Rayon (HWM)	$.1455	$.0810	$.2265	95.3%
Rayon (Regular)	$.1450	$.0810	$.2260	95.1%
Carded Cotton/Polyester	$.1558	$.0819	$.2377	100.0%
Rayon (HWM)/Polyester	$.1500	$.0840	$.2340	98.4%
Rayon (Regular)/Polyester	$.1498	$.0840	$.2338	98.3%
Combed Cotton	$.1761	$.0784	$.2545	107.1%
Combed Cotton/Polyester	$.1642	$.0819	$.2461	103.5%

* 4th Quarter 1975

Source: Modern Textiles, April, 1976.

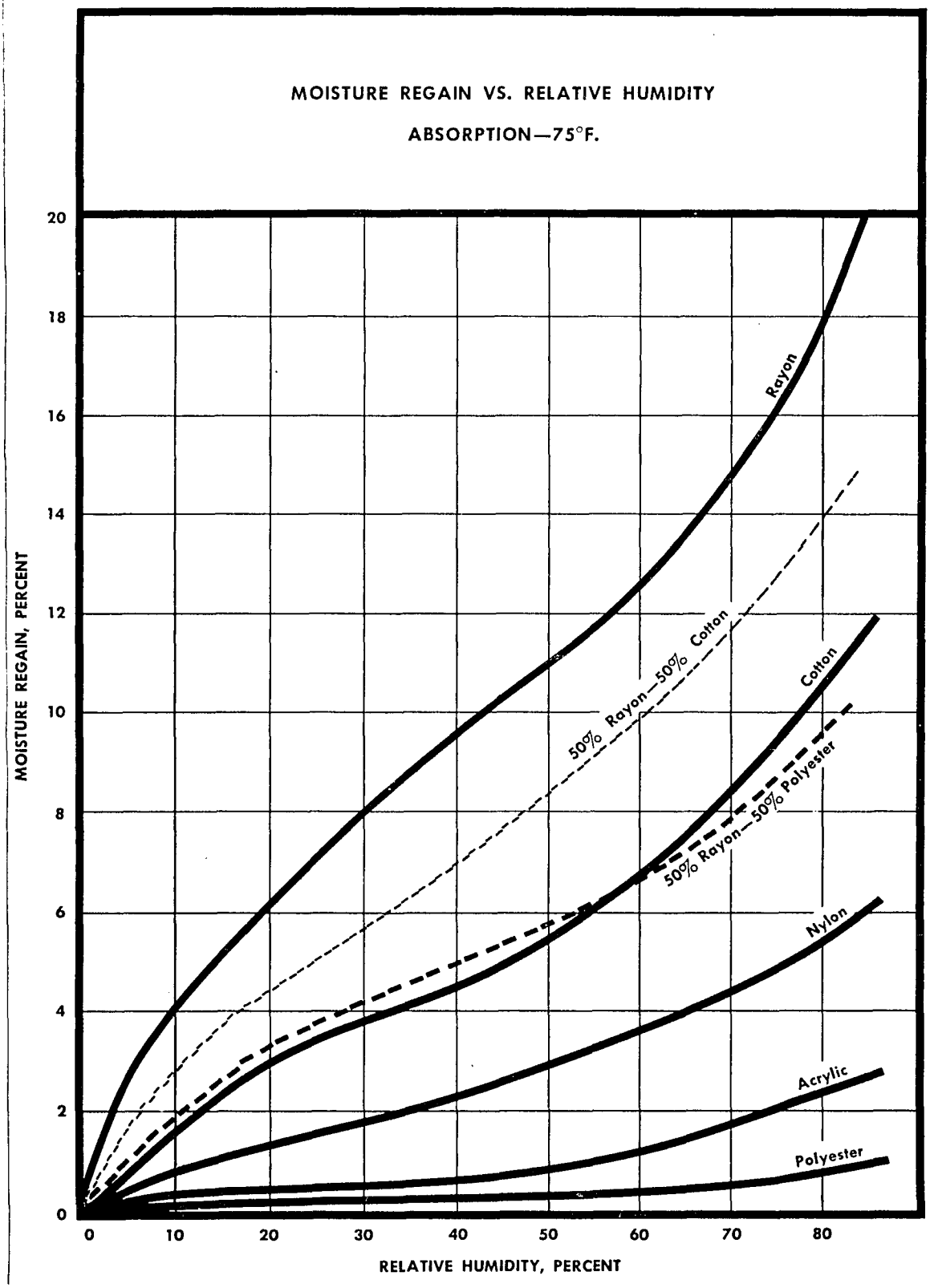
APPENDIX C

Comparison of cotton and three HWM rayon fibers

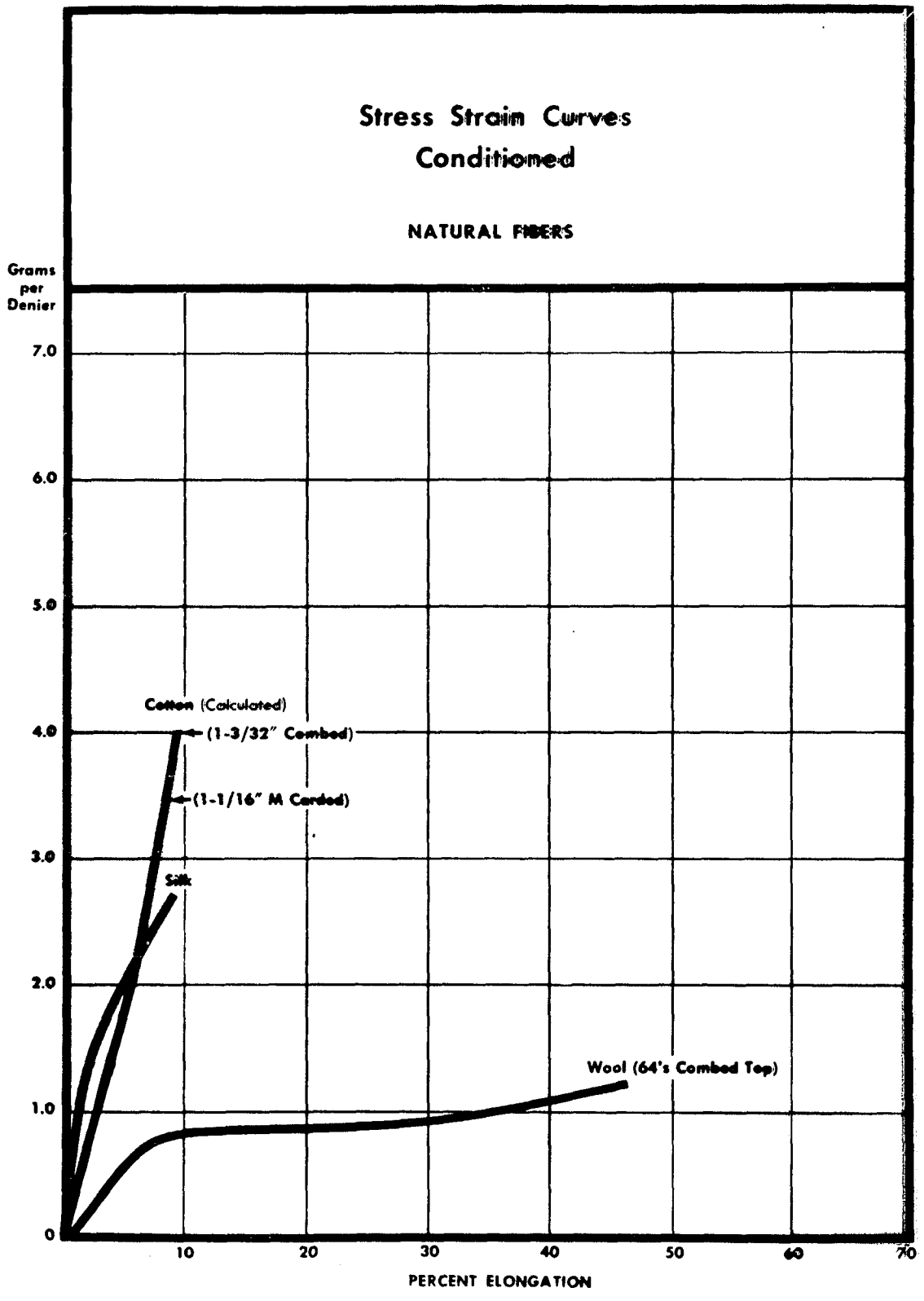
Tenacity G/D	Prima Rayon	Natural Multilobal HWM Rayon	Fiber 40 Rayon	Cotton
Cond.	4.3-4.5	4.0-4.6	4.7-5.0	3.0-4.9
Wet	2.2-2.3	2.2-2.3	2.6-2.9	3.3-6.4
Elongation %				
Cond.	15-18	15-18	21-23	10
Wet	21-23	21-23	27-29	13

Source: Knitting Times. December 4, 1978.

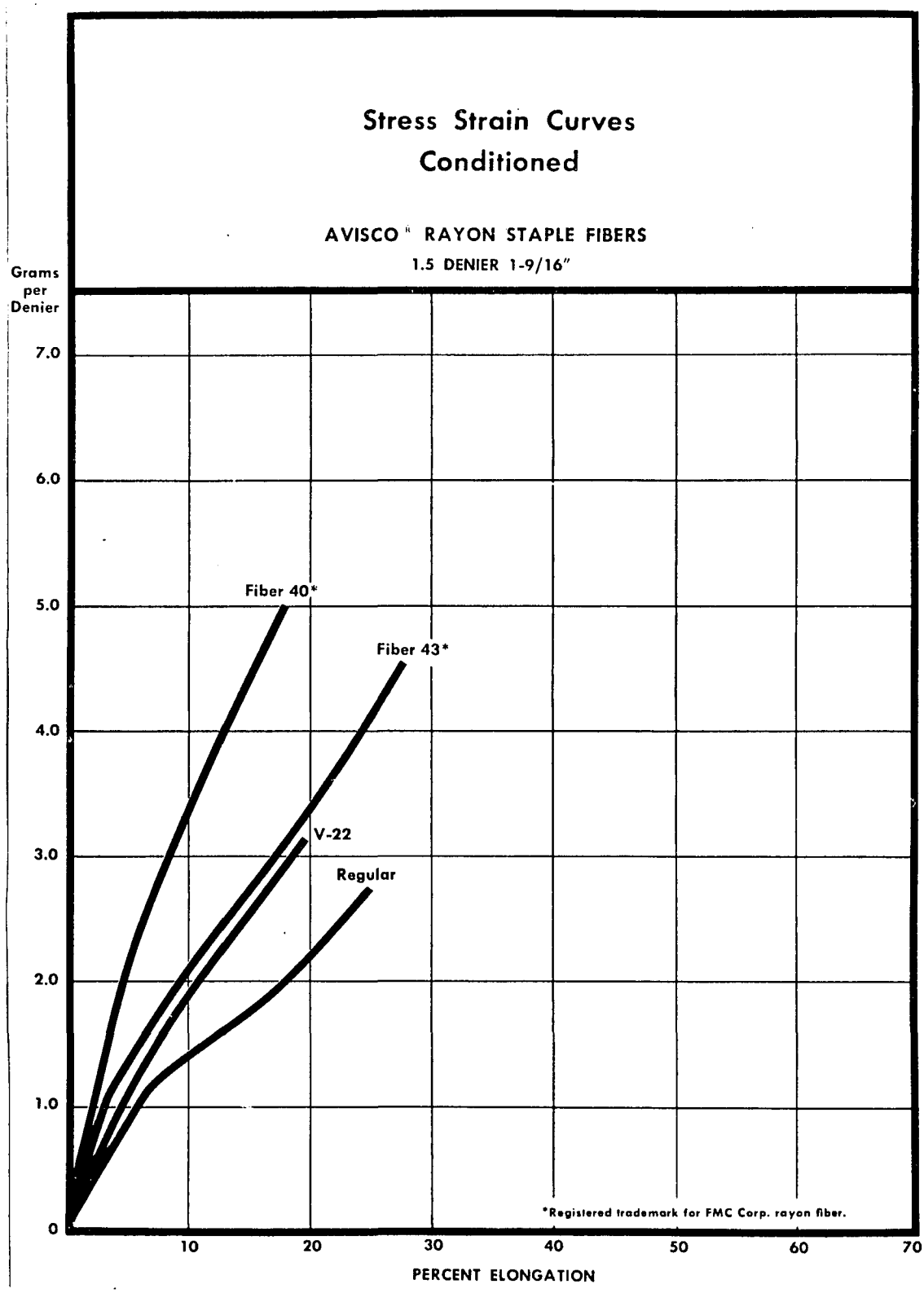
APPENDIX D


MOISTURE REGAIN VS. RELATIVE HUMIDITY
ABSORPTION—75°F.
MOISTURE REGAIN, PERCENT
RELATIVE HUMIDITY, PERCENT
0
2
4
6
8
10
12
14
16
18
20
0
10
20
30
40
50
60
70
80
Rayon
50% Rayon—50% Cotton
Cotton
50% Rayon—50% Polyester
Nylon
Acrylic
Polyester

APPENDIX E


Stress Strain Curves
Conditioned
NATURAL FIBERS
Grams per Denier
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
Cotton (Calculated)
(1-3/32" Combed)
(1-1/16" M Carded)
Silk
Wool (64's Combed Top)
10
20
30
40
50
60
70
PERCENT ELONGATION

APPENDIX F


Stress Strain Curves
Conditioned
AVISCO® RAYON STAPLE FIBERS
1.5 DENIER 1-9/16"
Grams per Denier
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0
Fiber 40*
Fiber 43*
V-22
Regular
*Registered trademark for FMC Corp. rayon fiber.
10
20
30
40
50
60
70
PERCENT ELONGATION

APPENDIX G

How polyester-rayon blend rates against poly-cotton (50-50-blends)

	Poly-rayon *	Poly-cotton
Finished construction		
Warp yarns/in.	101	102
Fill yarns/in.	85	84
Fabric weight (oz/yd^2)	4.41	4.41
Breaking strength (lb, 1-in. strip)		
Warp	45.1	50.3
Fill	51.5	47.8
Elongation (%)		
Warp	18.0	19.2
Fill	33.6	40.0
Tear (g, Elmendorf)		
Warp	1563	1648
Fill	1564	1508
Stiffness (g/cm)		
Warp	183.6	181.9
Fill	120.7	119.6
Shrinkage (%, 5 washes)		
Warp	1.47	1.67
Fill	0.27	+0.15
Wash-wear rating	4+	4+

*High-crimp, high-wet-modulus rayon used is Rayonier's Prima.

Source: Textile World, January, 1979.

APPENDIX H

Questions used for ANOVA

Table	Questions
31	1-14 and 24
33	6,7,9,11,13 and 24
34	1,4,10 and 24
35	2,3,5,8,12 and 24
37	1-14 and 26
38	6,7,9,11,13 and 26
39	1,4,10 and 26
40	2,3,5,8,12 and 26
42	1-14 and 23
43	6,7,9,11,13 and 23
44	1,4,10 and 23
45	2,3,5,8,12 and 23
48,49	1-14, 25 and 27

APPENDIX I

Questions used for Crosstabulation

Table	Questions
30	20 and 24
32	21 and 24
36	20 and 26
41	20 and 23
46	20 and 25
47	20 and 25
50	24 and 17