To the Graduate Council:

I am submitting herewith a dissertation written by Mary K. Tims entitled "Readability of Retail Printed Items and Shopping Behavior of Socially Active Older Women Shoppers of Apparel." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Home Economics.

Mary Frances Drake
Mary Frances Drake
Major Professor

We have read this dissertation
and recommend its acceptance:

Genet D. Snell

Imogene M. Ford

Jacquelyn DeJonge

Accepted for the Council:

Lee Minkel
The Graduate School

READABILITY OF RETAIL PRINTED ITEMS AND SHOPPING BEHAVIOR OF SOCIALLY ACTIVE OLDER WOMEN SHOPPERS OF APPAREL

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Mary K. Tims

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ABSTRACT

The purpose of this research was to investigate the effect that changing eyesight has on readability of printed consumer information and on shopping behavior. The research instrument was a self-administered questionnaire composed of a readability instrument for testing accuracy and ease of reading of retail printed items and a survey instrument for data regarding eyesight condition, shopping behavior, social activities, and demographics.

The research hypotheses were in five major groups: readability, self-assessment of eyesight, shopping behavior specific to eyesight condition, general shopping behavior, and use of information sources. The independent variable was age and the dependent variables were the concepts named in each hypothesis statement.

A judgemental sample of two hundred and four socially active women ranging in age from 26 to 89 years was used. Testing was accomplished in a controlled lighting situation of 20-30 footcandles.

Accuracy and ease were tested using the general linear models procedure. A regression equation was generated for predicting accuracy and ease by age. Chi-square analysis was used to measure differences by age group for the other hypotheses.

Age made a difference in both accuracy and ease of reading. Both accuracy and ease increased for all ages when size of type was enlarged and intensity of print was darkened. Increasing the size of type was more important than increasing the intensity. Eleven-point type of dark intensity was recommended for retail printed items.

Persons under age 45 assessed their eyesight as good or excellent, whereas, those over 45 assessed their eyesight as fair or good. Shopping behaviors specific to eyesight condition that were significant by age group were: shopping alone in familiar stores, time of day, driving a car, driving at night, and use of any type of transportation.

General shopping behaviors significant by age group were: type of store, frequency of shopping, amount of time spent, choice of companion, time of day, day of the week, method of payment, type of credit card, and expenditures on clothing. Information sources significant by age group were: observing other people, use of catalogs, fashion magazines, and TV and radio advertisements.

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CHAPTER I

INTRODUCTION

The older population maintains an increasingly important role in this nation's social and economic life. Persons age 65 and over are successfully dispelling the myths that the majority of the elderly are sick, inactive, uninformed, and poverty ridden ("Life Begins at 55," 1980). Older people are fast becoming activists in social and political arenas ("'Gray Power' Flexes," 1980; Harding, 1981; "Now the Revolt," 1977). With this increasing influence, the older segment can no longer be treated with disinterest in the marketplace.

Concern for the problems of the older population has stimulated studies by educators, researchers, and practitioners in the fields of business, biology, psychology, sociology, home economics, and gerontology. Research concerning older people as shoppers in the market place is essential in order to identify their needs and predict their behaviors. The marketplace is a central part of everyone's daily experience and has a wide impact on people's daily lives (Cravens, Hills, & Woodruff, 1980).

In the past, the business community with its youth-oriented emphasis has been slow to assess the consumer and marketplace needs of older people (Block, 1974; Reinecke, 1975; Waddell, 1975). More recently, business has recognized that many older people comprise an important consumer force (Allan, 1981a; Cruikshank, 1982; Flint, 1980;

"Market with a Future," 1980; "Marketers Discover," 1979; "Metamorphosis," 1977; "The Over-50 Set," 1982; Quinn, 1980; "Seniors' Spending," 1980). However, retailers have limited their use of marketing strategies that attract and meet the needs of the elderly (Allan, 1979; Gelb, 1978; Reinecke, 1975).

The population of older people in the United States has been increasing both in numbers and in percentage of the total since the turn of the century. In 1980, the population of persons age 45 years and over was more than five times that of 1900, while the population of persons age 65 years and over was eight and a half times that of 1900 (U.S. Bureau of the Census, 1975; U.S. Bureau of the Census, 1981c).

The importance of older women in American society is evidenced by the ratio of males to females. In 1980 the ratio of middle-aged (45 to 64 years) men per 100 middle-aged women was 90.7, and the ratio of elderly (65 years and over) men per 100 elderly women was 67.6 (U.S. Bureau of the Census, 1981c). The direction of the ratio becomes more pronounced as age increases; hence, the majority of older people are female.

Parallel to the rise in population of older people is their increased buying power. In 1969 the elderly comprised a $40 billion market, twice that of the teen-age market ("The Forgotten Generation," 1969). In the early 1970s purchasing power of the elderly in the marketplace was acclaimed at $60 billion ("The Power of Aging," 1971) while the middle-aged market was said to be $200 billion (Linden, 1976). From the 1972-73 consumer expenditure survey by the Bureau of Labor

Statistics, households headed by a person 65 or older spent $68 billion in the U.S. marketplace (Allan, 1979). Allan further reported that the average household headed by a person 45-64 accounted for 53 percent of the total discretionary income in the U.S. economy. Households age 55 and over spent an estimated 28 percent of all discretionary income (Allan, 1981b).

Spending power of older people may be attributed to numerous hidden assets of both cash and noncash origins. Many elderly have private savings and retirement pensions, and few have personal debts. Some continue in the labor force full-time, while many continue part-time, a trend that is increasing. Discounts on certain products and services are available to senior citizens in the business community. Most of the elderly receive preferential income tax treatment, government pensions, and have access to federally funded medical and health care programs. In addition, with leisure time available during retirement years, opportunities exist to increase nonmonetary income by production of certain goods and services at home, e.g., homegrown vegetables, yard care, and home repair. These factors result in discretionary spending power that may be greater than the raw figures suggest.

Health condition at any age has a strong influence on ability to participate in everyday activities. Medical science and technology have made an extensive contribution to the improvement of physical conditions that parallel aging. According to Harris (1979) the stereotypic picture of the elderly as sick and frail is inaccurate. Although

individuals respond differently to the aging process, most continue their usual activities including shopping. According to Chinn and Robins (1976), of the approximate 96 percent of the elderly living in the community, 82 percent are able to carry on the normal activities of daily living. Limitations and impairments typical of aging that tend to hamper effectiveness in the marketplace include diminished eyesight, reduced hearing, and decreased motor ability. Yet, even with these reduced physical functions many older people maintain independent and active lives.

The marketplace has the potential for contributing to many needs of aging people. With an understanding of the many facets of aging, retailers can design an effective marketing mix and set up a marketing environment that will attract and satisfy the needs of the older population. To successfully implement strategies aimed at older customers, analysis must be made of their characteristics, abilities, limitations, activities, and resources. Following this, plans can be initiated to match the marketing mix and environment to the needs of the older shopper. Benefits will then accrue to both the customer and the business firm. These efforts will have the potential of contributing to both the profit goals and the social responsibility goals of the firm. Aging consumers' needs will be met and their quality of life enhanced.

Purpose of the Study

The purpose of this research was to begin an investigation of physical changes due to aging and determine if shopping behavior is

affected by these changes. The physical change considered in this research concerned the aspect of eyesight that involved reading small print. The focus was on readability of retail printed items and shopping behavior of apparel shoppers of a wide range of ages. Specific research questions addressed were:

1. Does readability of retail printed items vary with the age of the shopper?
2. Are selected aspects of shopping behavior different by age because of eyesight condition?
3. Does self-assessment of eyesight differ by age?
4. Do general shopping behavior characteristics, including the use of information sources, differ by age?

The findings should alert marketers to an aspect of consumer behavior that heretofore has been addressed only lightly. Further, the findings should be useful to retail practitioners in planning to satisfy the needs and wants of an aging population.

Significance of the Study

Paramount to society now and in the near future is the increasing number of older people. Parallel to advancing years is a normal decreasing of health and physical condition. Diminishing eyesight is a fact of life for almost all older people. Being able to read marketplace information is essential to the satisfactory selection of goods.

This research is the first known attempt to investigate a changing health factor of the aging population and how this change manifests

itself in the marketplace. The findings of this research are expected to have direct implication for retail strategy formulation. In addition, the findings will be useful to marketers, educators, gerontologists, sociologists, and health care professionals.

A better understanding by marketers can lead to increased sales and improved public relations with this growing market segment. Equally important, the opportunity exists for a firm to focus its social responsibility objective on an increasingly important segment of society. According to Fela (1977, p. 27), "Since the needs of aged consumers are real and unique, marketing can no longer ignore them. If it is to remain a viable and dynamic sociocultural force, marketing must respond favorably to the new social consciousness directives of the [older] consumer."

This research is expected to provide a basis for other investigations concerning the relationship of health and physical variables to buying behavior of older consumers. A more thorough understanding of and attention to physical changes with age can provide the marketer with approaches to first hand strategies for attracting the older customer. Investigation of the readability variable can be of pragmatic value for the retailer in developing innovative ways to present product and price information to the customer. In addition, retail environmental planning and innovations aimed at accommodating the shopper who has diminished eyesight may be developed.

Conceptual Framework

This research draws from the field of consumer behavior which has been defined as the behavior exhibited by consumers in planning, purchasing, and using economic goods and services (Runyon, 1977). The Engel, Kollat, Blackwell model (EKB) of consumer behavior (Figure 1) provides a conceptual frame of reference for this research (Engel & Blackwell, 1982). This model is a flow chart that depicts the consumer behavior process and the relationships between variables that constitute decision making.

The EKB model is divided into five basic components: external influences, decision process variables, the decision process stages, information processing, and inputs such as stimuli dominated by the marketer and other sources. Five phases comprise the consumer decision process: problem recognition, search, alternative evaluation, choice, and outcomes (Figure 2). Three of the concepts within the decision process—search, alternative evaluation, and choice—are relevant to this research. It is within these three stages of the shopping process that a consumer/shopper is involved in reading retail printed items that aid in the final decision.

Consumer Decision Making

A "decision is the selection of an action from two or more alternative choices" (Schiffman & Kanuk, 1978, p. 432). Consumers enter the marketplace in search of products and services to fulfill their needs and enrich their lives. The problem solving consumer actively seeks

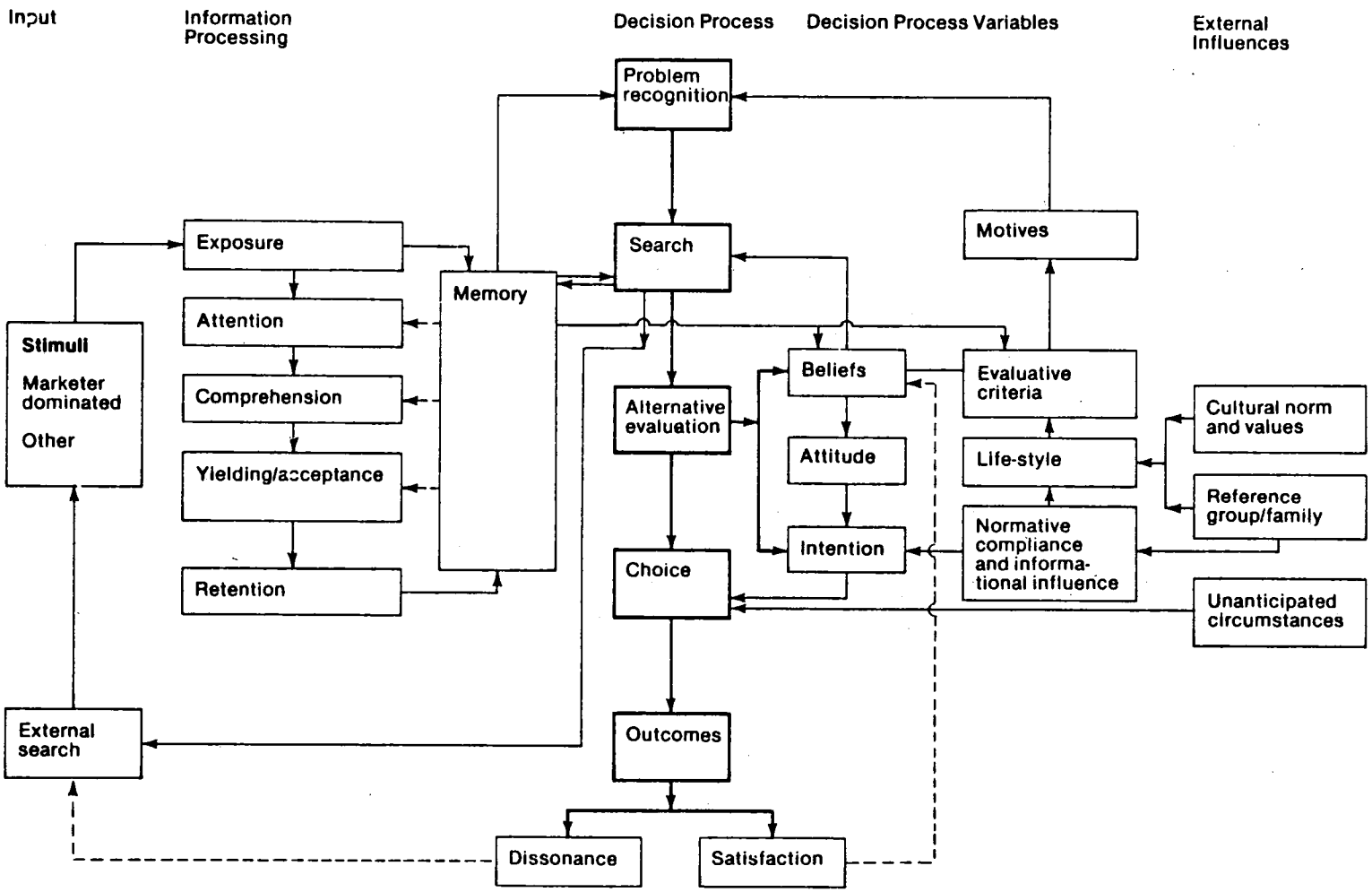


Figure 1. The EKB Model of Consumer Behavior.

Source: J. F. Engel and R. D. Blackwell, Consumer Behavior (4th ed.), 1982, p. 500.

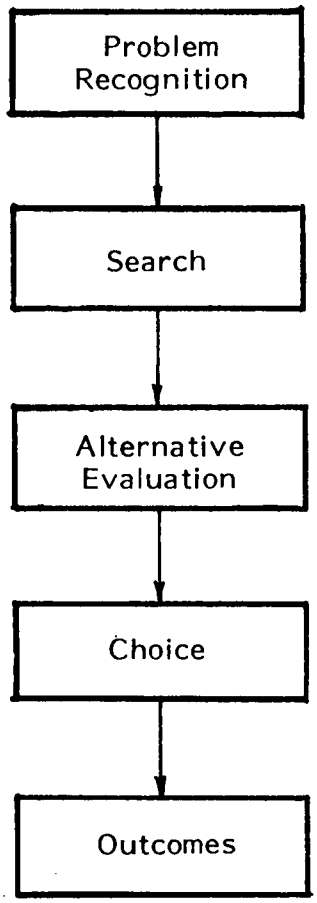


Figure 2. The Stages in the Consumer Decision Process.

Source: J. F. Engel, R. D. Blackwell, and D. T. Blackwell. Consumer Behavior (3rd ed.), 1978, p. 22.

information about available products, services, and retail outlets in order to make a satisfactory choice. When the consumer recognizes a need or unfulfilled want, then the search for alternatives begins.

Search

"Search refers to the process whereby the consumer seeks information to learn about the advantages and disadvantages of the various alternatives to satisfy a problem that has become recognized" (Engel & Blackwell, 1982, p. 349). Prepurchase search begins with the consumer's perception that the purchase and consumption of a product may satisfy a need. The consumer then actively seeks information to gain knowledge on which to base a decision. Printed tags and labels provide knowledge and criteria for evaluating products. To be useful this information must be readable by the shopper. Readability or legibility may depend on: (1) the eyesight condition (a physical variable) of the reader, (2) clarity of the print—size and degree of boldness (a condition of the label or tag per se), or (3) the amount of light provided in the area in which the information is being read (a condition of the environment).

Alternative Evaluation

After the search process, the buyer must compare the information gained, evaluate the consequences of buying and using the product, and then formulate an intention to purchase or reject. Printed information pertinent to evaluating competing apparel products includes fiber content, directions for care of the item, and purchase price. This

information is manufacturer- or retailer-provided by tags or labels that are attached for temporary use or sewn in permanently. Shoppers actively seek and use these tags and labels in the alternative process to arrive at a choice.

Choice

Choice refers to the selection that is made after evaluating the available alternatives. Choice usually takes place in some kind of retail setting. (In-home catalog shopping is an example of a setting where choice is made in a nonretail setting, and is not a variable of this research.) Influences within the retail setting can affect the choice process. Tags and labels that clearly exhibit consumer information are strategic to a satisfactory choice. At the same time, the lighting environment in the store may determine whether even a clearly printed label is legible. Moreover, the shopper's eyesight condition may be the determining factor of the readability. A satisfactory choice is not likely to result if information cannot be obtained by the reader, whatever the cause.

Purchasing Behavior and Marketing Strategy

Consumers need information about products so they can allocate their time and money to maximize benefits. Product packaging, labels, and promotional material provide a means for offering useful information. Product facts must be accessible and presented in a way that can be effectively processed by the consumer. Information of particular importance to a consumer of apparel products includes: fiber content,

directions for care, and price. The legibility of factual information is important to all consumers; however, the need for change in the form of presentation increases as the shopper's ability to see print decreases.

A major objective of the retailer is to convince customers to make a purchase when a satisfactory alternative exists. The customer's decision to purchase or reject determines the retailer's success or failure to persuade. Purchases signify whether the marketing strategy has been wise, insightful, and effective, or poorly planned (Schiffman & Kanuk, 1978).

A retailer survives because of the store's appeal to specific groups. Marketers segment their markets by what they know about consumer behavior, i.e., what makes the consumer buy, what needs are to be fulfilled, and what influences consumers' choices. With this type of consumer behavior information a retailer can develop a marketing program that specifically appeals to a particular segment. Both socio-demographic and physical variables of the target market must be understood in order to develop strategies that maximize results for the firm and satisfy the shopper.

This research is concerned with a particular market segment—older women, a segment whose eyesight typically is declining. The search, alternative evaluation, and choice concepts of the EKB Model are steps in the decision process during which a consumer uses eyesight to arrive at a decision. During each of these steps, the consumer's decision depends on whether or not the retail printed information is readable.

Nominal Definitions

Terms used throughout this study are defined as follows:

Aging. The process of growing older by adding years to life. Although aging begins with birth, the term more typically refers to becoming old.

Apparel or clothing. Wearable items made of fiber, leather, plastic, or skins. The term includes many types of body coverings such as outerwear, innerwear, hosiery, footwear, millinery, and handbags.

Consumer behavior. "The behavior that consumers display in searching for, purchasing, using and evaluating products, services and ideas which they expect will satisfy their needs" (Schiffman & Kanuk, 1978, p. 4).

Elderly. An individual whose chronological age is 65 years or older.

Marketplace. The total retail environment that encompasses the search process, choice, and possible purchase of products or services.

Middle-aged. Persons whose chronological age is 45-64 years.

Physical limitations. Physiological changes that alter activity but do not totally incapacitate the person. Of particular interest to this study is the limitation of diminishing eyesight.

Products. Purchasable goods.

Readability. Capability of being read or deciphered correctly and easily; legibility.

Retail firm or outlet. A business that sells products or services to the public. Examples are department stores, discount stores, specialty stores, and supermarkets.

Shopping process. The decision stages of search, evaluation, and choice that a consumer undergoes in determining whether or not to make a purchase.

Assumptions

The following assumptions are basic to this study:

1. Older people can assess their eyesight condition.
2. Older people can participate in shopping activities even with declining eyesight.
3. Socially active persons, such as members of social, civic, professional, and religious organizations, will be active apparel shoppers.

Limitations of the Study

The following limitations were imposed on this research:

1. The geographic location was the Knoxville, Tennessee area.
2. Responses of males were excluded from the analysis.
3. The sample was limited to socially active women as determined by a minimum of four points on the Social Activity Index, a score of social activities obtained from Section IV of the questionnaire (Appendix A).
4. Responses of persons living in subsidized housing were excluded from the analysis since their spending power likely

would be low, and consequently, they would be of limited interest to the retailers.

5. No attempt was made to clinically measure eyesight.
6. The items for the readability tests included printed items that would be typically read in the retail store at close range. Items not included were: those usually read at home, e.g., catalogs and newspaper advertisements; and print viewed at a distance in the retail setting, e.g., showcard copy, department identifications, and storefront signs.

Organization of the Dissertation

This dissertation is organized in the following manner. In Chapter I, an introduction to the entire study has been presented which included the purpose and significance of the research, conceptual framework, nominal definitions, assumptions, and major limitations. In Chapter II, pertinent literature concerning demographics of aging people, physical changes with age, self-assessment of health, and consumer behavior of older people is reviewed. An explanation of the procedures used to carry out the research is presented in Chapter III. Results and discussion of the findings are presented in Chapter IV. In the last chapter, the research is summarized, and conclusions and recommendations for future research are presented.

CHAPTER II

REVIEW OF LITERATURE

The review of literature relevant to this study is presented in five sections. First, the demographic characteristics of the aging population are discussed. The second section is concerned with selected physical changes that occur as a person ages. Visual changes that occur with aging are detailed, and self-assessment of health is discussed. The next section is a review of pertinent research related to consumer behavior and shopping patterns of the older market segment. The last section is a review of literature pertaining to readability and illumination.

Demographics

An overview of demographic variables of older people is provided in this section. These variables include population, marital status, race, education, employment, economic status, and living arrangements.

Definitions of Older Age Groups

The U.S. Bureau of the Census defines middle age as the period 45-64 years of age (U.S. Bureau of the Census, 1981b). Middle age, also, may be defined by the events taking place during this stage of the life cycle—children leaving home, peak years of economic well-being, grandparenthood, early retirement, onset of chronic illnesses, widowhood, and the care of elderly parents.

The term elderly, as used by the U.S. Bureau of the Census, refers to persons age 65 years and older (U.S. Bureau of the Census,

1979). Age 65 is recognized as a milestone in life—a time for retirement, Social Security benefits, Medicare coverage, income tax advantages, and price discounts.

Population of Older People

Numerical growth. In 1900, the total population of the United States was 76.1 million, almost doubled by 1950, and almost tripled by 1980 to 226.5 million people. The middle-aged population, age 45-64 years, was 10.5 million in 1900, almost tripled by 1950, and was four and a quarter times greater by 1980, or 85.7 million people. The elderly population, age 65 and over, was 3.1 million in 1900, quadrupled by 1950, and was eight and a quarter times greater by 1980, or 25.5 million people. Population by age groups for the years 1900, 1950, and 1980 is shown in Table 1 (U.S. Bureau of the Census, 1975 and 1981a).

Table 1. Population of the U.S.: 1900, 1950, and 1980

Year	Total (in millions)	Age group (in millions)		
		45-54 yrs.	55-64 yrs.	65 yrs. and over
1900	76.09	6.44	4.03	3.10
1950	151.68	17.40	13.36	12.36
1980	226.50	22.80	21.70	25.55

Source: Adapted from U.S. Bureau of the Census. Historical statistics of the United States, Colonial times to 1970, Bicentennial Edition, Part 1. Washington, DC: U.S. Government Printing Office, 1975, p. 10; and U.S. Bureau of the Census, Population profile of the United States: 1980, Series P-20, No. 363. Washington, DC: U.S. Government Printing Office, 1981a, p. 9.

Population projections. Projections of the population for the twenty-first century indicate the older population will continue to increase dramatically. Population projections by age groups and cumulative older ages are shown in Table 2 for the years 1990, 2000, 2025, and 2050. There will be twice as many persons age 45 and over in 2050 as in 1980; more than two and a half times as many persons age 65 and over; and over seven times as many persons age 85 and over. The 45-54 age group will reach its peak in the year 2000 with nearly 14 percent of the population in this age group. Age groups 55-64 and 65-74 will reach their peaks in 2025 with over 12 percent and 11 percent, respectively, of the population in these age groups. Age groups 75-84 and 85 years and over will reach their peaks in 2050 with nearly 7 percent and over 5 percent, respectively, of the population in these age groups.

Life expectancy. A person born in 1900 could expect to live an average of 49 years (U.S. Bureau of the Census, 1983a), while a person born in 1978 could expect to live 73.3 years (Chartbook on Aging, 1981). Since World War II, life expectancy at age 65 has increased faster than at birth. In 1978, a person reaching age 65 could expect to live an average of 16.3 years longer. Significant declines in the number of deaths from stroke and heart disease have been major factors in lengthening life.

Life expectancy of females has been projected to rise from 78.3 years in 1981 to 81.3 years by 2005 and to 83.6 years by 2050 (U.S. Bureau of the Census, 1983b). Life expectancy of males has been

Table 2. Population Projections for the U.S. by Age Groups: 1980 to 2050

	Age groups (numbers in millions)															
	Total population		45-54 yrs.		55-64 yrs.		65-74 yrs.		75-84 yrs.		85 yrs. and over		65 yrs. and over		45 yrs. and over	
Year	number	percent	number	percent	number	percent	number	percent	number	percent	number	percent	number	percent	number	percent
1980	226.51	100.00	22.80	10.06	21.70	9.58	15.58	6.88	7.73	3.41	2.24	0.99	25.55	11.28	70.04	30.92
1990	249.73	100.00	25.39	10.17	21.09	8.45	18.05	7.23	10.28	4.12	3.46	1.39	31.80	12.73	78.28	31.34
2000	268.00	100.00	37.09	13.84	23.78	8.87	17.69	6.60	12.21	4.56	5.14	1.92	35.04	13.07	95.91	35.79
2025	301.02	100.00	34.78	11.55	37.55	12.48	33.09	10.99	17.87	5.94	7.68	2.55	58.64	19.48	130.97	43.50
2050	308.86	100.00	36.92	11.95	37.28	12.07	30.02	9.72	20.98	6.79	16.06	5.20	67.07	21.72	141.26	45.74

Source: Adapted from U.S. Bureau of the Census, Current Population Reports, Provisional Projections of the Population of States, by Age and Sex: 1980 to 2000. Series P-25, No. 937. Washington, DC: U.S. Government Printing Office, 1983b, p. 12; and U.S. Bureau of the Census, Current Population Reports, Projections of the Population of the United States: 1982 to 2050. Series P-25, No. 922. Washington, DC: U.S. Government Printing Office, 1982a, pp. 9, 11-13.

projected to rise from 70.7 years in 1981 to 73.3 years by 2005 and to 75.1 years by 2050.

Sex differentials. Women disproportionately outnumber men in the older population. The difference between the number of older men and women is significant within every older age group. In 1960, elderly women outnumbered elderly men by only five to four, but by 1982, elderly women outnumbered men by three to two (U.S. Bureau of the Census, 1983a). In 1982, for persons ages 65 to 69 years there were 80 men to every 100 women, and for persons age 85 years and over there were 42 men to every 100 women.

Marital Status

Although more than half of all persons age 65 and over are married and live in two-person households, the marital status of older men differs considerably from older women (Chartbook on Aging, 1981). Most older men are married and most older women are widows. In 1980, married men comprised 85 percent of men age 45 to 54 years, 85 percent of those 55 to 64 years, and 77 percent of those 65 years and over (Table 3). Widowed males comprised 13.6 percent of males age 65 and over and 24 percent of those age 75 and over. For older women, 79 percent of the 45 to 54 age group were married, 70 percent of the 55 to 64 age group, and slightly less than 40 percent of those 65 years and older. Nearly 19 percent of the women in the 55 to 64 age group were widowed and 51 percent of those 65 and over were widowed (U.S. Bureau of the Census, 1981c).

Table 3. Marital Status by Age and Sex: 1980

	Percent distribution				
	Total	Single	Married	Widowed	Divorced
			Male		
45-54 years	100.0	6.4	85.3	1.6	6.8
55-64 years	100.0	5.7	85.2	4.0	9.0
65-74 years	100.0	5.5	81.6	8.5	4.4
75 years and over	100.0	4.4	69.4	24.0	2.2
65 years and over	100.0	5.1	77.6	13.6	3.7
			Female		
45-54 years	100.0	4.7	79.0	7.0	9.2
55-64 years	100.0	4.6	69.9	18.9	6.7
65-74 years	100.0	5.6	50.1	40.3	4.0
75 years and over	100.0	6.4	23.4	68.0	2.3
65 years and over	100.0	5.9	39.7	51.0	3.4

Source: U.S. Bureau of the Census, Statistical abstract of the United States, 1981. Washington, DC: U.S. Government Printing Office, 1981c, pp. 31, 38.

Race

In 1980, approximately 88 percent of the middle aged population and 90 percent of the elderly population were white (U.S. Bureau of the Census, 1981b). Approximately 87 percent of middle aged women and 90 percent of elderly women were white. The number of blacks and "other" persons aged 65 and older has been increasing at a greater rate than that of whites in recent years (Chartbook on Aging, 1981). "Other" persons refers to American Indians, Eskimos and Aleuts, Asians, and to Hispanics who may be of any race.

Educational Attainment

The educational attainment of the elderly is below that of the younger population, but the median number of school years completed has narrowed over the past three decades and is expected to further close within the next 10 years (U.S. Bureau of the Census, 1983a). In 1982, the percentage of women in age groups above 55 years having four years of high school or more slightly exceeded that of men in the same age groups, but the percentage of women having four years of college or more was markedly less than that of men (Table 4). The median years of schooling was equal for men and women in age groups between 55 and 69 years but was higher for women 70 years and over than for men.

Labor Force Participation

In 1980 the rate of labor force participation by both men and women age 45 and over decreased as age increased (Table 5). Labor

Table 4. Years of School Completed by Age and Sex: 1982

Age and sex	Percent			
	8 yrs. or less	4 yrs. high school or more	4 yrs. college or more	Median school yrs. completed
		Male		
25 and over	15.7	71.7	21.9	12.6
55-59 years	18.6	64.4	19.7	12.4
60-64 years	24.0	59.9	13.7	12.3
65-59 years	30.9	51.7	13.2	12.1
70-74 years	40.1	43.0	12.0	10.5
75 years and over	53.1	33.9	10.3	8.9
		Female		
25 and over	15.6	70.3	14.0	12.5
55-59 years	16.3	67.1	9.5	12.4
60-64 years	22.6	61.5	8.3	12.3
65-69 years	27.8	54.2	8.0	12.1
70-74 years	36.7	46.0	7.9	10.9
75 years and over	47.7	36.1	6.7	9.4

Source: U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 128, America in transition: An aging society. Washington, DC: U.S. Government Printing Office, 1983a, p. 21.

Table 5. Labor Force Participation by Age and Sex: 1980

Age and sex	Percent participation
Male	
45-54 years	91.2
55-65 years	72.3
65 years and over	19.1
Female	
45-54 years	59.9
55-64 years	41.5
65 years and over	8.1

Source: U.S. Bureau of the Census, Statistical abstract of the United States: 1981. Washington, DC: U.S. Government Printing Office, 1981c, p. 381.

force participation for elderly men dropped rapidly over the past 30 years but varied little for elderly women. For women age 55 to 64, labor force participation increased from 27 percent in 1950 to 42 percent in 1982 (U.S. Bureau of the Census, 1982b). There has been little change in the labor force participation of women age 65 and over. In 1950, about 10 percent of elderly women worked, and in 1981, approximately 8 percent or 1.1 million worked.

In 1980, older workers were primarily employed in white-collar occupations, with 49 percent of the workers age 65 and over and 52 percent of workers 55-64 years in these occupations (Chartbook on Aging, 1981).

Many elderly are employed part time. In 1981, 48 percent of the men and 60 percent of the women worked on part-time schedules (U.S. Bureau of the Census, 1983a). The trend toward part-time work has increased due to greater availability of part-time jobs, improved health conditions, new life styles, job satisfaction, and income from Social Security (Chartbook on Aging, 1981).

Economic Status

A strong pattern of declining income is associated with advancing years. Although America's elderly population is represented in all income levels, more are heavily concentrated at the lower levels than those under age 65. Even so, substantial numbers have sufficient economic means (Chartbook on Aging, 1981; U.S. Bureau of the Census, 1983a).

The median income of the elderly had a slightly higher percentage increase over the past two decades than the median income of younger people. Between 1960 and 1979 the median income of a person 65 years and older increased 3.9 times whereas younger families' incomes increased 3.6 times. However, even with this increase for older persons, the median remained roughly one-half that of younger persons in 1979 (Chartbook on Aging, 1981).

In 1982, the median and the mean income of women in all age groups was excessively less than that of men in the same age groups (Table 6). The greatest discrepancies fell between age 35 and 64.

Income throughout life tends to increase until age 55 when many workers begin to retire (Table 7). In 1980, the mean income for

Table 6. Money Income of Persons—Median and Mean by Age and Sex: 1982

Age	Median income (dollars)		Mean income (dollars)	
	Male	Female	Male	Female
Total pop.	$13,950	$5,887	$17,381	$8,195
25-34 years	16,416	7,972	17,780	9,424
35-44 years	21,649	7,851	23,966	9,872
45-54 years	21,543	7,502	24,566	9,492
55-64 years	17,828	5,907	21,919	8,661
65-69 years	11,365	5,502	15,361	7,857
70 years and over	8,121	5,315	11,566	7,235

Source: U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 142, Money income of households, families, and persons in the United States: 1982. Washington, DC: U.S. Government Printing Office, 1984, pp. 151-152.

Table 7. Money Income of Families—Mean and Per Capita Income by Age: 1980

Age	Number of families (in thous.)	Mean income (dollars)	Per capita income (dollars)
Total families	60,309	$23,974	$7,341
25-34 yrs.	14,484	21,394	6,291
35-44 yrs.	12,475	26,927	6,719
45-54 yrs.	10,840	30,279	8,287
55-64 yrs.	9,554	27,319	9,874
65 yrs. and over	9,185	16,918	7,275

Source: U.S. Bureau of the Census, Statistical abstract of the United States: 1982-83 (103d edition). Washington, DC: U.S. Government Printing Office, 1982b, p. 435.

families with a householder of age 45-54 was over $30,000 with per capita income over $8,200; for those 55-64 years the mean income was approximately $27,000 and the per capita income over $9,800; and for those age 65 and over the mean income was nearly $17,000 while the per capita income was approximately $7,200 (U.S. Bureau of the Census, 1982b).

Only a small percentage of the older population maintains a relatively high income during their later years (Table 8). In 1981, approximately half of the households headed by a person age 65 and older had an income of $10,000 or more; over 30 percent had an income of $15,000 or more; 20 percent had an income of $20,000 or more; and 14 percent had an income of $25,000 or more (U.S. Bureau of the Census, 1982b). The median income of households was highest for age group 45-54 with over $27,000; was over $21,000 for those age 55-64; and was nearly $10,000 for those age 65 and over.

Income is not a precise measure of economic well-being, and a comparison of income between older and younger populations is only part of the story. Many older people have considerable assets, including their homes which have high equity, although these assets are not readily convertible to cash. Older people with good retirement plans often choose a lower income so they can enjoy more leisure time (U.S. Bureau of the Census, 1983a).

In 1981, the four major sources of income for persons age 65 and over were: Social Security benefits (37 percent), employment earnings (25 percent), investments including rent, dividends, and interest

Table 8. Distribution of Money Income of Households by Age: 1981

Age	Total households (in thousands)	Income levels								Median income (dollars)
		Under $5,000 (percent)	$5,000-9,999 (percent)	$10,000-14,999 (percent)	$15,000-19,999 (percent)	$20,000-24,999 (percent)	$25,000-34,999 (percent)	$35,000-49,999 (percent)	$50,000- and over (percent)	
Total	83,527	10.5	14.9	14.4	12.3	11.4	17.2	12.1	7.2	$19,074
25-34 yrs.	19,327	7.2	11.1	15.2	14.7	15.2	21.3	11.5	3.8	20,513
35-44 yrs.	15,326	5.4	8.0	10.7	11.6	13.3	22.8	17.9	10.3	25,384
45-54 yrs.	12,505	6.4	8.2	10.2	9.4	10.8	20.8	20.0	14.1	27,044
55-64 yrs.	12,947	9.5	13.0	12.8	12.0	11.3	17.6	13.4	10.4	21,041
65 years and over	17,312	20.8	29.7	18.5	11.0	6.0	7.1	3.9	3.0	9,903

Source: U.S. Bureau of the Census, Statistical Abstract of the United States: 1982-83 (103d edition). Washington, DC: U.S. Government Printing Office, 1982b, p. 430.

(23 percent), and retirement incomes and pensions (13 percent). These sources provided 98 percent of the total income of the elderly population (Chartbook on Aging, 1981).

The most significant change in the source of income for the elderly since 1960 was the decline in importance of earnings and the increasing dependence on Social Security, pensions, and assets. Even so, earnings played the greatest part in the economic position of the elderly. Until age 70, those who worked full-time year-round had incomes close to younger people's.

Living Arrangements

In 1979, three out of four households maintained by an elderly person were owner-occupied (U.S. Bureau of the Census, 1983a). Two-thirds of all homes that were owned free and clear in this country were maintained by an elderly person. Over one-third of the owner-occupied elderly households were maintained by an elderly man or woman living alone. Of renter-occupied households, one-third were maintained by elderly persons living in families, while two-thirds were maintained by elderly persons living alone.

Over seven million (30 percent) of the elderly were living alone in 1982 (U.S. Bureau of the Census, 1983a). Two out of five elderly women lived alone compared to one out of seven elderly men. Most women age 75 and over lived alone or with a relative, while only one out of four men age 75 lived alone (Chartbook on Aging, 1981).

Patterns of living arrangements differ sharply between elderly men and women. More than three out of four elderly men are live with

wives, while less than half of all elderly women are live with husbands (Chartbook on Aging, 1981). Only one out of five women age 75 and over lives with a spouse.

In 1977, there were 1.1 million persons, approximately 5 percent, age 65 and over who were residents of nursing and personal care homes. Approximately two-thirds of this population was female. For persons age 75-84 years, there were nearly three times as many women as men in nursing homes, and for persons age 85 years and over there were nearly four times as many women (U.S. Bureau of the Census, 1981c), (Table 9).

Table 9. Resident Population in Nursing Homes by Age and Sex: 1977

Age	Number (in thousands)	
	Male	Female
65 yrs. and over	294	832
65-74 yrs	80	131
75-84 yrs	122	343
85 yrs. and over	92	358

Source: U.S. Bureau of the Census, Statistical abstract of the United States: 1981. Washington, DC: U.S. Government Printing Office, 1981c, p. 115.

Selected Physical Changes With Age

Tobin (1975, p. 47) says, "Aging is a continuum that exists across the entire age spectrum and not something that happens only after one

reaches some specific chronological age. It is happening to all of us, all the time." The elderly are a highly heterogenous group with a wide range of physical capabilities and disabilities. Although health declines with age, few elderly are decrepit and incapacitated as is often perceived by society (Crandell, 1980). Generally, older people with physical limitations are able to adjust and continue independent living with moderate changes in life-style or environment.

Normal Changes With Age

Normal aging involves a general decline in the functioning of all the body's systems. According to Shock (1977), the processes of aging operate during all of adult life. The decline in function that accompanies these processes correlates with a progressive loss of body tissue which is associated with the disappearance of cells from muscles, the nervous system, and many vital organs. The aging of tissues and systems within an individual occurs at different rates (Hendricks & Hendricks, 1981; Kalish, 1977; Shock, 1977; Weg, 1975). Dr. Rubin Andres of the National Institute of Aging states, "People not only don't age at the same rates, but one person has many different ages within him, because different organ systems degenerate at varying speeds" ("Aging Americans: Diversity," 1979, p. 1). Hendricks and Hendricks (1981) reported that after age 30 a wide range of physiological functions exhibits a linear decline of approximately 1 percent a year.

Kimmel (1980) cites three areas for the most obvious changes due to aging: appearance characteristics such as graying or loss of hair,

wrinkling of skin, decrease in height, and loss of teeth; sensory modalities such as decreased vision and hearing; and slowing of the functioning of the central nervous system which affects such physical characteristics as balance, stature, and ability to move the limbs and get from place to place.

According to Kalish (1977) a key factor of aging is generalized loss of elasticity. This occurs throughout the system, but the most tell-tale signs are in the skin, hair, teeth, bones, eyes, and ears. The effects of reduced elasticity in the blood vessels and lungs are less apparent but no less contributory to changes that accompany aging.

Generally, the older a person is, the less acute the sensory system is. Older people are more likely than younger people to show deficits in at least four of the five senses as well as the sense of balance (Kimmel, 1980). The aged require higher levels of stimulation in vision, audition, taste, and smell for the sense receptors to perform as well as younger people's senses. Sensory changes begin with reduction of acuity in the 40s or 50s, but do not appreciably limit behavior until the 70s or 80s (Saxon & Etten, 1978). Vision and hearing changes are especially important since they influence the individual's ability to function in the physical environment and may also create a kind of sensory deprivation and social isolation that may be important to psychological and social effects (Kimmel, 1980).

The central nervous system is markedly affected by aging (Shock, 1977). Kimmel (1980) points out that with advanced age, the body becomes less efficient in perceiving, processing, and responding to

external stimuli. Older people require more time to make choices between a number of possible responses to a given situation. Nevertheless, vocabulary comprehension remains strong for most older people although verbal responses may take more time.

The slowing of the functioning of the central nervous system seems to be independent of disease (Kimmel, 1980). Changes in the processes within the central nervous system involve such factors as loss of nerve cells, limitations of transmission speed, and a decline in neural excitability (Harris & Cole, 1980). This change results in the slowing of the number of behaviors that can be emitted per unit of time. The slowing of the central nervous system is most apparent in tests of reaction time (Kimmel, 1980). Other distinguishing characteristics show up in hand tremors, in quick fatigue following little exertion, and in limited functioning of muscles and limbs.

Good health to most older people does not mean a complete absence of disease, but that illness does not significantly interfere with everyday functioning (Harris & Cole, 1980). Most people age 65 and over are capable of carrying on their normal daily routines, although approximately one in five is limited in the amount and kind of major activity, and about one in six is unable to carry on major activities (Table 10).

Acute conditions were the most prevalent health problems at the beginning of the century, but today chronic conditions are the most prevalent. The likelihood of having a chronic illness increases dramatically with age. Eighty percent of the older population have at

Table 10. Limitation of Activity for Older Persons: 1979
(Civilian Noninstitutionalized Population)

Age	Total	With limitation of activity		
		Limited but not in major activity	Limited in amount or kind of major activity	Unable to carry on major activity
	(percent)			
45-64 years	21.1	5.4	12.1	6.5
65 years and over	46.0	6.9	22.3	16.9

Source: U.S. Department of Health and Human Services. Health: United States, 1981. DHHS Pub. No. (PHS)82-1232. Hyattsville, MD: National Center for Health Statistics, 1981, p. 148.

least one chronic condition and multiple problems are common (Chartbook on Aging, 1981; U.S. Bureau of the Census, 1983a). In 1979, for persons age 65 and over, 44 percent had arthritis, 39 percent had hypertension, 28 percent had hearing impairments, 27 percent had a heart condition, 12 percent had visual impairments, and 8 percent had diabetes (Chartbook on Aging, 1981).

Acute and chronic conditions necessitate the need for help. However, the vast majority of elderly, including those over age 85, continue to independently perform the activities of daily living. In 1979 only 2.1 percent of the noninstitutionalized elderly were confined to bed, 2.6 percent needed help to get around the neighborhood, and 8.4 percent needed help traveling outside the neighborhood (Chartbook on Aging, 1981). Kalish (1975, p. 25) says, "Fortunately, people are

reasonably resilient and most older persons come to peace with such changes [as reduced capacity and lowered performance-effectiveness] by recognizing that the only way to enjoy life is to cope with the changes as effectively as possible, compensate as much as is appropriate, and then go to other matters." Kalish further points out that when the aging person notes that cohorts are encountering similar difficulties, the knowledge becomes supportive, and this leads to a preference for social contacts within his or her age group rather than with less understanding persons of younger ages.

Visual Changes With Age

The way a person perceives the world is determined by the characteristics of the sensory system (Colavita, 1978). Different people have different perceptions of the world around them because their sensory systems have different ranges of sensitivity. People with limited visual, auditory, or tactile systems live in a perceptual environment that differs from that of persons with full capacity of these systems. Older people need stronger stimuli to activate the sensory receptors, for example, brighter lights or louder sounds, in order to obtain the information they need to function adequately in the environment.

The eyes show characteristic decline with age (Botwinick, 1973; Colavita, 1978; Corso, 1971; Saxon & Etten, 1978). Crouch (1967, p. 685) says, "Radical changes in ocular acuity and dexterity are part of the aging process. Youth-normalcy actually begins to wane at the 20 year mark." Decreased visual efficiency is often apparent at age 20,

and changes are serious by age 40 and reach unexpected proportions by age 45.

Changes of the eye. As the eye ages, major changes become evident in the iris, the lens, and the pupil (Atchley, 1977b). The iris controls the quantity of light that can get to the optic nerve through the retina. As age increases, the functioning of the iris declines. The lens bends the light pattern entering the pupil to focus the pattern of light on the retina. To focus on both near and far objects, the lens must change shape. This ability to change shape decreases with age. The size of the pupil controls the amount of light that gets into the eye. The diameter of the pupil becomes smaller with age. Typically, the eye of a 60-year old admits one-third as much light as the eye of a 20-year old. Since less light gets to the optic nerve (a decline of the iris), the quality of light to the retina is reduced (a decline of the lens), and less light enters the eye (a decline of the pupil), the ability to focus on near objects decreases and farsightedness increases, hence sight gets poorer with age.

Common visual changes with age include a decrease in ability of the eye to focus on near objects, a decrease in the field of vision, an increase in sensitivity to light and glare, an inability to adapt to darkness, a decrease in color recognition, and a decline in ability to perceive shapes and spaces.

Visual acuity. Visual acuity is an index of efficiency reported in terms of ability to discriminate test objects at a distance of 20 feet

(Hendricks & Hendricks, 1981). Vision rated as 20/20 means a person can read an eye chart as well as a normal sighted person at 20 feet. Vision rated as 20/70 means that objects that can be read at 20 feet by a person with impaired eyesight can be read at 70 feet by the normally sighted person. Pitts (1982) refered to visual acuity as the ability of the eye to see shapes of objects. Visual acuity is commonly tested by symbols or letters on a chart. Corso (1971) expressed visual acuity as the ability to discriminate fine detail. Discrimination of fine detail becomes difficult with age because lines and shapes blur; consequently, more time is needed for older people to focus on an object (Buseck, 1980). Visual acuity deteriorates at about age 45, and during the following four decades the loss amounts to some 80 percent (Weale, 1975). Crouch (1967) says that the visual acuity of an 85 year old is only half that of a 15 year old. Reduction of visual acuity may be due to diseases, injuries, or changes in the receptors due to primary aging (Corso, 1971). Severe defects in visual acuity are much more common in women than in men and are substantially higher for both sexes in lower income groups (Kalish, 1977). Reading materials for older people need to be printed in larger-than-usual type which has a clear, distinct type face. From the literature reviewed, it can be construed that visual acuity is of primary importance to the shopper of apparel. Not only is there a need to be able to read consumer printed information but also to be able to examine fabric and construction details. As

visual acuity declines, the judgment of features that distinguish quality becomes more difficult.

Accommodation and farsightedness. "Accommodation is the process responsible for maintaining a clear retinal image in the presence of varying vergence of light entering the eye" (Carter, 1982, p. 125). The ability of the eye to focus at near or far distances is controlled by the process of accommodation (Cristarella, 1977). More time is needed by older people to refocus when looking from one site to another (Buseck, 1980). The loss of accommodation can influence a person's ability to function.

Near-point vision, the distance from the eye at which an object can be seen clearly, i.e., without blur, begins to change around age 10 (Cristarella, 1977). The greatest change occurs between ages 45 and 55 when corrective glasses, bifocal or trifocal lenses, are needed for close range tasks. There is virtually no further change in accommodation after age 60. When accommodation for near objects is poor, the individual is described as farsighted, or having presbyopia. Farsightedness is due to the loss of elasticity of the lenses of the eye (McFarland, 1968). With farsightedness there is an inability to rely on normal vision for pleasure reading, identifying labels and directional information, and locating names and numbers in a telephone directory (Portnoy, 1981).

Visual field. The field of vision is the area over which the eye can see as it gazes straight ahead (Carter, 1982). The visual field of an individual is an oval shape extending 180 degrees laterally and 150

degrees vertically (Cristarella, 1977). The field is sharp, clear and detailed in the center and less detailed toward the boundaries. As a person ages, the visual field becomes more narrow. After age 60, shrinkage of the field is marked and accelerated. With the narrowing of the visual field, an individual will have difficulty judging what is near on the right or left sides, e.g., an oncoming car, people walking nearby, or an architectural change in the floor level.

Light sensitivity, darkness adaptation, and glare. Visual functions associated with light sensitivity include decreased sensitivity to low levels of illumination, inability to adjust to changing amounts of light, difficulty in adapting to the dark, and difficulty in recovering from glare. According to Portnoy (1982), as the pupils become smaller with age, less light enters the retina through the pupil. The visual threshold, i.e., the minimum amount of light required to register visual information in the highest centers of the nervous systems, increases with age; thus older people need greater illumination. The retina of a 60-year old receives 30 percent of the light of a 20-year old (Saxon & Etten, 1978). A 100-watt bulb supplies adequate light for a 20-year old, but a 60-year old needs 230 watts; a 70-year old, 300 watts; and an 80-year old, 415 watts (Cristarella, 1977).

Dark adaptation occurs when the eye is exposed to a dark environment after being previously exposed to light (Pitts, 1982). Dark adaptation is slow and can be easily measured in tests. The ability to adapt to low levels of illumination decreases with age (Bennett & Eklund, 1983). Not only is there a decrease in the amount of light to

the retina, but the amount of time to become accustomed to darkness also increases with age. Kalish (1975) points out that eyeglasses can help problems in distance adjustment, but devices to compensate for loss in ability to adjust to various amounts of light are not available.

The ability to see in the presence of a glare, a distracting brightness in the field of vision, is related to the aging process (McFarland, 1968). Older people have difficulty adjusting to the presence of glare, and with further aging, the ability to recover from glare decreases. Tests have shown an abrupt increase in sensitivity to glare around age 40, and the recovery from a bright flash of light is delayed significantly among persons over age 40 (Carter, 1982). Older persons experience difficulty in situations when facing glare, such as, viewing across a room toward a large plate glass window in daytime, or driving with oncoming traffic lights at nighttime.

Color sensitivity. Color sensitivity, the ability to discriminate colors, undergoes a steady decline after age 30. Hues of short wavelengths—blue, blue-green, and violet—are more difficult to distinguish than red, orange, and yellow (Corso, 1971; Gilbert, 1957). The yellowing of the lens with age impairs color recognition (Carter, 1982). Design details become harder to distinguish, hence the ability to separate a figure from its background becomes more difficult with advancing age (Cristarella, 1977). Increased lighting aids a person in making these distinctions. Strong color contrasts can assist the elderly in locating doors, reading signs, and finding important elements in the environment (Buseck, 1980).

Spatial ability. Older people respond slowly in tests of spatial ability, that is, the capacity to perceive the relationship of objects using environmental cues such as relative size, distance, position, shadows, and high-lighting (Cristarella, 1977). Depth perception, the spatial ability used to estimate the relative distance and relief of objects, shows a marked decline after age 40. The cause may be due to a decrease in acuity and accommodation, and to a lack of ability to converge the images of both eyes into one image (Bennett & Eklund, 1983).

Statistics concerning vision. Ralph (1982) reported that 10.5 million persons in America cannot read 6- to 8-point type and printed materials in certain colors and combinations of colored ink and paper. Further, 8.5 million men and 650,000 women are color-blind. Estimates have been made that 20 million persons wear glasses or contacts of prescriptions that are no longer suited to their visual needs, and another 20 million have need of visual correction and don't know it.

Severe visual impairment or visual disability is defined as the inability to see well enough to read ordinary newspaper print with glasses (Aging & Vision Insights, 1981; Kirchner & Peterson, 1979). From the 1977 Health Interview Survey (HIS) by the National Center for Health Statistics (NCHS), 1.4 million persons were found to have severe visual impairments (Kirchner & Peterson, 1979). Seventy-one percent (990,000) of this group were noninstitutionalized elderly.

Visual disability has been shown to be associated with age. The trend of visual disability derived from the HIS report was: one per

1,000 for those less than age 45, six per 1,000 for those age 45-64, and 44.5 per 1,000 for those age 65 and over (Kirchner & Peterson, 1979). Other health statistics confirm that visual disability parallels age (U.S. Bureau of the Census, 1977). Binocular acuity of 20/20, with and without correction, and binocular acuity less than 20/20 without correction decrease with age (Table 11).

Table 11. Prevalence of Limited Visual Acuity by Age: 1960-1970

Age	Binocular acuity 20/20		Binocular acuity less than 20/20 without correction (percent)
	without correction (percent)	with usual correction (percent)	
6 to 11 years	74.8	–	11.1
12 to 17 years	70.3	88.2	22.4
18 to 24 years	74.8	87.7	14.8
25 to 34 years	77.3	89.6	13.1
35 to 44 years	76.7	90.0	12.4
45 to 54 years	44.6	71.0	31.7
55 to 64 years	21.0	50.1	57.2
65 to 74 years	5.7	32.2	75.0
75 to 79 years	1.5	15.0	85.4

Source: U.S. Bureau of the Census, Department of Commerce, Social indicators 1976. Washington, DC: U.S. Government Printing Office, 1977, p. 207.

Based on the HIS of NCHS, by the year 2000 the number of visually impaired persons will increase sharply for elderly persons (Table 12). Furthermore, a very high percentage of the visually impaired can be expected to be over age 75 and to be female (Lowman & Kirchner, 1979).

Table 12. Projected Number of Visually Impaired Elderly Persons in Year 2000 (Based on 1977 NCHS Health Interview Survey)

Age	NCHS prevalence rates U.S., 1977 (number per 1,000)	Projected number of visually impaired elderly: U.S.: 2000
65-74 years	22.0	384,000
75-84 years	64.9	690,000
85 years and older	181.5	682,000
Total Elderly	–	1,756,000

Source: C. Lowman & C. Kirchner, Elderly blind and visually impaired persons: Projected numbers in year 2000. Visual Impairment and Blindness, 73 (2), 1979, p. 69.

Statistical data concerning vision have been based on ability to read, but no statistics have been collected about the number of elderly who have other visual conditions such as night vision, glare sensitivity, or need for more light (Aging & Vision Insights, 1981). Estimates have been made that three-fourths of persons over age 75 have one or more visual problems.

Selected research. Anderson and Palmore (1974) evaluated ocular functions of older people. Cross-sectional data showed that over half of the persons in their 60s had normal vision, i.e., 20/20 or better, while only one-fourth in their 70s and 14 percent in their 80s had normal vision. The best corrected vision of 20/50 or worse occurred in 8 percent in their 60s, 14 percent in their 70s, and 36 percent in their 80s. Ten years later, the best corrected vision of 20/50 or worse occurred in 21 percent of those now in their 70s and 46 percent of

those now in their 80s, a substantial increase in impairment for each age level. Also, poor vision was found to be related to lower leisure activities, work activities, group activities, status feelings, and emotional activity.

A scientific study of footcandles for critical seeing was conducted by Luckiesh and Eastman (1946). Tabulated data were compiled that illustrated the need for fitting footcandles to critical seeing and to the eyesight involved, whether normal and subnormal. The data showed the range of footcandles necessary to elevate visual tasks to specific visibility levels calibrated from one to 20 units. When footcandles were raised, limitations of vision were reduced. From this research, Luckiesh and Eastman were convinced that light must be applied directly to a task as well as to the general area.

Luckiesh (1949) reported that every seeing task could be approached from two broad viewpoints: the visibility of critical details and the ease of seeing, and that the two were not inseparable. Research has revealed that the only definite visibility-level is that of threshold level; however, no one is satisfied to be able to just barely see. Suprathreshold visibility-levels can be raised by increasing footcandles. The supravisibility level of a task can be determined by what must be done to reduce the task to threshold visibility. This can be accomplished by altering the size of a critical detail, by providing contrast in the background, or by changing the brightness-level or the time available for seeing. Although visibility-level can be determined easily by various scientific tests, there is no single practical criterion

for ease of seeing that can be applied quickly. Ease of seeing is a combined result of all the psychophysiological effects resulting from performance of prolonged critical seeing. According to Luckiesh (1949, p. 229), "The ideal footcandle level from the viewpoint of maximum ease of seeing is that at which the waste of human resources is minimized. In other words, the ideal footcandle-level is that which the overall efficiency of the human seeing-machine is a maximum."

Guth (1957) was concerned with light levels needed by workers of different ages. Guth believed that how well workers performed was a function of how well they could see. Visibility level was measured by the Luckiesh-Mors visibility meter, scaled in numbers two to 10. An experiment with 100 office and laboratory workers, ages 17 to 65, used a series of 10 measurements of the visibility of 7-letter words printed in 6-point type on white paper. Measurements were made at several levels of illumination ranging from 10 to 100 footcandles. To evaluate the effect of age on visibility, participants were combined into six age groups: 17-20; 21-30; 31-40; 41-50; 51-60; and 61-65. For each group, as footcandles were increased visibility levels increased. Footcandles required for specific visibility levels were determined for each age group. Decrease in visibility was gradual up to about age 45, then the change became more pronounced. To attain a visibility level of 5, the youngest group needed 30 footcandles whereas the oldest group needed 50. When illumination was increased from 20 to 80 footcandles, the maximum visibility of the youngest age group increased 65 percent while improvement for the oldest age group increased 135 percent.

Guth concluded that older workers required considerably higher levels of illumination than younger workers in order to achieve the same visual abilities.

Pastalan (1973) constructed a simulation model to duplicate environmental experiences of people with sensory deficits by using mechanical devices to simulate sensory losses. Specially prepared lenses designed to simulate reduced visual perception were worn by experimental subjects in various environmental settings. The approach was to provide a tool to discover and evaluate the nature of environmental barriers that people with reduced sensory perception face in their homes, neighborhoods, and communities. A major finding regarding experiences related to a change in vision was that the ability to discriminate fine visual detail was seriously impaired. Other findings concerning reduced vision included: natural and artificial glare were difficult to adjust to, all colors faded, the capacity to perceive structural boundaries was reduced, depth perception was limited, and the recovery of the eye when moving from a lighted area to a dark area was slowed. The study demonstrated that age-related sensory decrements can seriously constrain a person from freely moving about and making use of buildings as presently designed.

Self-Assessment of Health

Health status has been measured by the perception that a person has of his or her physical condition (Ferraro, 1980; Fillenbaum, 1979; LaRue, Bank, Jarvick, & Hetland, 1979; Maddox & Douglass, 1973).

Maddox and Douglass (1973), in a 15 year study, found an agreement between self- and physician's-assessment of general health status. When there was lack of agreement between the two measures, the individual tended to overestimate, rather than underestimate health status. Fillenbaum (1979) also found that self-assessment of health seemed to reflect the actual state of health. Women tended to report more problems, took a greater variety of medications, and suffered from more illnesses. The consensus of Maddox and Douglass (1973) and Fillenbaum (1979) was that health self-assessments reflected actual health status and thus were useful in surveys.

Ferraro (1980) reported on a national survey of 3,402 older persons which indicated that self-rating of health status was significantly related to measures of objective health status. Persons with higher education reported better health. Males reported poorer health than females. Persons age 75 and over, who were more disabled and reported more physiological disorders, rated their health better than persons 65 to 74 years.

LaRue et al. (1979) compared self-ratings of health and physicians' ratings of 69 survivors of an initial sample of twins that had been studied longitudinally since the late 40s. Self-reports were significantly correlated with physicians' ratings and were predictive of survival time for the younger subjects, but neither measure was predictive of the oldest subjects. The findings suggested that self-ratings are a useful index of health for persons below age 85 years.

The majority of Americans of all ages generally view themselves as being in good health (Chartbook on Aging, 1981). In 1981, approximately 12 percent of the total noninstitutionalized population in the United States assessed their health as fair or poor, while 22 percent of persons age 45-64 and 30 percent of persons age 65 and over assessed health as fair or poor (U.S. Department of Health and Human Services, 1983). Thus, nearly eight out of 10 middle-aged persons and seven out of 10 elderly assessed their health as excellent or good.

With increase in income, perception of health status is more favorable. Forty percent of elderly persons with income of $25,000 or more described their health as excellent, while less than 25 percent of those $7,000 or below described their health as excellent (U.S. Bureau of Census, 1983a). Usually, with higher income, there is the likelihood of good health care, good nutrition, and good housing, and correspondingly, a greater reporting of excellent health (Developments in Aging: 1981, 1982).

In the literature reviewed, a limited number of studies were found that dealt with self-assessment of eyesight. A rating of eyesight was included in the assessment of functional status by the Duke University Center for the Study of Aging (Multidimensional Functional Assessment, 1978). A measure of perceived sensory functions was included in the study of global and functional dimensions of health status by Wolinsky, Coe, Miller, and Prendergast (1984). Sensory functions included were appetite, vision, hearing, ability to taste, and sense of smell. These were measured on a scale of excellent, good, fair, and poor, and were

combined and treated as one variable, perceived sensory functions. Perceptions of specific sensory functions were not reported.

Selected Consumer/Shopper Aspects of Older People

Research pertaining to consumer behavior and shopping patterns of aging people was diverse in nature. Some studies covered numerous variables for a broad sample, while others were more specifically defined for a limited age group. Pertinent literature has been summarized under the following headings: market segmentation; spending power; consumer behavior and shopping patterns; and information processing, sources, and usage.

Market Segmentation

Kotler (1980, p. 195) defined market segmentation as "the subdividing of a market into distinct subsets of customers, where any subset may conceivably be selected as a target to be reached with a distinct marketing mix." Typically markets can be segmented by demographic, psychographic, or behavioristic variables. Through market segmentation, a company can identify the segments it can best serve, determine the needs and satisfactions of these segments, and aim product and promotional plans to meet the needs of these segments. Age has been a useful and successful demographic variable for segmenting consumers in the marketplace. Kotler (1980) divided age groups into seven categories: those under 6 years, 6 to 11 years, 12 to 19 years, 20 to 34 years, 35 to 49 years, 50 to 64 years, and 65 years and over.

Reynolds and Wells (1977) divided the middle years into two segments: middle adulthood (age 35 to 44) and later adulthood (age 45 to 54). They reported that attractive appearance and stylish dressing were not as important to women in the middle years as previously, but that persons in later adulthood were somewhat more interested in appearance and clothing than persons in middle adulthood. In addition, Reynolds and Wells reported that leisure pursuits during later adulthood were less strenuous and more individualized than previously.

Reynolds and Wells (1977) divided older consumers into two segments: the soon-to-be retired (age 55 to 64) and the already retired (age 65 and over). Interests in clothing, physical appearance, and grooming were found to decline with older ages; however, older ages did not reject the concept of dressing well. Persons who were more socially active were more interested in appearance than those who were isolated. An additional finding was that physical decline brought about a narrowing of leisure pursuits and consequently an increase in sedentary activities. Reynolds and Wells (1977, p. 188) stated, "Physical, and even financial, decline does not mean older consumers are of less importance to marketers, but that these consumers have needs for products and activities which are different from those of their younger counterparts."

Towle and Martin (1976) questioned whether the elderly comprise a homogeneous market segment. A national sample of 209 consumers aged 65 and over was drawn from a consumer data base to determine if the elderly differed by demographic, psychographic, and buying-style

variables. Six different buying-style segments were identified: saver/planner, brand loyalist, information seeker, economy shopper, laggard, and conspicuous consumer. Psychographic characteristics of each of these buying-style segments were identified. The largest group (over one-third) was identified as conspicuous consumers who evaluated themselves as more stubborn, egotistical, and dominating than their peers. The second largest (one-fourth) was the saver/planner who purchased unknown brands and described themselves as frank and self-confident. Towle and Martin concluded that natural segments existed within the elderly market and could be defined by buying-style characteristics and psychographic characteristics.

Rena Bartos (1980) asserted that age by itself is not differentiating enough to reveal the market opportunities that exist. Further, Bartos contended that it was a mistake to generalize about older people as a group. Consumer needs change as life events change, and adjustments to these events are dependent on time, money, and health. These are the clues to consumer markets for the over-49 population. This age segment comprises 40 percent of American adults. Bartos profiled the over-49 group into six segments, three of which had potential as customers: the active affluents, the active retireds, and the homemakers. The active affluents comprised 40 percent of persons over age 49. They were still in the mainstream of life, 90 percent were under age 65, three-fourths had no child under age 18 at home, over half were in marriages where both husband and wife work, they were in good health, and they had more discretionary income now than in

previous years. The active retireds comprised 15 percent of the over-49 segment. Half of this group was between age 65 and 75, one in three was over age 75, and one in five was under age 65. Active retireds rejected the "age ghetto" and did not want to be isolated. They were the pioneers of leisure. Homemakers comprised 22 percent of the over-49 age group. Seventy percent were married and 25 percent were widowed. Their identities and satisfactions had come from being wives and mothers. Lifestyles and demographic characteristics of this group were quite diverse. Bartos said that how the over-49 group used time was the key to their consumption habits. Additionally, how they handled and spent their money was important. Bartos challenged marketers to look at outdated assumptions about age and to consider new target groups.

Spending Power

The average household income of persons over age 65 has been reported at 59 percent of the national average, while household income of people age 35-44 is 125 percent, and for age 45-54 is 135 percent of the national average ("Aging Over 65," 1981). These statistics ignore the fact that older households are much smaller than younger households. A more accurate gauge of prosperity is household income per capita. Linden (1980) emphasized the importance of per capita income as a criterion in assessing age segments of the consumer markets. The per capita income of persons over age 65 is 92 percent of the average, equal to those age 25 to 44, and greater than those age 14 to 24, which is 85 percent of the average (Table 13). Persons age 45-54 usually

Table 13. Distribution and Income by Households and Persons: 1978

Characteristic	Distribution		Average household size	Average income index	
	Households (in millions)	Persons (in millions)		Household	Per capita
Total	77.3 (100%)	215.3 (100%)	2.78	$17,730 (100%)	$6,367 (100%)
Age of head					
under 25	8.2%	6.6%	2.24	68.6%	85.3%
25-34	22.0	23.6	2.99	99.9	92.9
35-44	17.2	23.7	3.83	124.2	90.4
45-54	16.3	19.5	3.33	133.7	111.7
55-64	15.9	13.7	2.40	109.6	127.0
65 and over	20.4	12.9	1.76	58.0	91.9

Source: F. Linden, "Per capita-ism," Across the Board, 1980, 17(6), p. 68.

have the most advantageous situation since income earnings are at a peak and households have become smaller.

Linden (1978b) reported that 20 percent of all families (11 million) in 1975 were in the highest income brackets, i.e., minimum of $22,000 annual income. This top fifth accounted for 40 percent of the total consumer spending power. One-third of these top income families were age 45-54, one-fourth were age 34-45, one-fifth were age 55-64, and 6 percent were age 65 and over. Projections of discretionary income by age groups for 1985 and 1990 were reported by Linden (1978a) (Table 14). An increase in discretionary income was projected for age group 45-54, but a decrease for age group 55-64. Discretionary income for the elderly was projected to remain constant. Linden (1978b) also reported data from the Bureau of Labor Statistics Consumer Expenditure Survey of 1972-73 concerning expenditures on clothing by age of

Table 14. Households by Age, Percent Total Income, and Percent Discretionary Income: Projections for 1985 and 1990

	Age of head of household (in years)					
	Total	25-34	35-44	45-54	55-64	65 and over
1985						
Percent total income	100.0	24.0	23.8	19.0	15.7	12.1
Percent discretionary income	100.0	16.0	29.0	27.5	19.0	8.0
1990						
Percent total income	100.0	23.1	25.7	20.1	14.2	12.3
Percent discretionary income	100.0	15.5	29.5	28.5	17.5	8.0

Source: F. Linden, "The great shuffle in spending power," Across the Board, 1978a, 25(2), p. 64.

household head (Table 15). Expenditures on clothing were highest for age group 35-44 and declined for each age group thereafter.

Table 15. Expenditures on Clothing by Age of Household Head; 1973.

	Expenditures for Total Consumption		Expenditures on Clothing
Age of Household Head	Dollars	Percent	Percent
25-34 years	$ 8,596	100%	8.6%
35-44 years	10,262	100	9.2
45-54 years	10,148	100	8.6
55-64 years	7,922	100	7.7
65 years and over	4,888	100	6.4

Source: F. Linden, "Magic numbers—ages 25 to 44," Across the Board, 1978b, 25(3), p. 67.

The findings of Tongren (1976; 1978) indicated the purchasing power of many elderly to be over 30 percent more than their income would suggest because of special benefits that reduce claims on income; thus more spendable cash is available. Tongren (1976) stated that when appraising the purchasing power of persons over 65, the many special benefits that reduce the outflow of disposable income have often been overlooked. Benefits that are available on a national basis to older people include: double personal exemption for taxpayers, nontaxable Social Security income, absence of FICA withholding, cash benefits from Medicare insurance, and cash benefits from mortgage-free home. Tongren (1978) reported there is strong evidence that cash income alone is a false indicator of the real economic condition of people age 65 and over. Tongren calculated imputed income of the elderly. The term "imputed" describes the value of certain costs or expenses that young families must pay for which older families get free. Imputed income from various benefits received amounts to 32.4 percent of an income of $8,500 for a family over 65 when compared to a younger family having the same income. In addition, there are other benefits that the elderly may receive—state and local tax benefits, property tax credits, and discounts on public transportation, drugs, and other merchandise and services. Tongren concluded that the discretionary spending potential of the over-65 market is much greater than usually expected.

Consumer Behavior and Shopping Patterns

Bernhardt and Kinnear (1976) profiled the senior citizen's market by personal characteristics, shopping behavior, credit usage, media

habits, and leisure time activities. A probability sample of 3,435 men and women in the metropolitan Atlanta area was interviewed. Participants were grouped into four age segments: less than 35 years, 35 to 49 years, 50 to 64 years, and 65 years and over. Significant findings regarding the oldest group were: they were heavy users of department stores but light users of discount stores, light users of credit cards, and heavy watchers of T.V. Media habits were stronger for newspapers than for magazines, and this group traveled primarily by mass transit and taxi cabs. Leisure time activities were strong for church activities, eating out, gardening, reading, and sewing. In general, the pattern of activities of the elderly group was similar to the younger groups, but the level of activity was lower.

Schutz, Baird, and Hawkes (1979) surveyed a sample of 271 persons in three age groups: 45 to 54, 55 to 64, and 65 and over in the San Francisco area to study lifestyles and consumer behavior of older people. The consumer behavior component included numerous variables that concerned buying styles, consumer problems, and budget management for several products including clothing. Buyers of clothing chose the department store far in excess of discount, specialty, or mail order retailers. Women over age 60 perceived themselves as fashion conscious and enjoyed shopping. Product assortment led the evaluative criteria for choice of store, followed by merchandise quality, parking convenience, sales promotion, and prices. The most pronounced consumer problems were high cost of living, quality of goods, quality of environment, and availability of health care. The most serious financial

and budget problems were related to maintaining a desired standard of living during inflation. These researchers concluded that older people were rational shoppers with logically varying expenditure patterns. "The portrayal of the elderly as a separate market segment, based on mythic stereotyping that characterizes them as having physiological impairments is unfounded" (Schutz et al., 1979, p. 158). Other conclusions were that consumer behavior is one of the most stable conditions in the lives of older people, and that lifestyles, relationships, activities, and involvements in and away from home have more effect on the elderly than age, sex, and income.

Samli and Palubinskas (1972) studied buyer behavior and consumption patterns of 211 middle and upper-middle class attendants at a senior citizens' center in California. Salient findings from this research include: senior citizens had abundant time and most had at least one hobby; they were actively involved in events of their clubs and lodges; shopping was done on weekends and limited to less than one hour; convenience was a key to store selection; the oldest seniors and those with the highest incomes were the most store loyal, but store loyalty was not important in shopping for apparel; 90 percent read the daily newspaper with the front page and editorial sections being the most read; those with the highest incomes watched the least amount of TV; commercials were disliked; over half spent no more than 5 percent of monthly income on apparel, while one-fourth spent 6 to 10 percent, and one-fourth spent more than 10 percent.

Mason and Smith (1974) interviewed 75 low income elderly to analyze shopping behavior related to several products including apparel. All respondents reported purchasing all of their personal apparel themselves. The primary way of obtaining information about clothing was by physical search, followed by newspaper advertisement, and then by word-of-mouth. These shoppers preferred morning shopping in the central business district regardless of the location of their residences. From these findings, Mason and Smith hypothesized that shopping patterns established early in life tended to persist in old age. Shopping seemed to be a major part of the lifestyle and a source of pleasure for these respondents.

Mason and Bearden (1978) interviewed 110 elderly to profile shopping behavior of food shoppers. The profile included an inquiry into physical limitations. Twenty-eight percent reported that health problems hindered their mobility somewhat, while 22 percent reported health related problems hindered their mobility a great deal. Ten percent reported poor eyesight and 10 percent reported poor hearing. These shoppers considered shopping a good source of recreation and exercise. Other findings were: they made use of advertising but relied more heavily on personal experience; they preferred to shop in the mornings; and they preferred merchants who offered senior citizen discounts.

A further analysis of consumer satisfaction/dissatisfaction of elderly food shoppers was reported by Mason and Bearden (1979). These elderly expressed dissatisfaction with advertisements that singled

out the elderly as principle users of such products as laxatives and denture cleaners. Other dissatisfactions included temperatures that were too cold in supermarkets and lack of a place to sit and rest when shopping. Although many said shopping was not a problem, 20 percent preferred to shop for food by telephone and have it delivered.

Four hundred and three senior citizens were surveyed at meetings of retirement-aged people in Houston by Gelb (1978). A self-administered questionnaire was used to identify shopping behavior relating to physical and lifestyle changes. These elderly were in favor of businesses that sought the patronage of retirement-age people. They agreed that clothing stores should have a special department for older people. One-third expressed having some physical limitation, and they reported that the physical problem of shopping was affecting shopping practices. Shopping trips were cut short, a younger person took them shopping, and shopping around was more trouble than it was worth. Gelb stated that physical and lifestyle changes point to an emphasis on services with special recognition and treatment of the older segment.

In another analysis of these senior citizens, Gelb (1977) focused on their perception of business and their history of taking action after a perceived consumer problem. The sample showed a high degree of agreement with statements related to senior militancy regarding an unsatisfying experience with a retail store. However, action directed at the store, beyond returning a product that was unsatisfactory, was less

strong. Gelb indicated that the problems of business concerning the older population may lie in the future when cohorts of the social movements of the 1960s and 1970s become aged. Future elderly, with previous experience in advocacy and protests along many issues, may be quick to confront business management with gray power.

Forty Americans aged 50 to 59 years were interviewed in a study of the market potential of older people by Langer Associates ("The Over-50 Set," 1982). A typology was developed that subdivided the group into the "vitally active" who were the biggest spenders and rejected expectations about senior citizens, the "adapters" who would have liked to be vitally active but had difficulty in the transition from middle age, and the "overwhelmed" who had essentially given up. Langer saw the upper-age segment as a potential for new products and services if marketers recognize the diversity of the group, portray older people positively in the media, do not assume they have limited incomes, cater to their desire to look attractive, recognize they still have romantic appetites, and cater to those living alone.

Shopping patronage, purchases, and attitudes were major components of the interview survey by Gillett, Scott, and Davis (1982a, 1982b) in metropolitan Phoenix. The sample of 600 elderly persons was divided into two age groups—the "young-old" or those age 65-74, and the "old-old" or those age 75 and over. The two age groups did not differ in frequency and variety of shopping patronage among retail facilities known to attract elderly shoppers—shopping centers, downtown and suburban department stores, nor did they differ in frequency

of shopping outside the residence area. Both groups were active vacationers out-of-state and out-of-country. The younger group was more likely to participate in leisure activities, especially the more physically demanding, but no more likely than the older group to participate in cultural events. The research showed some evidence that independent elderly households are not homogeneous in levels of leisure activities and that dividing the older segment at age 75 has some value in the marketplace. Gillett et al. said that with the rising proportions of elderly households anticipated to be in the over-75 age group, the elderly market can be expected to be more heterogeneous than presently.

An investigation of unmet needs and wants at the retail level of 510 older persons of two age groups, 55-64 years and 65 years and over, was conducted by Lambert (1979) in several metropolitan areas in Florida. The most pronounced concern of both age groups centered around interest in discount prices. Other concerns focused on a need for courteous and dignified treatment in the store, for assistance in locating products, for transportation and delivery services, and for improved price tags and labels. Lambert said that if retailers, after analysis of their situations, are able to profitably implement steps designed to serve older consumers, the welfare of all would be enhanced.

Multidimensional differences in several generations of fashion consumers were examined by Towle (1976) in two southwestern Missouri trade areas. A mail questionnaire was completed by 356 respondents

from a wide range of ages with one-fourth being age 60 and over. Respondents were grouped into young adults (age 18 to 30), matrons (age 40 to 59), and elderly (age 60 and over). A typology of 25 dimensions was constructed to typify elderly fashion consumers. Several major descriptions of these older buyers of fashion included: bought a garment to match presently owned accessories in a store where she had shopped previously, had no lower price limit but a definite upper price limit, had certain colors that were not favored, shopped alone, relied on a salesperson's advice about style and fit, depended on newspaper advertising for information, had definite attitudes about fabric care, and kept up with fashion trends. Two-thirds of the elderly women perceived themselves as fashion conscious and a high proportion enjoyed shopping. The findings indicated older women were a potential target for the fashion retailer.

Tongren (1981) used a judgment sample of 334 senior citizens in the Washington, D.C., area to study buying habits of older consumers and sales potential of clothing and durables for this age group. The results showed that most older consumers did not have serious financial constraints and were frequent shoppers of clothing and relatively heavy spenders. Clothing was found to have greater potential than durables in the older market segment. Age did not seem to inhibit older buyers except for the uppermost age levels. Tongren said that more attention should be paid to the micro aspects of the marketplace, such as, product design and advertising and promotion techniques to attract the older consumer.

A national probability sample of 2,854 men and women of all ages was used by Lumpkin and Greenberg (1982) in a study of shopping patterns of the elderly apparel consumer. The elderly tended to rate all information sources lower in importance than did younger age groups. Newspapers and interpersonal sources—friends and spouses—were the most influential sources. Older people tended to shop less than younger people. They shopped most often in department stores, followed by specialty stores, with discount stores and in-home shopping used the least. The elderly tended to enjoy shopping and went shopping for recreational and social reasons as well as to make a purchase. They liked to shop where they knew the personnel; however, they did not perceive salespeople as knowledgeable or helpful, but neither did the elderly exhibit self-confidence when shopping for apparel. They did not like to try new stores and did not shop around as did the younger age groups. These elderly were not price conscious but tended to spend less on apparel as age increased. Store reputation was much more important than was the brand or label of apparel. Lumpkin and Greenberg identified the elderly consumer as a viable market segment and recommended a strategy that emphasizes a personal relationship between store personnel and the elderly shopper for successful retailing to older people.

Barnes and Peters (1982) examined views of the elderly regarding modes or channels of distribution of consumer goods. They hypothesized that convenience, alienation, health, and transportation restricted the frequency of use of specific retail channels by the elderly. Mail

questionnaires from 260 respondents in a northeastern state were analyzed. Women were found more likely than men to buy clothing and shoes through the mail. Persons with more education and a more professional occupation were more likely to purchase through the mail. Retail stores as the mode of shopping were used considerably more than any other channel of distribution, followed by mail order, then telephone, and door-to-door last. Convenience perceived in buying from various channels was highly correlated with shopping frequency of the channel. High correlations between frequency of use and convenience were shown for cosmetics by door-to-door mode and for clothing and shoes by catalog. Feelings of alienation led to a decrease in shopping certain modes of distribution. Retail stores showed the strongest relationship to alienation. Elderly persons with some personal restrictions, e.g., lack of transportation or poor health, were likely to experience alienation. Personal restrictions led to low usage of the less accessible retail stores. Barnes and Peters pointed out that by identifying the needs of the elderly segment and employing appropriate marketing strategies, the marketplace could increase economic and psychological benefits to the elderly as well as increase retail sales.

Deshpandé and Krishnan (1979) looked at buying strategies or "decision rules" that the elderly used to simplify their buying decisions. A national sample of 1,555 responded to a mail survey instrument that employed a Likert-scale to determine use of decision rules for market transactions for 33 commonly purchased products and services. The elderly found certain buying decision rules more

effective than others for avoiding negative purchase experiences. "Decision rules" most likely to be associated with bad buying experiences were classified as flexible shopping, conservative shopping, brand conscious, sales pressure avoidant, and information avoidant. Flexible shopping rules included ignoring budget limits, going beyond shopping lists, and disregarding details on contracts. Conservative shopping strategy included reluctance to consult business and consumer professionals, a shopping behavior that could lead to perceived purchase mishaps. Brand consciousness and sales pressure avoidance led to better buying and less postpurchase dissatisfaction. Information avoidance was associated with ignorance regarding what to expect in terms of product performance.

The following conclusions were drawn from this investigation: elderly consumers used a limited number of buying decision rules to simplify their purchase activity; these decision rules appeared to apply across a wide set of frequently purchased products and services; consumers who used buying decision strategies that fostered quality-consciousness tended to avoid perceived bad buying experiences; those who were less easily swayed by sales pressure appeared to be more satisfied with their purchases; and the extremely conservative tended to be less happy with their buying decisions.

Information Processing, Sources, and Usage

A critical review pertinent to age differences in information processing has been presented by Phillips and Sternthal (1977). Major findings pertaining to information exposure included: social,

psychological, and physical changes that parallel aging resulted in a contraction of life space of older people in relation to younger; reading and TV viewing served as substitutes for declining social participation; criteria for media selection were based on information value rather than on entertainment as for younger persons; the elderly had substantial social contacts with reference groups composed of extended family and friends; and a shift in media patterns seemed to begin at retirement (around age 60 to 65) coupled with a decline in energy levels. When information was presented at a fast pace, the learning deficit was greater for older people than for younger, but when information presentation was self-paced, learning deficits diminished. Older people showed a greater inability to ignore irrelevant stimuli than younger people did. Older people who had acquired experience with age processed information more efficiently. Elderly people who perceived themselves as competent were no more susceptible to influence than were younger people, but the elderly who were isolated lacked resistance to influence.

Ross (1981) summarized psychological literature that explained consumer information processing characteristics of older consumers. Major findings from the research reviewed included: intellectual abilities showed a general decline with age; decrement of intelligence functioning was not universal on all components until the late 80s and then was mostly associated with abilities that required speeded responses; when acquisition of information time and response time were self-paced, there was less difference in learning quality among age

groups; and search and retrieval of recently acquired memories as compared to older memories became impaired with age. The literature concerning problem-solving skills suggested a consistent decline with age, particularly by the 70s. Older people performed better at tasks that were structured in concrete terms than in abstract terms. They were less able to ignore irrelevant information and did not risk being wrong for the sake of speed. Ross emphasized that for older consumers, their ability to acquire and process information is critical in being able to "consume" information.

The research of Klippel and Sweeney (1974) was concerned with formal and informal information sources used by older consumers in learning about new products. A nonprobability sample of 101 persons age 55 and over was studied by questionnaire in St. Petersburg, Florida. The findings indicated that informal information sources—friends, neighbors, salespeople, and family—were important in communicating product information. Marketing strategies that incorporated product sampling and in-store demonstrations were suggested for attracting older consumers. The relationship between personality traits and the information source used was also considered in this research. Klippel and Sweeney suggested market segmentation on the basis of internal locus of control (individuals, rather than others, have dominant control over their reinforcements) or external locus of control (focus outside the individual's control dominate their reinforcements). Data relative to informal information sources suggested that the aged "externals" placed more importance on informal information sources than

did the "internals." This importance was based on other research which suggested that as people aged they tended to adopt attitudinal characteristics associated with "external."

Bearden and Mason (1979) looked into the use and processing of shopping-related information available in grocery stores. Data were collected through a series of in-depth interviews with 110 elderly households in a southeastern metropolitan area. Levels of familiarity with nutritional labels, open-code dating, and unit-pricing were substantially lower for the elderly than for a representative national sample. For those who were familiar with and made frequent use of these information sources, this sample of elderly was similar to the national sample. A conclusion was drawn that many elderly had not been reached by efforts to disseminate information designed to assist shoppers.

From the University of Pittsburgh study (Elderly Consumer Project, 1978), the elderly were found to make limited use of information sources when making a major purchase decision. The information processing behavior of 1,481 persons age 65 and over was compared with that of 864 persons under age 65. The investigators suggested that several factors may distinguish the elderly from the younger consumer in the marketplace: reduced number of social contacts, physical inability to access information, and lack of availability of sources of information. The top four types of information used by the elderly in order of preference were: price, brand name, past experience, and advertising.

Schiffman (1971) explored the impact of internal and external sources of information on new product trial behavior of the elderly. The product was a salt substitute. These participants made limited use of external sources of information, such as half price coupons, letters outlining product features, and conversations about products, but relied more on past consumption experiences. Preconceived likes and dislikes acquired during the years the elderly had been making consumer decisions seemed to serve the informational needs of these elderly better than other sources.

In a study of responses by the elderly to promotions of new cold remedies, 98 percent were found to be familiar with, but only 9 percent had tried, the products (Michman, Hocking, & Hanes, 1981). One hundred senior citizens in middle income housing developments were interviewed and questioned about shopping and consumption patterns and new product adoption. Although television was a major media source for information, the respondents relied heavily on advice from their pharmacists. Past experience was an important factor, and the perceived risk in purchasing a new product was high.

Functioning by the elderly in deficient consumer information environments was studied by Deshpandé and Krishnan (1981). A national sample of 1,747 persons age 65 and over responded to the survey. Product and service areas used in the study were those frequently mentioned in elderly consumer literature as areas where advantages had been taken of the elderly. These included purchase and repair of durable goods, utilities, insurance, and professional

services. Salient findings were: when product-related information was insufficient or unavailable, there was general dissatisfaction by elderly consumers; and there was a positive relationship between information deficiencies and bad buying experiences.

Credibility of media advertising, as perceived by the elderly, was investigated by French and Crask (1977). Sixty-nine senior citizens were interviewed in a town of 70,000. The findings can be summarized as follows: respondents watched significantly more television than read newspapers or listened to the radio; over half perceived no difference in the credibility of advertisements via television, newspaper, or radio; a majority said advertisements were an important source of information; advertisements directed primarily at the elderly had the lowest recall rate, while intergenerational themes had the highest recall rate; elderly under age 75 were more influenced by media advertising than those over age 75; and those who identified themselves as active were more influenced by advertising than were the passive.

Smith, Moschis, and Moore (1982) examined the impact of mass media advertising on several aspects of consumer decision making among the elderly. A self-administered questionnaire was completed by 91 members of a service organization in a major southeastern city. The findings suggested that the elderly felt negatively portrayed in advertisements, that social motivation for consumption could be increased, and that mass media advertising could discourage brand preference among the elderly. Since elderly people made extensive use of television both as entertainment and as a source of information, Smith

et al. suggested that advertisers are in a position to influence consumer socialization of the aged.

Readability and Illumination

In the literature reviewed, a limited number of studies focusing on shopping patterns included a component related to eyesight or other physical conditions.

Ross (1981) acknowledged the importance of visual condition to information processing. Most consumer-related information is presented visually through newspapers, magazines, direct mail, television, instruction brochures, and product labeling. Ross (1981, p. 37) said, "Presbyopia [farsightedness] or other infirmities associated with aging may not be immutable given new medical marvels. But it is a condition very common among older consumers today, and it (and other age-related conditions) will interfere with the acquisition of information."

In Lambert's (1979) research on unmet needs of older consumers in the marketplace, over 9 percent of the 55-64 age group and more than 10 percent of those 65 years and over indicated having problems reading price information because numerals were frequently small and blurred or print was too small on product labels. When retailers were asked about the practicality of taking steps to ensure that price tags were readable, over 90 percent of the department store managers and all of the discount store managers said this was practical to some degree. Lambert's study did not include whether or not the retailers actually took steps to make price tags more readable.

The profile of elderly consumers by Mason and Bearden (1978) included a self-assessment of eyesight. Over 16 percent assessed their eyesight as excellent, approximately 42 percent as good, 39 percent as fair, and 10 percent as poor. In another report of this research, over 72 percent of the elderly agreed that product labels were too small for older people to read (Mason & Bearden, 1979).

Sciglimpaglia and Schaninger (1981) studied demographics correlated of consumer acquisition of price and package information of food products. Use of unit price information was found to relate negatively to age and positively to education. These researchers did not look at physical or eyesight differences by ages of respondents to consider eyesight condition as a possible reason for older persons not making use of unit price information (which is printed in a small type size). A consumer who could not see to read the information, would not be able to use it.

Reading of labels was highly correlated with age of food shoppers in the research of Glisan and Kiser (1979). Food shoppers from age 36 through those 66 and over were more active label readers than those younger.

Use of large print has been reported to be effective for persons with aging eyesight in areas other than the marketplace. Retirement home residents, who were members of a choir group, were observed to have serious vision problems in reading the music and words of hymns (Flynn & Rich, 1982). When large-printed choral books were not available, pages of the choir music were enlarged 120 percent by a

photographic method and copies distributed to the members. As a result, participation of the original membership was maintained, and the group increased by 84 percent in the first year and a half.

Ralph (1982) expressed concern for the limited awareness by the publishing and graphics industries about visual problems of the aged. Many people cannot see to read and understand labels on consumer products because of small print or color of ink or paper. The most visible printing combination is black ink on white matte paper which gives a strong contrast. The need for contrast increases with age. Many labels are printed with size of type smaller than newspaper print which is usually 8- or 9-point type. Ralph says that the minimum recommended size of type for the general population is 11-point, with 12-point suggested for the elderly, and 14-point for the severely visually handicapped but these recommendations are not used presently by government, business, or manufacturers.

The Illuminating Engineering Society of North America has published extensively on the lighting of public areas including merchandise areas (IES Lighting Handbook, 1981). The society stated, "Sophisticated consumers and the general lack of trained sales personnel make it essential to present merchandise under lighting that will aid in sales and a reduction of merchandise returns" (IES Lighting Handbook, 1981, p. 8-1). The customer must be able to see in order to make a decision. Additionally, the customer must be able to visually evaluate the merchandise and read the labels through adequate illumination. Factors that affect visibility are size of detail, contrast, time it takes to see,

and luminance. When size is increased, seeing becomes easier to a certain point. When size of detail is small, visibility can be improved by increased illumination. Each critical detail of merchandise, or seeing task, must differ in illumination or color from its background. Where poor contrast conditions exist, visibility can be improved by using a better lighting system. It takes time to decipher a given message and take action on it. Increased illumination will help increase the speed of seeing. Since merchandise or task size are fixed, improvements in visibility and visual performance can be made by improving the lighting. The society has recommended illumination for various merchandising areas. Where merchandise is displayed that has readily recognizable usage, evaluation and viewing time are rapid, and merchandise is shown to stimulate impulse buying, 100 foot-candles is recommended. Where merchandise is familiar but the customer may require time or assistance in evaluating quality and making a decision to buy, 75 foot-candles is recommended. Where merchandise is displayed that is purchased less frequently and the customer may be unfamiliar with the product and may need time and help to make a decision, 30 foot-candles is recommended. When merchandise is displayed in one location and appraised in another, such as taking an item out of a showcase, illumination between the two locations should not exceed a ratio of 3-to-1. A uniform wash of light over the length of hanging garments is recommended to facilitate customer evaluation of an item and make the reading of pertinent data on tags and labels easier. The society emphasized the importance of lighting in the fitting room where close

evaluation is made and the critical decision to buy often takes place. The illumination on the sales transaction task is recommended to be 50-75-100 foot-candles.

Summary

In this literature review, major topics that portrayed the aging consumer as an important segment in the marketplace have been examined. Demographic characteristics and projections of the older population have been highlighted. Census data showed that the older population is a significant and growning portion of the American population. Older people are living longer, are better educated, and are more affluent than previously. Other surveys indicated they are in the mainstream of political and social life, are healthier, and live diverse life styles.

Literature concerning physiological changes strategic to shopping effectiveness were reviewed with emphasis placed on changing eyesight and visual acuity. Declining health and diminished eyesight were found to be a fact of life for older people, although these changes varied widely among the population. Even with declining health in the advancing years, older people were found to remain active in social and community life long after retirement from full-time work. Studies of self-assessment of health showed that most older people thought of themselves as being in reasonably good health.

Research pertaining to consumer behavior and needs and wants of aging people in the marketplace were reviewed. Extensive research has

been conducted in the past 10 to 15 years in an effort to increase understanding of this "new" and vital segment. A general conclusion was that older consumers are quite diverse. Methodology used in the studies differed widely and the findings were inconsistent, which emphasizes the heterogeneity of the older segment.

In the literature reviewed, no studies were found that dealt with the effects that specific physical changes pertaining to aging had on consumer behavior and shopping patterns. Now that the viability of the older consumer is well established, there is a need to look at micro aspects of this age group. This research attempts to approach the question of declining eyesight and shopping practices.

CHAPTER III

RESEARCH METHODOLOGY

This research was exploratory in nature and was undertaken to study what effects changing eyesight due to normal aging had on shopping behavior of women in the apparel marketplace. More specifically, the research was planned to determine whether retail printed items were readable by women shoppers of a wide range of ages and to investigate shopping behaviors and patterns.

The independent variable of this research was age, studied on a continuum from the youngest respondent to the oldest. The dependent variables were: accuracy of reading retail printed items, ease of reading retail printed items, self-assessment of eyesight, selected shopping behavior variables specific to eyesight condition, and general shopping behavior variables including use of information sources.

The research methodology is presented under the following headings: hypotheses; operational definitions; research design which includes development of the instruments, pretest, sample selection, and sample size; data collection; and data analysis procedures.

Hypotheses

Hypotheses were formulated concerning readability of retail printed items, self-assessment of eyesight, and shopping behavior of women apparel shoppers. Three hypotheses were related to eyesight.

Hypotheses One and Two pertained to readability, while Hypothesis Three pertained to self-assessment of eyesight. Hypotheses Four through Nine pertained to shopping behaviors specific to eyesight. Hypotheses Ten through Twenty-seven pertained to general shopping behavior, and Hypothesis Twenty-eight pertained to use of information sources. Statements of the hypotheses with corresponding questionnaire items are as follows:

H_1: Accuracy of reading retail printed items has a relationship to age (Section I, item 1 of A-M).

H_2: Ease of reading retail printed items has a relationship to age (Section I, item 2 of A-M).

H_3: Self-assessment of eyesight will be significantly different among age groups (item 31).

Shopping behavior will be significantly different by age group because of eyesight condition with respect to the following selected variables:

H_4: frequency of shopping (item 35).

H_5: whether respondent goes shopping alone or not (item 36).

H_6: time of day selected for shopping (item 37).

H_7: amount of time spent shopping (item 38).

H_8: need for sales assistance (item 39).

H_9: transportation used to get to a shopping area (item 40).

Shopping behavior will be significantly different by age group with respect to the following general variables:

H_{10}: how clothing is acquired (item 1).

H_{11}: extent of shopping for self (item 2).

H_{12}: type of shopping area shopped (item 3).

H_{13}: type of store shopped (item 4).

H_{14}: frequency of shopping (item 5).

H_{15}: choice of shopping companion (item 6).

H_{16}: time of day selected for shopping (item 7).

H_{17}: amount of time spent shopping (item 8).

H_{18}: day(s) of the week selected for shopping (item 9).

H_{19}: type of sales service chosen (item 10).

H_{20}: method of payment (item 11).

H_{21}: type of credit card (item 12).

H_{22}: type of transportation (item 13).

H_{23}: frequency of catalog shopping (item 14).

H_{24}: shopping for items less than $25 (item 15).

H_{25}: shopping for items $25-$50 (item 16).

H_{26}: shopping for items over $50 (item 17).

H_{27}: amount spent on clothing (item 18).

Use of information sources will be significantly different by age group with respect to the following variables:

H_{28}: visiting stores and window shopping (item 19).

H_{29}: observing other people (item 20).

H_{30}: talking with salespeople (item 21).

H_{31}: talking with friends and relatives (item 22).

H_{32}: reading newspaper and advertisements (item 23).

H_{33}: reading newspaper articles (item 24).

H_{34}: use of catalogs (item 25).

H_{35}: reading fashion magazines (item 26).

H_{36}: watching TV advertisements (item 27).

H_{37}: listening to radio advertisements (item 28).

H_{38}: attending fashion shows (item 29).

Operational Definitions

The concepts employed in the research hypotheses are defined operationally as follows:

Age—number of chronological years of life as determined by date of birth.

Age groups—six categories by years: less than 35 years, 35-44 years, 45-54 years, 55-64 years, 65-74 years, and 75 years and over.

Accuracy of reading—correctness of written reporting of designated information on retail printed items.

Apparel—any product of clothing that is worn or carried, e.g., dresses, suits, coats, underwear, hosiery, shoes, and accessories.

Apparel shopper—person who visits a retail business to search and evaluate apparel products in order to make a choice concerning purchase.

Ease of reading—difficulty posed when reading the retail printed items.

Eyesight condition—ability to see to read.

Information sources—media used to obtain facts deemed useful in making a purchase decision.

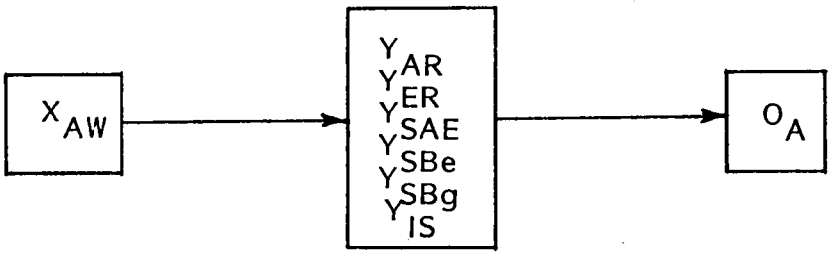
Retail printed items—copies of price tags, care labels, fiber labels, cash register receipts, and credit receipts.

Self-assessed eyesight—respondent's evaluation of personal vision.

Shopping behavior—activities that the apparel shopper is directly involved in when searching, evaluating, and choosing apparel products.

Research Design

This research can be diagrammed as:



where:

X_{AW} = age of women apparel shoppers,

Y_{AR} = operational tests of accuracy of reading of retail printed items,

Y_{ER} = operational tests of ease of reading of retail printed items,

Y_{SAE} = self-assessment of eyesight,

Y_{SBe} = shopping behavior specific to eyesight,

Y_{SBg} = general shopping behavior,

Y_{IS} = use of information sources, and

O_A = the measurement or results by age group.

A chart of independent and dependent variables for each hypothesis can be shown as follows:

Hypotheses	Independent Variable (X)	Dependent Variables (Y)
1-2	Age	Tested Readability; accuracy and ease
3	Age	Self-assessed eyesight
4-9	Age	Shopping behavior specific to eyesight condition
10-27	Age	General shopping behavior
28-38	Age	Use of information sources

The following controls were employed for final analysis of the data: the participant was female (item 53), was an active shopper (item 2), was socially active (sum of scores for items 41-54 equaled four or greater), and did not reside in subsidized housing (item 62). These controls were used to limit the sample to a group of respondents who would be potential apparel shoppers and thus be of interest to the apparel retailer.

Development of the Instruments

To test the hypotheses, a self-administered questionnaire (Appendix A) with two instruments was developed: (1) a readability instrument to operationally test readability of retail stimuli, and (2) a survey instrument to investigate self-assessed eyesight, shopping behavior, social activity participation, and demographic variables. The research questionnaire as shown in Appendix A has been reduced 23 percent to

meet the guidelines of the graduate office for margins used in a dissertation. Design of the questions for both instruments was based on the "total design method" (TDM) described by Dillman (1978).

Readability instrument. The readability instrument was designed to operationally test readability of retail printed items by accuracy of reading and ease of reading (Appendix A, Section I). In the literature reviewed, no instrument could be found concerning readability of printed items needed by the consumer/shopper; therefore, the instrument was developed by the researcher.

The readability instrument was developed through a series of five steps: (1) determination of apparel products most frequently purchased by older women, (2) determination of light level in corresponding departments in local retail establishments, (3) determination of an "average" light level to be used when testing, (4) determination of printed items to be used in the test, and (5) determination of how to vary these printed items for the test.

The first step in the development of the readability instrument was to determine which apparel products were purchased most frequently by older women. The index of purchasing for women's apparel compiled by Simmons Market Research Bureau (The 1980 Study of Media and Markets, 1980) was reviewed for nation-wide statistics. The percentage of purchasers of apparel, in the past 12 months, who were age 45 years and over, is shown in Table 16. From this table it was determined that departments supported strongly by the older shopper were hosiery, foundations, suits, all-weather coats, lingerie, sportswear, and dresses.

Table 16. Departments Shopped, Apparel Items Purchased, and Percentage of Purchasers Age 45 and Over

Department	Item	Percentage*
hosiery	regular hosiery	71.6
foundations	girdles	67.4
suits	pant suits	51.4
hosiery	support stockings	48.2
coats	all weather coats	44.1
lingerie	slips	41.0
sportswear	blouses	39.9
dresses	dresses	39.9
sportswear	slacks	39.0
foundations	bras	37.4
hosiery	control top panty hose	37.2
suits	skirted suits	36.9
hosiery	regular panty hose	36.8
sportswear	skirts	35.4
coats	cloth coats	35.3
sportswear	sweaters	34.6

*Percentage of purchasers of apparel, in the last 12 months, who were age 45 and over.

Source: The 1980 study of media and markets, women's apparel. New York: Simmons Market Research Bureau, Inc., 1980, vol. P-14.

The next step was to determine the brightness of the light in these departments. Three major Knoxville department stores were studied using a sight-light meter (manufactured by Western Electric Instrument Corp., Newark, NJ) to measure footcandles. The meter was gauged:

0-10 inadequate for critical seeing

10-20 reading usual print

20-30 reading fine print, sewing

30-50 good contrast, newspapers

50-70 severe visual work for long periods

Lighting in Store A in the departments frequented by older people registered in the range of 0-10 footcandles where apparel products were displayed openly. Directly under an overhead light the sight-light meter reading was 20-30 footcandles. In wall bins, for example, where coats were displayed, the sight-light meter reading was strong—40-50 footcandles. However, for a customer to examine a particular coat, it had to be taken out of the bin. In this area outside the bins, the footcandle reading was 0-10, i.e., a level inadequate for critical reading of labels and tags. Departments throughout the store were lighted similarly, i.e., the highly lighted areas were the display areas; however, the lighting was considerably less in the areas where customers needed to read consumer information.

Lighting in Store B was similar to that of Store A, but slightly better. General lighting in the store was 10-20 footcandles and in some areas 20-30. The sight-light meter reading in wall bins and cash

register areas was approximately 30 footcandles. Lighting in the sportswear and lingerie departments was somewhat greater than in better dresses. In the basement where prices are slashed to cost or below, the sight-light meter reading was above 75 footcandles—the highest found in the three stores visited.

The lighting in all departments of Store C ranked in the 30-50 footcandles reading. In some situations, such as the lowest shelf for hosiery or between two closely placed display racks, footcandles were reduced to 10-15. In general, lighting in all departments of Store C was more evenly distributed than in Store A or Store B.

From this review of lighting in the three department stores, it was determined that the "average" sight-light meter reading was 20-30 footcandles. A research decision was made to maintain an illumination of 20-30 footcandles when administering the readability test to the participants.

A principle question for consideration in the development of the instrument was to determine which retail printed items would an apparel shopper use in the retail setting during the search, alternative evaluation, and choice stages of the purchase decision process. Through a product search scenario, the items needed for making a selection were determined to be price tags, care labels, and fiber labels. Further, if the customer made a purchase, the cash or credit receipt would be another printed item of importance in the entire shopping process. These five items were selected to be used in the design of the readability instrument.

From the examination of numerous printed items from actual retail transactions, many variations were found in both the print and the background material. For example, print was varied by type size, color, intensity, style, and printed vs. woven message. The background material was varied by color, sheen, and paper vs. fabric. A research decision was made to limit this study to the investigation of variations in size of type and intensity of print, and to use black print on white paper background.

The final step in the development of the readability instrument involved determining which variations in size of type and intensity of print and how many stimuli to use in the test instrument. A trial instrument composed of five sizes of type and four intensities of print for a total of 20 stimuli was used in the pretest. After consultation with the statistician, the final test instrument was developed which included 12 stimuli varied by four sizes of type: 6-point, 8-point, 11-point, and 14-point, and by three intensities of print: light, medium, and dark. Each of the 12 stimuli was designed from printed items acquired from the purchase of an apparel product, but was varied by use of a copy machine to meet the type size and intensity criteria (Table 17).

Survey instrument. The survey instrument was designed to describe characteristics of older shoppers regarding shopping behavior (Appendix A, Section II), self-assessed eyesight (Section III), social activities (Section IV), and demographics (Section V). In section II, items 1-30 concerned shopping behavior which included buying and

shopping patterns and use of information sources. These items were designed to obtain shopper descriptions related to the search, alternative evaluation, and choice concepts in the EKB model of buyer behavior (Figure 1, p. 8). Research studies that included these concepts and contributed to the development of this questionnaire were Bellenger, Robertson, and Hirshman (1976-77); Crask and Reynolds (1978); French and Crask (1977); Krishman and Mills (1978); McCall (1977); Reynolds and Wells (1977); Rich and Jain (1968); Tigert, King, and Ring (1980); Westbrook (1981); and Wilson (1966).

Table 17. Schedule of Size of Type and Intensity of Print of Retail Printed Items Used in Readability Test Instrument

Intensity of Print	(1) 6-point type	(2) 8-point type	(3) 11-point type	(4) 14-point type
	Item C	Item F	Item K	Item M
1. Light	cash receipt $7.28	cash receipt $30.74	credit receipt $4.22	credit receipt $20.44
	Item G	Item J	Item A	Item D
2. Medium	price tag $8.00	price tag $20.00	price tag $5.99	cash receipt $2.33
	Item L	Item B	Item E	Item H
3. Dark	care label "no ironing"	fiber label "30% linen"	care label "no bleach"	cash receipt $4.22

Section III, items 31-40, was concerned with the present condition of the participant's eyesight. Item 31 is specific to the individual's self-assessment of eyesight for reading. Findings from the research of Fillenbaum (1979) and Maddox and Douglass (1973) indicated that health self-assessments reflected actual health status. No studies of self-assessment of eyesight were found in the literature reviewed. The researcher posited that since self-assessment of general health reflected actual health, the self-assessment of eyesight would reflect eyesight health. Hence, self-assessment of eyesight was included in the questionnaire to confirm actual eyesight status. Descriptive items regarding vision problems and corrective lenses also were included in this section. Sources useful in structuring this part of the questionnaire were Cavan, Burgess, Havighurst, and Goldhamer (1949); Maddox and Douglass (1973); A Needs Assessment, (1977); and Streib and Schneider (1971).

Section IV, items 41-54, dealt with the frequency of participation in social activities. Numerous studies in both the gerontological and marketing literature were helpful in formulating these items: Atchley (1977a); Bultena (1969); Edwards and Klemmack (1973); Graney (1975); Hawes, Grønmo, and Arndt (1978); Kaplan (1979); Lawton (1978); McAvoy (1979); Palmore (1968); Pheiffer and Davis (1971); and Settle, Alreck, and Belch (1979). A measure of social activity was necessary in order to verify that the subjects were indeed active people.

Section V, items 55-62, concerned demographic variables: age, sex, marital status, race, educational level, employment status, income, and housing. The Current Population Reports (U.S. Bureau of the Census, 1979) and Statistical Abstract of the United State 1981 (U.S. Bureau of the Census, 1981c) were used as a guide for establishing categories for demographic variables.

Demographic questions were purposely placed at the end of the questionnaire. Churchill (1976) described proper questionnaire sequence as having questions for obtaining basic information presented first and questions classifying the respondents presented last. Churchill (1976, p. 194) said, "The researcher should not risk alienating the respondent by asking a number of personal questions before getting to the heart of the study, since it is not unusual for personal characteristics to cause the most alienation of respondents." Dillman (1978) also advocated always placing the demographic questions at the end of the questionnaire. Further, Dillman suggested that after a respondent had invested time in answering earlier questions, he or she was faced with losing the entire investment if the time was not taken to answer the personal questions.

Both instruments were incorporated into a 16 page questionnaire. This questionnaire was printed under strict quality control to insure that the intensity of print of the retail items in the readability instrument remained constant throughout all printings.

The cover page included the title, a university symbol, departmental identification, and succinct directions. In addition, each

participant was provided with the researcher's business card which was paper-clipped to the cover page.

The questionnaire was assembled with pages stapled to open like a book. Each page was staple 1/8 inch off-center with respect to the preceding page (Figure 3). This decision was made to aid in the turning of pages and to eliminate omission of pages—a consequence that was noted after the pretest.

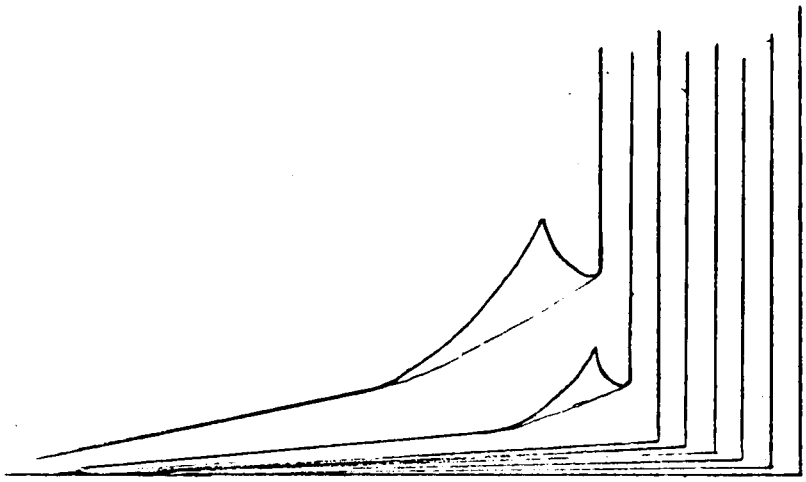


Figure 3. Lower Right Hand Corner of Questionnaire Showing Page Edges One-Eighth Inch Apart.

Pretest

The test instruments were pretested on a subsample of 37 socially active women apparel shoppers who were not included in the final sample. The pretest was conducted to ascertain clarity of the

measures, to determine if modifications needed to be made, and to determine the amount of time needed to complete the questionnaire.

Sample Selection

The focus of this research was on the shopping behavior of older women apparel shoppers with special emphasis on the readability of retail printed items used in the selection and purchase process. This research was exploratory in nature and justified the use of a judgemental sample. Churchill (1976) described a judgement sample as having sample elements that will serve the purpose and that are representative of the population of interest. Churchill (1976, p. 265) further states about a judgement sample, "When searching for ideas and insights, the researcher is not interested in sampling a cross section of opinion but rather in sampling those who have the requisite experience and knowledge to offer some perspective on the research question."

A deliberate effort was made to obtain participation by socially active women of a wide range of ages. The socially active woman was believed to be a potential consumer of apparel and consequently would be active in apparel shopping.

Needed for the research were potential apparel consumers of a wide range of ages. Lists of local organizations whose membership included women were obtained through the Knoxville Chamber of Commerce and the public library. Organizations approached to participate in the research were civic, professional, social, and religious

groups. Presidents of the organizations were contacted and requests were made regarding participation in the research. Organizations that participated were chapters of the American Association of Retired Persons, American Business Women's Association, Delta Kappa Gamma, Elderhostel participants at UT-K, Knoxville Business and Professional Women's Club, religious groups, and senior citizen's groups. Members of these organizations were deemed to be socially active, with a reasonable amount of discretionary income, and likely to be typical buyers of apparel products.

Sample Size

The sample consisted of 204 women respondents. Efforts were made to obtain adequate numbers of respondents by age group. Two hundred sixty-three questionnaires were completed; however, those persons identified as male, or having a social activity index of less than four points, or living in subsidized housing were not included in the analyses. The sample consisted of 15 women less than 35 years of age, 22 age 35-44 years, 33 age 45-54 years, 44 age 55-64 years, 49 age 55-64 years, 30 age 75 years and over, and 11 who did not report age.

Data Collection

Presidents of organizations were contacted by telephone, the research discussed, and a request was made for members to participate. A copy of the questionnaire and a letter of support of the research by Dr. Bill C. Wallace, chairman of the Knoxville-Knox

County Council on Aging (Appendix B), were mailed to the potential participating organizations. Upon agreement to participate in the research, the questionnaire was taken to a regular meeting of the group, the purpose was explained, and volunteers were solicited. The sight-light meter was used to adjust the lighting in the room to 20-30 footcandles. Confidentiality was emphasized and a sealed box was provided for the completed questionnaire.

Data Analysis Procedures

Statistical procedures were performed using the Statistical Analysis System (SAS)© computer programs. Initially the data were characterized with simple descriptive frequency statistics. Subsequently the analysis of the data involved two different tasks: analysis of variance for Hypotheses One and Two and chi-square analysis for Hypotheses Three through Thirty-Eight. The significance levels for Hypotheses One and Two were set at $\alpha = .05$ and for Hypotheses Three through Thirty-Eight at $\alpha = .10$.

Hypotheses One and Two were tested by a series of models using the general linear models (GLM) procedure. ACCURACY was measured by a right or wrong answer and EASE was measured by a yes or no answer to the option of clear and easy to read. A regression equation was generated for the prediction of ACCURACY and EASE of reading by age. Relationships obtained from the final models were graphically displayed after each model was evaluated for four specific ages—45, 55, 65, and 75.

Chi-square analysis was used to test for significant differences by age group for the hypotheses concerning self-assessment of eyesight, shopping behavior characteristics specific to eyesight condition, general shopping behavior characteristics, and use of information sources. Findings were reported in two-way contingency tables.

CHAPTER IV

RESULTS AND DISCUSSION

Detailed analyses of the findings are presented in this chapter. These findings are discussed under the following headings: (1) Description of Respondents, which includes demographics, social activities, and eyesight characteristics, (2) Hypotheses Concerning Readability of Retail Printed Items, (3) Hypotheses Concerning Self-assessment of Eyesight, (4) Hypotheses Concerning Selected Shopping Behavior Variables Specific to Eyesight Condition, (5) Hypotheses Concerning General Shopping Behavior, and (6) Hypotheses Concerning Use of Information Sources.

Description of Respondents

Two hundred sixty-three persons responded to the questionnaire. The following respondents were deleted from the analyses: males, persons living in subsidized housing, and those who omitted or had a total score less than four on the social activity questions (items 41-54). The sample consisted of 204 female respondents. Some of the respondents failed to answer all demographic questions; therefore, the total number of responses (n) varied for different questions.

Demographics

Demographic data collected included age, marital status, race, education, employment status, income, and housing.

Age. Participants ranged in age from 26 through 89 years with a mean age of 58.7 years, median age of 61 years, and the mode was 69 years. Respondents were grouped into six age groups (Table 18). The 65-74 age group represented over 25 percent, the largest group. Over 80 percent of the participants were age 45 and over, and 41 percent were age 65 and over.

Marital status and race. Nearly 53 percent of the respondents were MARRIED, and more than 27 percent were WIDOWED (Table 18). Over 98 percent were WHITE and less than 2 percent were BLACK.

Education. Approximately 23 percent of the respondents had COMPLETED HIGH SCHOOL, over 66 percent had attended SOME COLLEGE or more, and nearly 14 percent had a GRADUATE DEGREE. The mean, median, and mode were in the category, SOME COLLEGE. Participants were clearly an educated group. Fewer than 6 percent had COMPLETED GRADE SCHOOL or less, and approximately 11 percent had not COMPLETED HIGH SCHOOL (Table 18).

Employment status. Approximately 42 percent of the respondents were EMPLOYED FULL TIME (Table 18). Respondents who were RETIRED, NOT WORKING comprised 39 percent of the sample, while 7 percent were RETIRED, WORKING FULL TIME or RETIRED, WORKING PART TIME.

Income. Yearly income before taxes was divided into nine categories (Table 18). The mean by category was 4.67 and by dollars was $18,349.33; the median was category five or $20,000 to $24,999; and the mode, category three or $10,000 to 14,999. Approximately

Table 18. Demographic Characteristics of Respondents

Characteristic	Frequency	Percent
Age group (by category and years)		
1. Less than 35	15	7.77
2. 35-44	22	11.40
3. 45-54	33	17.10
4. 55-64	44	22.80
5. 65-74	49	25.39
6. 75 and over	30	15.54
	n = 193	100.00 (rounded)
Marital Status		
Never married	16	7.84
Married	108	52.94
Divorced	21	10.29
Separated	3	1.47
Widowed	56	27.45
	n = 204	100.00 (rounded)
Race		
White	201	98.53
Black	3	1.47
	n = 204	100.00
Education		
Some grade school	2	.99
Completed grade school	10	4.93
Some high school	11	5.42
Completed high school	46	22.66
Some college	69	33.99
Completed college	18	8.87
Some graduate school	19	9.36
Graduate degree	28	13.79
	n = 203	100.00 (rounded)
Employment Status		
Employed part time	13	6.47
Employed full time	85	42.29
Not employed, not retired	11	5.47
Retired, not working	78	38.81
Retired, working part time	11	5.47
Retired, working full time	3	1.49
	n = 201	100.00
Income (by category and dollar range)		
1. Less than $5,000	10	5.24
2. $5,000 to $9,999	18	9.42
3. $10,000 to $14,999	36	18.85
4. $15,000 to $19,999	28	14.66
5. $20,000 to $24,999	30	15.71
6. $25,000 to $34,999	25	13.09
7. $35,000 to $49,999	27	14.14
8. $50,000 to $99,999	16	8.38
9. $100,000 or more	1	.52
	n = 191	100.00 (rounded)
Housing		
Home owned	158	78.22
Home rented	9	4.46
Condominium or apartment owned	4	1.98
Condominium or apartment rented	19	9.41
Rented room	1	.50
Other	11	5.45
	n = 202	100.00 (rounded)

5 percent had an income of less than $5,000, while 9 percent had an income of $50,000 or more. With over 85 percent of the respondents having an income of $10,000 or greater, over 66 percent an income of $15,000 or greater, and 36 percent an income of $25,000 or greater, the sample was clearly a group which had the financial potential for actively participating in the marketplace.

Housing. Approximately 80 percent of the respondents lived in their own homes or apartments, while 14 percent lived in some form of rented housing (Table 18). Over 5 percent lived in housing categorized as OTHER which included living in a mobile home or living with a son or daughter.

Summary. Of the 204 respondents, approximately 19 percent were less than 45 years of age, 40 percent were middle-aged, and 41 percent were elderly. Over half were married and more than one-fourth were widowed. Two-thirds had an education beyond high school. Over 40 percent were employed full time, and approximately 40 percent were retired, not working. Two-thirds had an income of $15,000 or more, and over half had an income of $20,000 or more. More than 80 percent owned their residence.

These data serve to describe the participants of this research by major demographic characteristics. According to these demographics, the respondents met the criteria for selection of a sample of persons of a wide range of ages with apparent discretionary income. The reasonably high education level, home ownership, and employment status helped to support the fact that the respondents were a group with the potential and ability to participate in the marketplace.

Social Activities

Frequency of participation in social activities was reported by respondents (Table 19). The highest ranking social activities that respondents reported participation in ONCE A WEEK were: attending religious services, 73 percent; eating in a restaurant, 57 percent; attending civic or professional meetings, over 19 percent; and attending social organizations, 17 percent.

Rank and distribution for social activities that respondents participated in ONCE A MONTH were: civic or professional organizations, over 37 percent; social organization, over 27 percent; dining in a restaurant, nearly 19 percent; and gave a dinner party, over 17 percent.

Social activities that respondents participated in SEVERAL TIMES A YEAR were: gave a dinner party, nearly 50 percent; visited out-of-town, 43 percent; attended a social organization, 39 percent; attended a movie or play, 38 percent; and attended lectures or workshops, nearly 28 percent.

Social activities that respondents participated in ONCE OR TWICE A YEAR were: visited out-of-town, 45 percent; attended a movie or play, 32 percent; attended lectures or workshops, 31 percent; and took a trip outside the United States, 23 percent.

Participation in social activities reported as NOT AT ALL included: attending tournaments or shows, 86 percent; going on trips outside the United States, 76 percent; volunteer work, 52 percent; attending spectator sports events, 46 percent; and attending musical concerts, 30 percent.

Table 19. Participation in Social Activities

Social activity	Not at all (0)		Once or twice yr. (1)		Several times yr. (2)		Once a month (3)		Once wk. or more (4)	
	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Civic or professional meetings	20	10.26	31	15.90	33	16.92	73	37.44	38	19.49
Religious services	5	2.46	12	5.91	26	12.81	12	5.91	148	72.91
Social organizations	9	4.59	23	11.74	77	39.29	54	27.56	33	16.84
Lectures, seminars	35	17.95	61	31.28	54	27.69	19	9.74	26	13.33
Volunteer work	99	52.11	40	21.05	19	10.00	17	8.95	15	7.90
Musical concert	56	29.95	79	42.25	44	23.53	6	3.21	2	1.07
Movie or play	31	15.90	63	32.31	74	37.95	25	12.82	2	1.03
Spectator sports	86	45.75	33	17.55	52	27.66	13	6.92	4	2.13
Tournaments or shows	162	85.71	18	9.52	7	3.70	-	-	2	1.06
Gave dinner party	14	7.14	44	22.45	97	49.49	34	17.35	7	3.57
Eat in restaurant	1	.51	3	1.52	44	22.22	37	18.69	113	57.07
Visited out-of-town	10	5.03	89	44.72	86	43.22	8	4.02	6	3.02
Trip outside of U.S.	143	76.06	43	22.87	2	1.06	-	-	-	-
Other	14	66.67	1	4.76	-	-	3	14.29	3	14.29

Seven respondents indicated participation in OTHER social activities. Three persons (ages 62, 66, and 71) reported active participation in bridge clubs. Other older persons (between 65 and 79 years) reported weekly or monthly participation in golf, exercise clubs, hiking, and dancing.

A social activity index was obtained by summing the participant's responses. The five-point scale used for analysis was: NOT AT ALL (0), ONCE OR TWICE A WEEK (1), SEVERAL TIMES A YEAR (2), ONCE A MONTH (3), and ONCE A WEEK (4). Participants whose total score was less than four were regarded as too inactive for a sample defined as socially active, and therefore were deleted from the analyses. The social activity index ranged from four to 36, with a mean of 20.9, median of 21.0, and mode of 21.0. More than 56 percent of the respondents had a social activity index between 16 and 25, over half had an index greater than 20, and nearly one-fourth had an index above 25 (Table 20).

Table 20. Distribution of Social Activity Index

Index range	Frequency	Percent
4-10	9	4.41
11-15	31	15.20
16-20	56	27.45
21-25	59	28.92
26-30	38	18.63
31-36	11	5.39
	n = 204	100.00

Summary of social activities. Persons in this research were involved in many different social activities. Eight out of 10 had a social activity index of 16 or higher. Nearly three-fourths attended religious services once a week, and nearly six out of 10 ate a meal out once a week. Approximately 60 percent attended a civic or professional meeting once a month or more, and over 40 percent attended a social meeting once a month or more. Ninety-five percent visited out-of-town once a year or more, and approximately one-fourth traveled out of the United States once a year or more.

This research is a study of socially active women. Persons that are actively involved in social activities are believed to be conscious of appearance and interested in apparel, thus would be potential shoppers. From the data presented concerning the various types of activities and from the social activity index, the participants are believed to fulfill the requirement that the sample be a socially active group.

Eyesight Characteristics

Three questions were related to descriptive information about the respondent's eyesight (items 32-34). Participants were asked whether or not they had any vision problems, and if so which one(s) (Table 21). Approximately 32 percent reported they were NEARSIGHTED; 24 percent were FARSIGHTED; 19 percent had ASTIGMATISM; 9 percent had CATARACTS; 3 percent had GLAUCOMA; and 2 percent had received an INTRAOCULAR LENS IMPLANT. Approximately 23 percent reported they had NO VISION PROBLEMS and

Table 21. Rank and Distribution of Vision Problems

Vision problems	Rank	Frequency	Percent*
Nearsighted	1	64	31.84
Farsighted	2	48	23.88
No Vision Problems	3	46	22.89
Astigmatisim	4	38	18.91
Cataracts	5	18	8.96
Other	6	13	6.47
Don't Know	7	8	3.98
Glaucoma	8	6	2.99
Lens Implant	9	4	1.99
		n = 201	*

*Respondents were asked to identify one or more vision problems; therefore, the total percentage exceeds 100.

4 percent reported I DON'T KNOW. Vision problems identified as OTHER were stated as old age, ulcers, and vitreous detachments. Ninety-six percent of the participants were knowledgeable about their eyesight condition and could identify their eyesight problems.

Nearly 44 percent indicated their eyes were checked LESS THAN A YEAR AGO and over 80 percent had their eyes checked by an eye specialist within the past two years (Table 22). Nearly 13 percent indicated having an eye examination THREE TO FIVE YEARS AGO, while more than 5 percent reported FIVE OR MORE YEARS AGO. Over 50 percent of the respondents reported wearing BIFOCAL LENSES; 15 percent wore TRIFOCAL LENSES; over 7 percent wore GLASSES WITHOUT READING LENSES; and 7 percent wore CONTACT LENSES (Table 23). Eighteen percent reported wearing neither glasses nor contact lenses.

Table 22. Time Since Eyes Were Checked by a Specialist

Time	Rank	Frequency[a]	Percent
Less than one year	1	89	43.84
One to two years ago	2	75	36.95
Three to five years ago	3	36	12.81
Five or more years ago	4	11	5.42
Don't know	5	2	0.99
		n = 203	100.00 (rounded)

[a]No response = 1

Table 23. Type of Corrective Lenses Worn

Type of lenses	Frequency[a]	Percent
Glasses without reading lenses	15	7.46
Bifocal lenses	101	50.25
Trifocal lenses	30	14.93
Reading glasses	5	2.49
Contact lenses with glasses	3	1.49
Contact lenses without glasses	11	5.47
Neither glasses nor contacts	36	17.91
	n = 201	100.00

[a]No response = 3

Summary of eyesight characteristics. Approximately three-fourths of the respondents had some kind of vision problem. Eight out of 10 had had their eyes checked by a specialist within the past two years, and more than eight out of 10 wore some type of glasses or contact lenses. These findings indicated that most of the respondents did not have perfect eyesight, but had taken measures to provide adequate vision. Seven out of 10 of the respondents wore some type of reading lenses. Reading lenses are generally prescribed to correct sight deficiencies for distinguishing small, near objects. The sample seemed appropriate for the testing of readability of printed items.

Hypotheses Concerning Readability of Retail Printed Items

Two hypotheses were formulated and tested concerning readability of retail printed items (price tags, care labels, fiber labels, and cash and credit receipts) by age group of women apparel shoppers. The readability test was composed of 12 printed items which were varied by using four sizes of type and three intensities of print. Hypothesis One was a test of ACCURACY of reading. ACCURACY was measured as either an accurate or inaccurate answer and was analyzed for variance by age. Hypothesis Two was a test of EASE of reading. EASE was measured on a four-point scale. For the analysis of variance, responses were considered as (a) easy to read, which included responses to the option CLEAR AND EASY TO READ or (b) not easy to read, which included all other options. EASE was analyzed by age.

The discussion of both hypotheses includes descriptive statistics and findings by analysis of variance procedures. The findings from the two hypotheses follow.

Null Hypothesis One

There will be no significant difference by age in accuracy of reading retail printed items (items A-1 through M-1).

Descriptive statistics. ACCURACY of reading was measured as an accurate or inaccurate answer for an item circled on the Readability Instrument. Frequency distributions, percentages, and rank of items read accurately are shown in Table 24.

Table 24. Distribution and Rank of ACCURACY of Readings of Retail Printed Items at Two Levels

Retail print item			Accurate		Not accurate			
Questionnaire item	Size of type	Intensity of print	frequency	percent	frequency	percent	Total	Rank of accuracy
C1	6 pt.	light	188	97.92	4	2.08	192	8
G1	6 pt.	medium	152	80.42	37	19.58	189	9
L1	6 pt.	dark	189	99.47	1	.53	190	4
F1	8 pt.	light	192	100.00	0	.00	192	1*
J1	8 pt.	medium	194	98.49	1	.51	195	6
B1	8 pt.	dark	190	98.95	2	1.04	192	5
K1	11 pt.	light	195	100.00	0	.00	195	1*
A1	11 pt.	medium	194	99.49	1	.51	195	2
E1	11 pt.	dark	193	100.00	0	.00	193	1*
M1	14 pt.	light	192	99.48	1	.52	193	3
D1	14 pt.	medium	190	98.45	3	1.55	193	7
H1	14 pt.	dark	195	100.00	0	.00	195	1*

*100 percent correct

The percentage of subjects that responded correctly to the 12 retail printed items ranged from 80 to 100 percent. Four printed items

were read correctly 100 percent of the time: item E (11-point type, dark intensity), item F (8-point type, light intensity), item H (14-point type, dark intensity), and item K (11-point type, light intensity). Item G (6-point type, medium intensity) was the most difficult to read, as indicated by only approximately 80 percent reading this item correctly. All other items were read correctly by approximately 98 to 99 percent of the respondents. In general, the percentage of correct readings was high for all items, except item G. The type style, which was a stylized design of the figure "eight," may have accounted for incorrect answers here.

Analysis of variance. The general linear models (GLM) procedure in SAS© was used to test the effect of age of respondents for ACCURACY of reading the printed items.

The procedure for testing this hypothesis involved a series of models, with each being used to develop the succeeding model. The initial model contained second-order polynomial terms for age, size, and intensity as well as all possible combinations of two-way interactions. With each analysis, the nonsignificant variables were partitioned-out, i.e., not included in the model that followed. The test of significance to determine if each of the terms was to be retained in the model was based on Type I sums of squares (sequential). Analysis of variance for ACCURACY of reading is shown in Table 25. From the final model, a regression equation was generated for the prediction of ACCURACY by age.

Table 25. ACCURACY of Reading Mean Square Values and Significance of F-ratios

Source	df	Mean square	
Total	2,199		
Size(s)	3	.55**	
Linear (L)	1		1.06**
Quadratic (Q)	1		.63**
Intensity (i)	2	.43**	
Linear (L)	--[a]		--[a]
Quadratic (Q)	1		.04 NS
s x i	6	.46**	
Ls x Li	--[a]		--[a]
Ls x Qi	1		.05 NS
Qs x Li	--[a]		--[a]
Qs x Qi	1		.08*
Age (ag)	5	.12**	
Linear (L)	1		.53**
Quadratic (Q)	--[a]		--[a]
s x a	3	.01**	
Ls x Lag	1		.61**
Ls x Qag	--[a]		--[a]
Qs x Lag	1		.41**
Qs x Qag	1		.0003 NS
Residual	2,190	.0186	

[a]These terms were deleted in the previous model.

*p < .05

**p < .0001

NS p > .05

The polynominal equation for ACCURACY of reading was:

$$Y = 1.2609 - 0.1745 \text{ size} + 0.0276 \text{ size}^2 + 0.0019 \text{ size}^2 \times \text{intensity}^2 - 0.0083 \text{ age} + 0.0057 \text{ size} \times \text{age} - 0.0009 \text{ size}^2 \times \text{age}.$$

From this equation, graphs were developed to illustrate the prediction of ACCURACY of reading by age for four sizes of type and three levels of intensity of print. Contour graphs have been used to illustrate prediction percentages for size of type when intensity was increased from light to dark. Three-dimensional graphs illustrate more vividly the changes derived when size of type and intensity of print were increased. ACCURACY of reading has been illustrated for ages 45, 55, 65 and 75 years. Size of type is represented along the ordinate with a scale of 1.0 to 4.0. The sizes of type with corresponding locations are: 6-point (1.0), 8-point (2.0), 11-point (3.0), and 14-point (4.0). Intensity of print is represented along the abscissa by: light (1), medium (2), and dark (3).

The main effects of size, intensity, and age as well as the interactions of size and intensity and size and age were significant at the .0001 level (Table 25). Differences attributable to second order effects varied in significance levels. The null hypothesis was rejected, and the conclusion was made that ACCURACY of reading retail printed items was significantly related to age.

Evaluation for age 45. From the equations, the following predictions estimate the means of a population of 45 year olds for ACCURACY of reading.

1. For 6-point type of light intensity, ACCURACY can be predicted at a level of 96.1 percent (Figure 4), while for 6-point type of dark intensity, ACCURACY can be predicted at 99.9 percent (Figure 5).

2. Prediction level for ACCURACY of reading light intensity increased from 96.1 percent for 6-point type (Figure 4), to 99.7 percent for 8-point type (Figure 5), and to 100.0 percent for slightly larger than 8-point through 14-point type (Figure 4).

3. For 8-point type of the three intensities, ACCURACY can be predicted at a level of 99.7 percent (Figure 5).

4. For 11-point and 14-point type of the three intensities, ACCURACY can be predicted at a level of 100 percent for age 45 (Figure 4).

Evaluation for age 55. From the equations, the following predictions estimate the means of a population of 55 year olds for ACCURACY of reading.

1. For 6-point type of light intensity, ACCURACY of reading can be predicted at a level of 92.6 percent (Figure 6), while for 6-point type of dark intensity, ACCURACY can be predicted at 96.6 percent (Figure 7).

2. Prediction level for ACCURACY of reading light intensity increased from 92.6 percent for 6-point type (Figure 6), to 99.4 percent for 8-point type (Figure 7), and to 100.0 percent for slightly larger than 8-point through 14-point type (Figure 6).

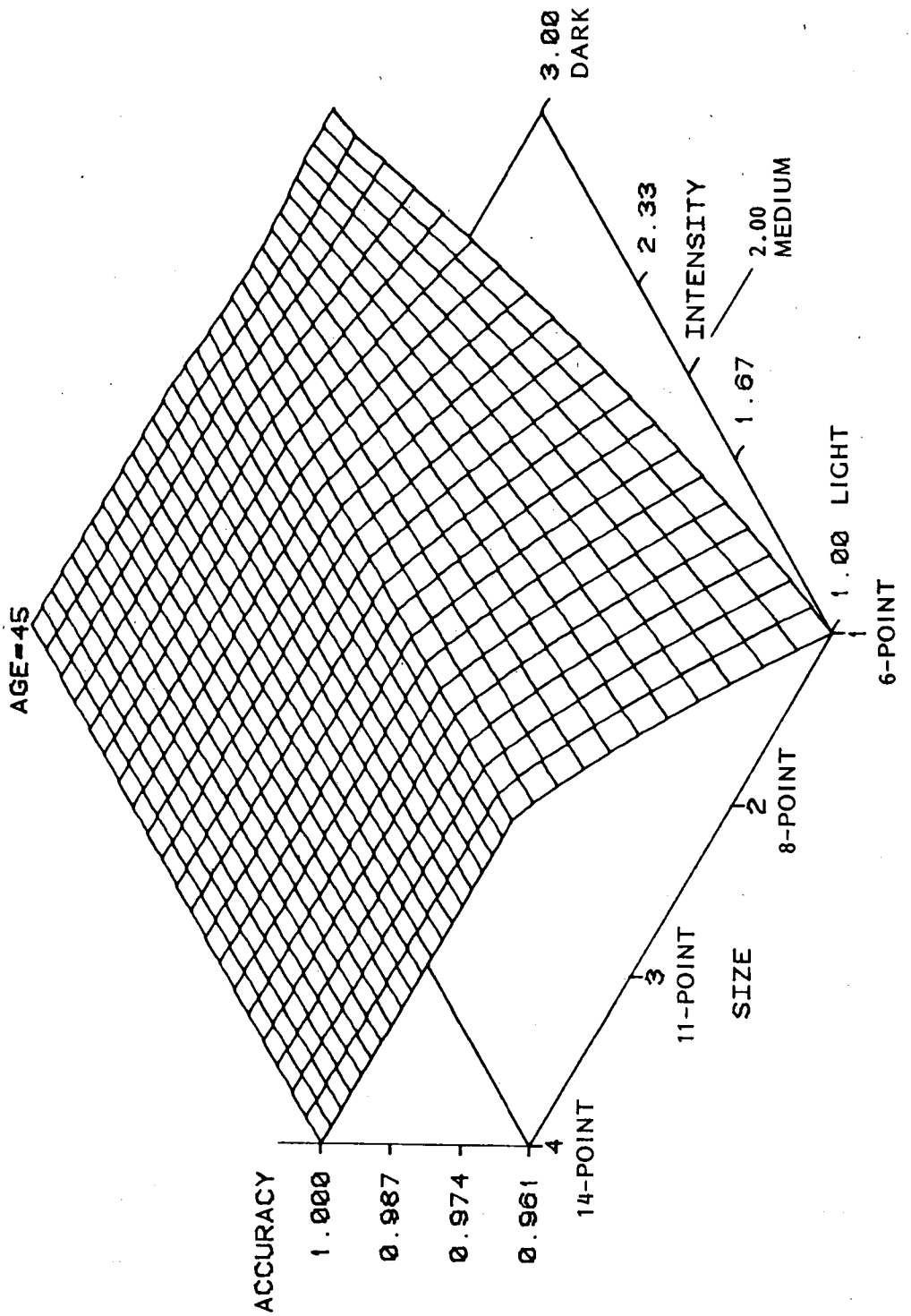


Figure 4. ACCURACY of Reading, Prediction for Age 45 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

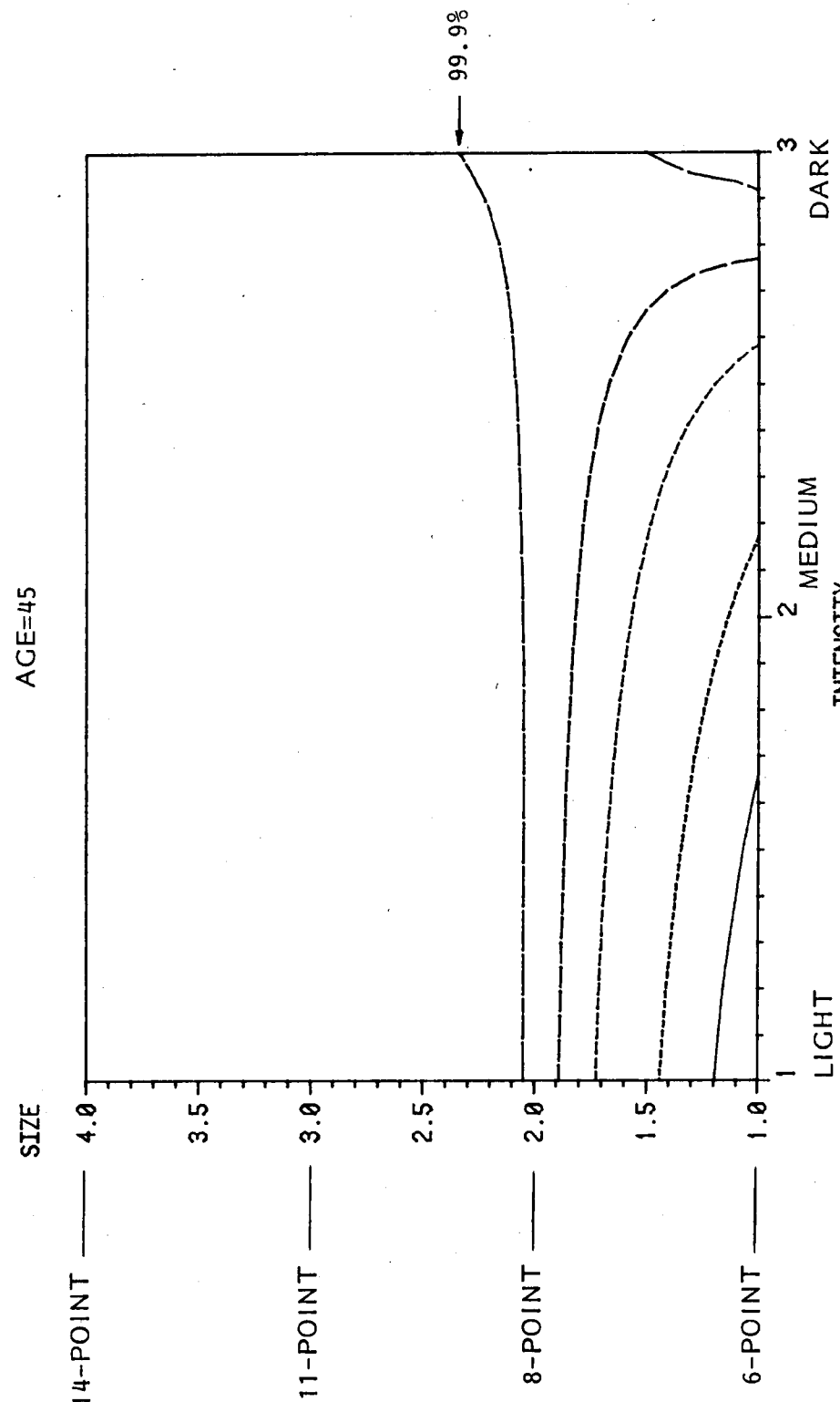


Figure 5. ACCURACY of Reading, Prediction for Age 45 by Size of Type and Intensity of Print, Shown on Contour Graph.

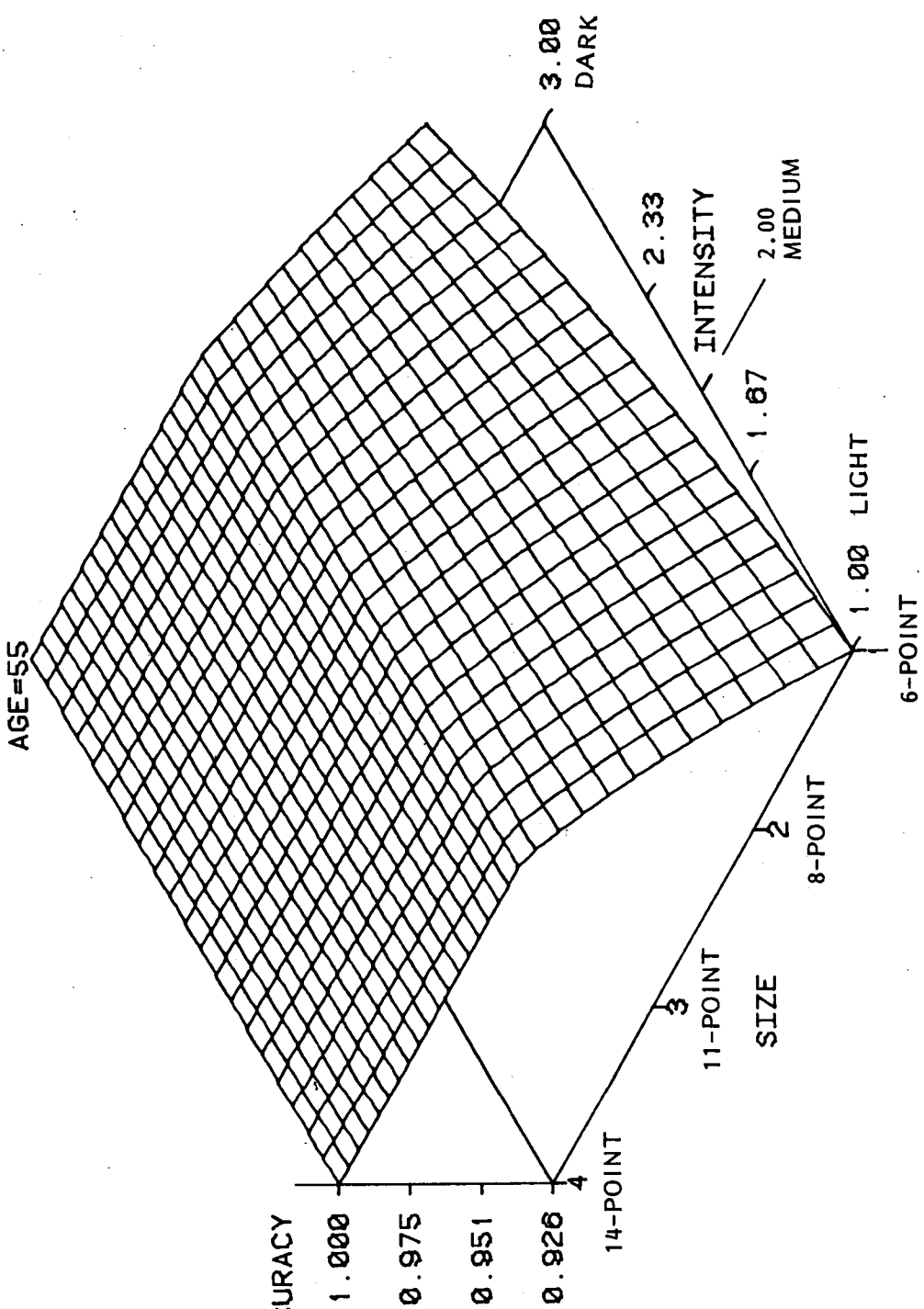


Figure 6. ACCURACY of Reading, Prediction for Age 55 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

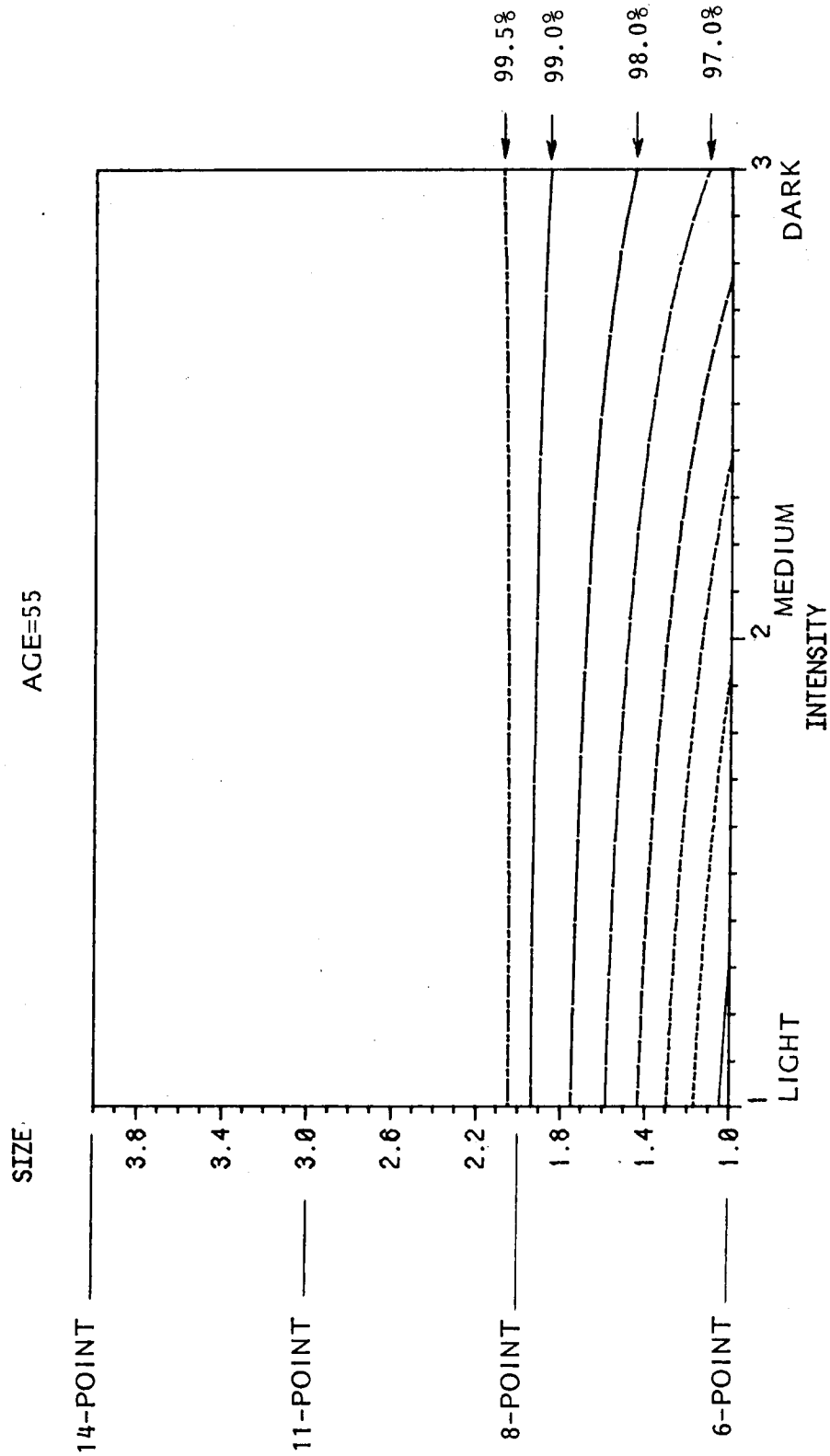


Figure 7. ACCURACY of Reading, Prediction for Age 55 by Size of Type and Intensity of Print, Shown on Contour Graph.

3. For 8-point type of light intensity, ACCURACY can be predicted at a level of 99.3 percent and for dark intensity at 99.4 percent (Figure 7).

4. For 11-point and 14-point type of all three intensities, ACCURACY can be predicted at a level of 100.0 percent for age 55 (Figure 6).

5. Prediction of ACCURACY for age 55 differed slightly from that of age 45 in that the range was increased. The prediction range for age 55 was 92.6 to 100.0 (Figure 6), whereas the prediction range for age 45 was 96.1 to 100.0 (Figure 4). ACCURACY could be predicted at a lower percentage for age 55 than for age 45.

Evaluation for age 65. From the equations, the following predictions estimate the means of a population of 65 year olds for ACCURACY of reading.

1. For 6-point type of light intensity, ACCURACY of reading can be predicted at a level of 89.0 percent (Figure 8), while for 6-point type of dark intensity, ACCURACY can be predicted at 93.2 percent (Figure 9).

2. Prediction level for ACCURACY of reading light intensity increased from 89.0 percent for 6-point type (Figure 8) to 98.8 percent for 8-point type (Figure 9) and to 100.0 percent for slightly larger than 8-point through 14-point type (Figure 8).

3. For 8-point type of all three intensities, ACCURACY can be predicted at a level of 98.8 percent (Figure 9).

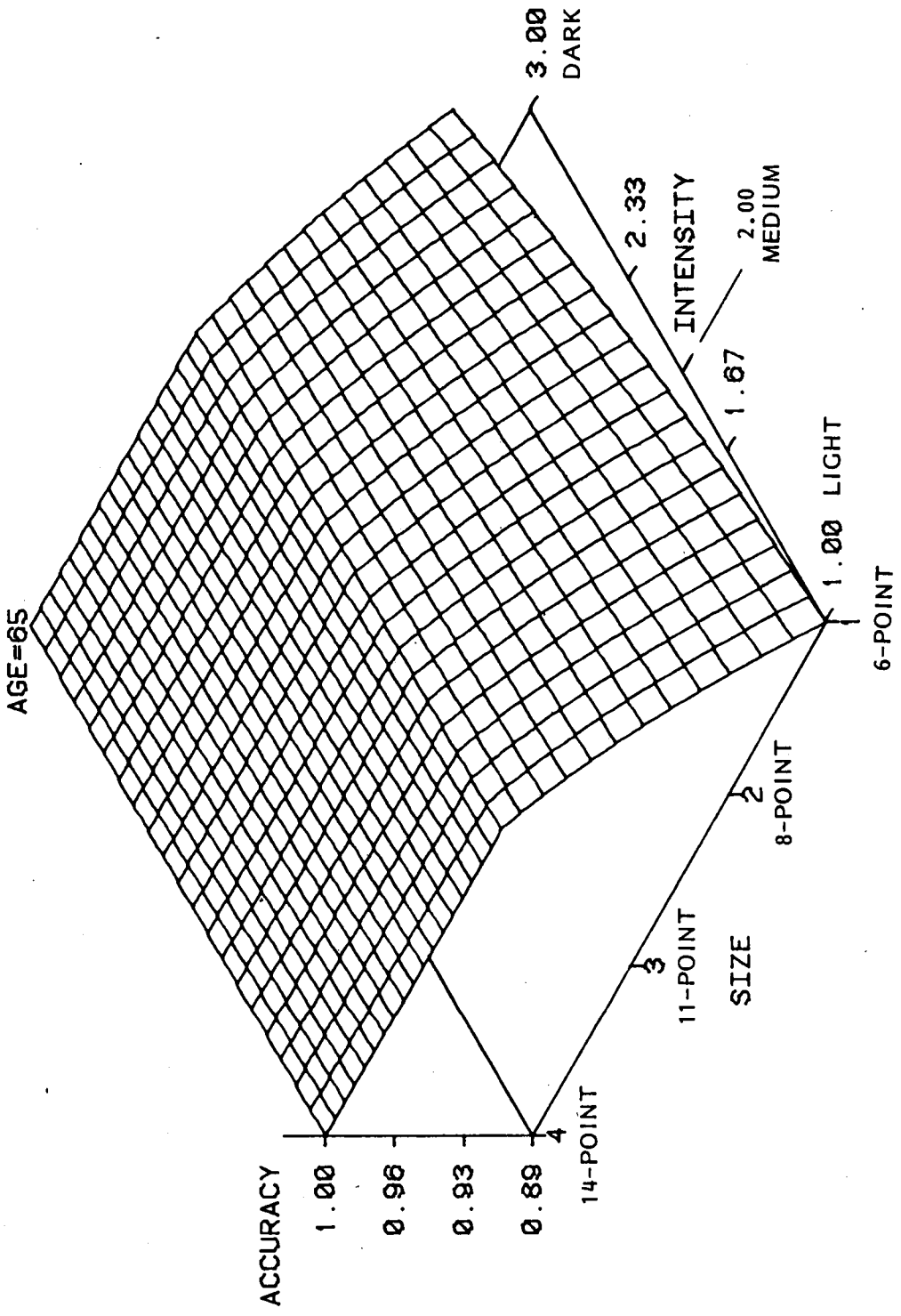


Figure 8. ACCURACY of Reading, Prediction for Age 65 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

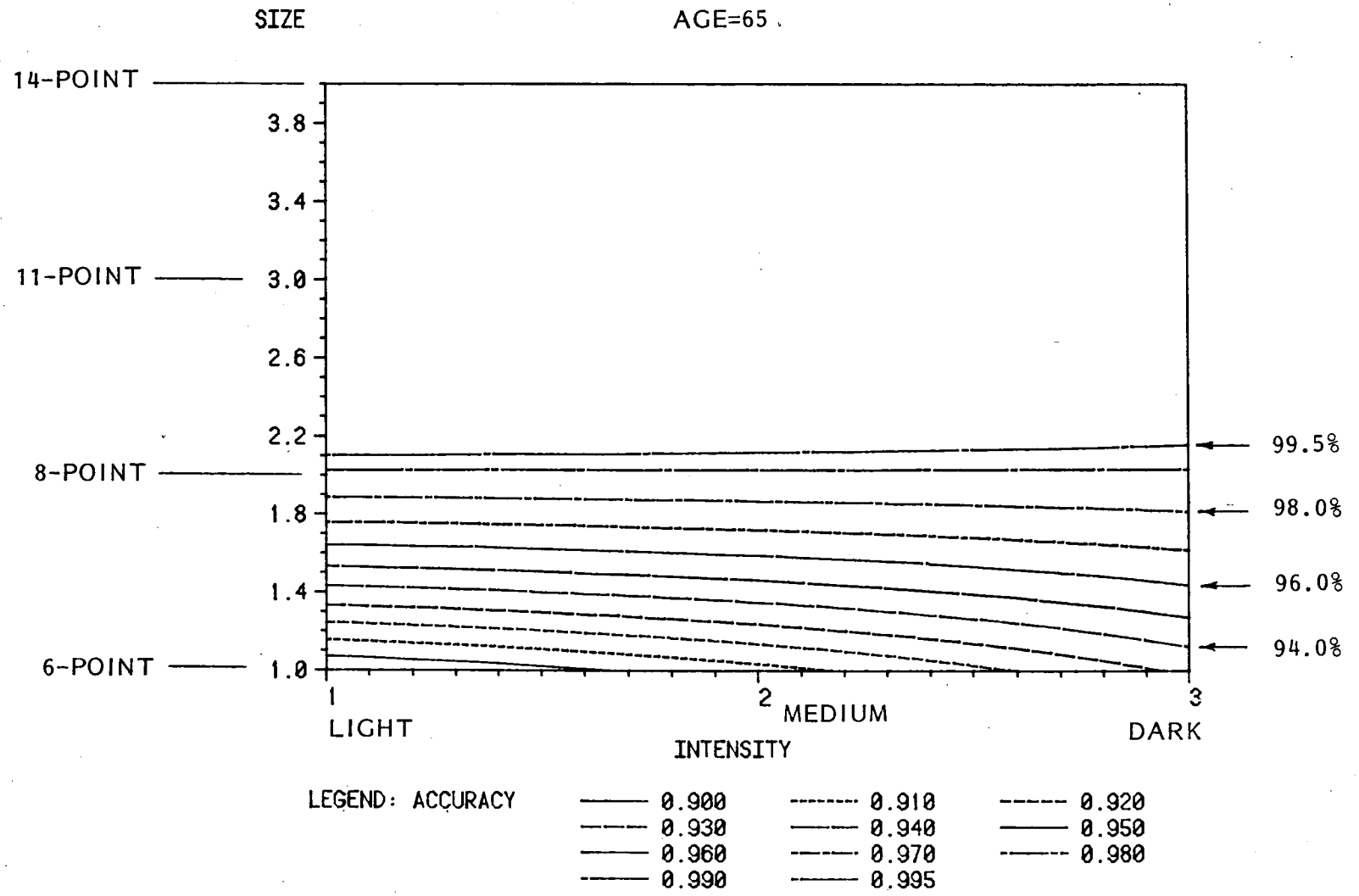


Figure 9. ACCURACY of Reading, Prediction for Age 65 by Size of Type and Intensity of Print, Shown on Contour Graph.

4. For 11-point and 14-point type of all three intensities, ACCURACY of reading can be predicted at a level of 100.0 percent for age 65 (Figure 8).

5. Prediction of ACCURACY for age 65 differed somewhat from that of age 55 in that the range was increased. The prediction range for age 65 was 89.0 to 100.0 (Figure 8), whereas the prediction range for age 55 was 92.6 to 100.0 (Figure 6). ACCURACY could be predicted at a lower percentage for age 65 than for age 55.

Evaluation for age 75. From the equations, the following predictions estimate the means of a population of 75 year olds for ACCURACY of reading.

1. For 6-point type of light intensity, ACCURACY of reading can be predicted at a level of 86.0 percent (Figure 10), while for 6-point type of dark intensity, ACCURACY can be predicted at 88.9 percent (Figure 11).

2. Prediction level for ACCURACY of reading light intensity increased from 86.0 percent for 6-point type (Figure 10), to 98.3 percent for 8-point type (Figure 11), and to 100.0 percent for slightly larger than 8-point through 14-point type (Figure 10).

3. For 8-point type of all three intensities, ACCURACY can be predicted at a level of 98.3 percent (Figure 11).

4. For 11-point and 14-point type of all three intensities, ACCURACY can be predicted at a level of 100.0 percent for age 75 (Figure 10).

5. Prediction of ACCURACY for age 75 differed from that of age 65 in that the range was increased. The prediction range for age 75

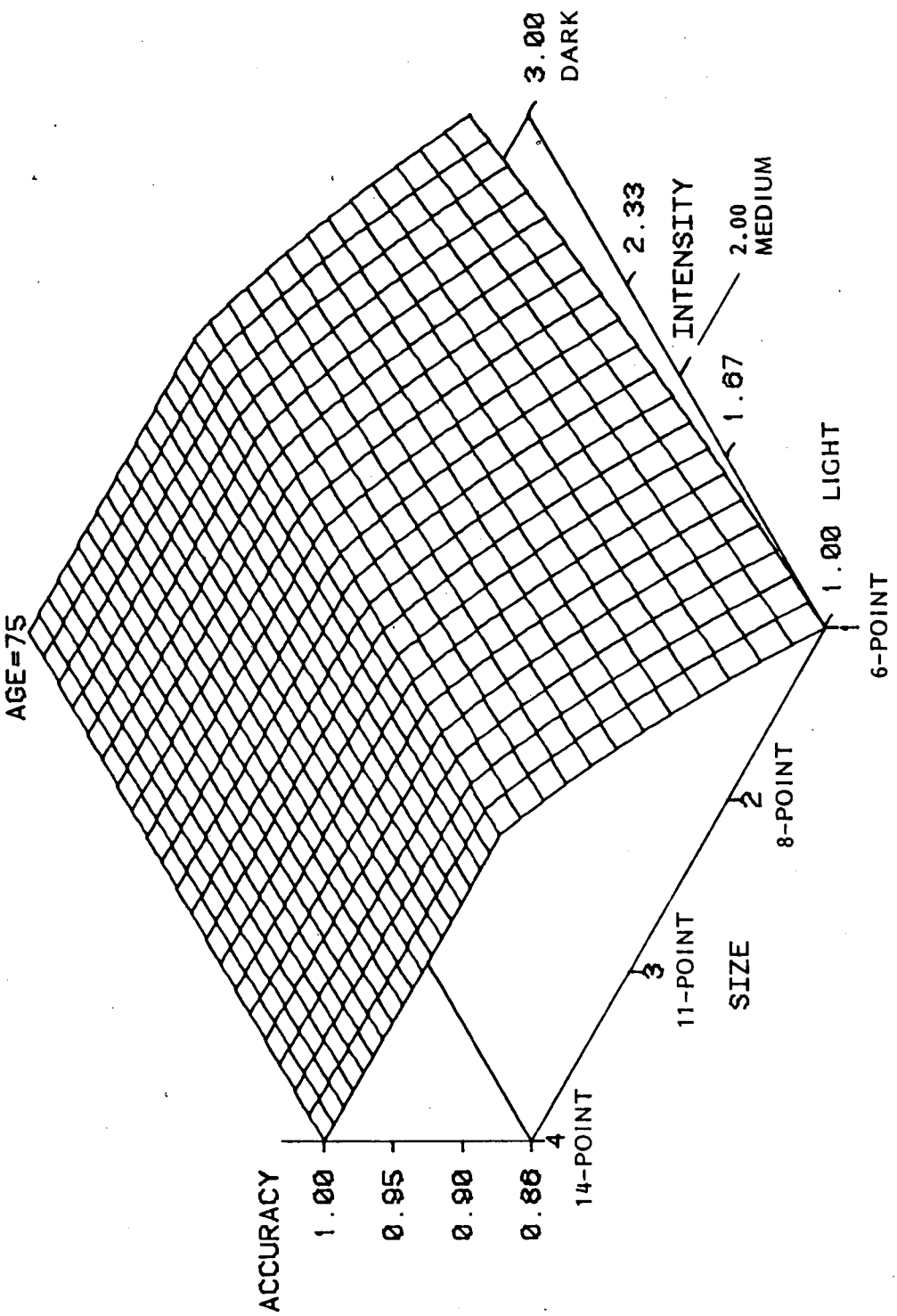


Figure 10. ACCURACY of Reading, Prediction for Age 75 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

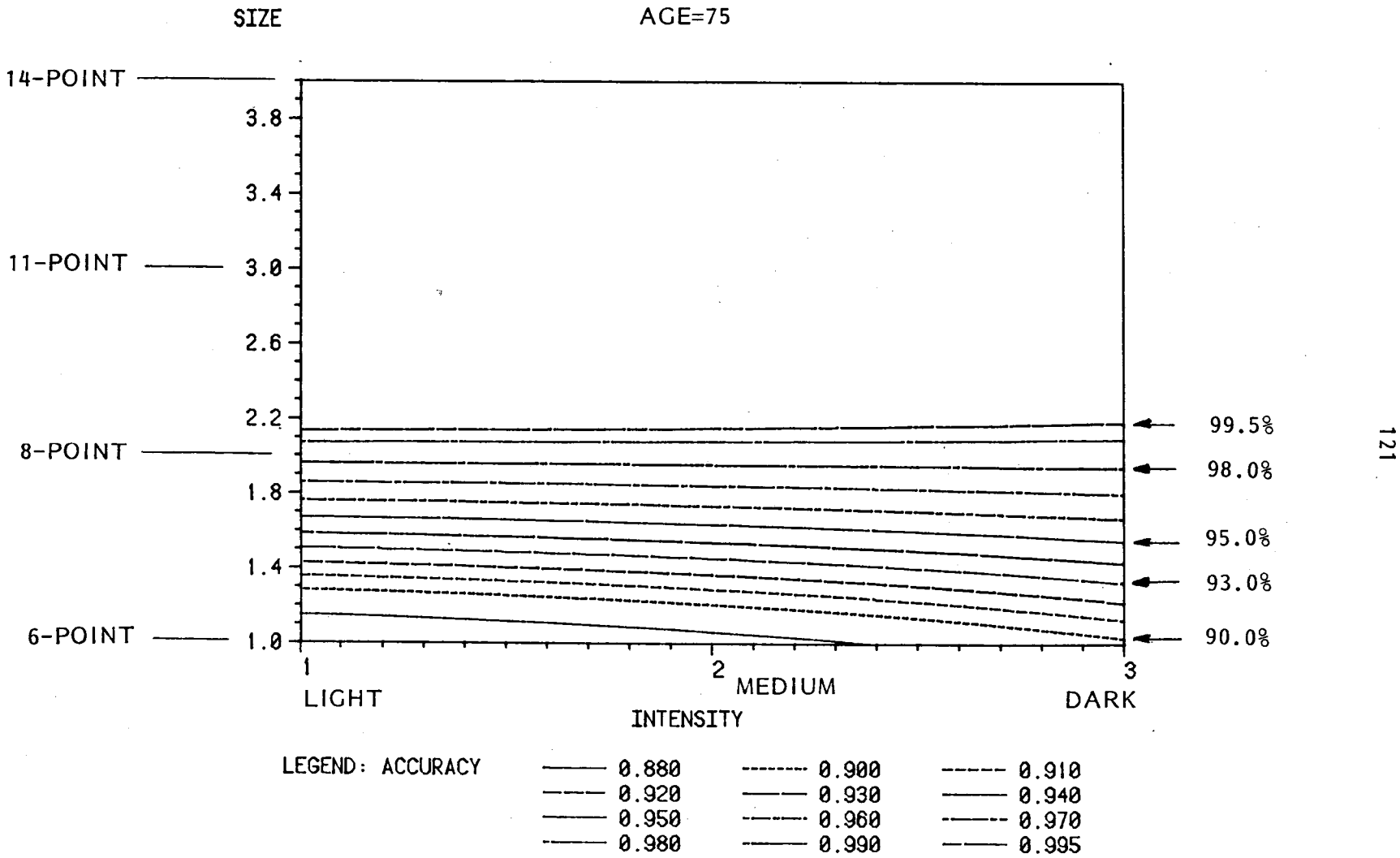


Figure 11. ACCURACY of Reading, Prediction for Age 75 by Size of Type and Intensity of Print, Shown on Contour Graph.

was 86.0 to 100.0 (Figure 10), whereas the prediction range for age 65 was 89.0 to 100.0 (Figure 8). ACCURACY could be predicted at a lower percentage for age 75 than for age 65.

Summary. The following statements summarize the findings of the prediction equation for ACCURACY of reading:

1. The prediction level for ACCURACY of reading 6-point type of light intensity declined with each succeeding age.

2. The prediction level for ACCURACY of reading 6-point type of light intensity was less than for 6-point type of dark intensity for each age.

3. The prediction level for ACCURACY of reading 6-point type of dark intensity declined with each succeeding age.

4. The prediction level for ACCURACY of reading 8-point type of the three intensities was high for all ages, but declined slightly as age increased.

5. The prediction level for ACCURACY of reading for 8-point type of light intensity was greater than for 6-point type of light intensity for all ages, and the differential increased markedly as age increased.

6. The peak or break-point at which ACCURACY could be predicted at 100.0 percent was at approximately 8½-point type of any of the three intensity levels, for each of the four ages.

7. The prediction range for ACCURACY of reading increased as age increased, which means that at the youngest age level the people are more alike in their ACCURACY of reading, therefore one can predict better for this group than for the elderly.

Null Hypothesis Two

There will be no significant difference by age in ease of reading retail printed items (items A-2 through M-2).

Descriptive statistics. EASE of reading was measured on a 4-point scale: NOT READABLE (0), BARELY READABLE (1), READABLE WITH SOME EFFORT (2), and CLEAR AND EASY TO READ (3). Respondents circled the appropriate choice on the Readability Instrument. Frequency distributions, percentages, and rank of the items for EASE of reading are shown in Table 26.

The percentage of subjects that responded CLEAR AND EASY TO READ for the 12 items ranged from more than 5 percent to 99 percent. Item G (6-point type, medium intensity) was the most difficult to read with over 15 percent of the subjects identifying it as NOT READABLE, over 45 percent identifying it as BARELY READABLE, and 33 percent identifying it as READABLE WITH SOME EFFORT. Item H (14-point type, dark intensity) was identified as the easiest to read with 99 percent assessing it as CLEAR AND EASY TO READ and the remaining 1 percent as READABLE WITH SOME EFFORT. The 14-point type of medium intensity ranked fifth and 14-point type of light intensity ranked eighth. Item M, which was 14-point type of light intensity, was ranked reasonably low considering the large size of type. This item lacked clarity in that the boldness of the different numerals was not consistent; however, this type of inconsistency can be seen repeatedly in retail printing. The three items of 11-point type were ranked as second (dark intensity), third (medium intensity), and

Table 26. Distribution and Rank of EASE of Readings of Retail Printed Items at Four Levels

Retail print items			Ease of reading									
			Not readable		Barely readable		Readable with some effort		Clear and easy to read			
Questionnaire item	Size of type	Intensity of print	frequency	percent	frequency	percent	frequency	percent	frequency	percent	Total	Rank of ease of reading
C2	6 pt.	light	7	3.53	49	24.75	188	59.60	24	12.12	198	11
G2	6 pt.	medium	31	15.66	90	45.45	66	33.33	11	5.56	198	12
L2	6 pt.	dark	7	3.52	44	22.11	107	53.77	41	20.60	199	10
F2	8 pt.	light	1	.51	3	1.53	79	40.30	113	57.65	196	9
J2	8 pt.	medium	1	.50	1	.50	35	17.59	162	81.41	199	6
B2	8 pt.	dark	--	--	3	1.55	34	17.53	157	80.92	194	7
K2	11 pt.	light	1	.50	2	1.00	19	9.50	178	89.00	200	4
A2	11 pt.	medium	2	1.01	--	--	8	4.06	187	94.92	197	3
E2	11 pt.	dark	--	--	--	--	6	3.06	190	96.94	196	2
M2	14 pt.	light	--	--	4	2.01	48	24.12	147	73.87	199	8
D2	14 pt.	medium	2	1.01	1	.51	29	14.72	165	83.76	197	5
H2	14 pt.	dark	--	--	--	--	2	1.00	198	99.00	200	1

fourth (light intensity). Items of 6-point type were the most difficult to read according to the rankings. Item G, 6-point type of medium intensity, was ranked the most difficult, which may be attributed to a style of type that was somewhat unusual and less common in retail printing.

Analysis of variance. The general linear models (GLM) procedure in SAS© was used to test the effect of age of respondents on EASE of reading the printed items. For this analysis, the data used were the responses to the option CLEAR AND EASY TO READ, hereafter referred to as EASE. Responses to the other three options were considered not easy to read.

The procedure for testing this hypothesis involved a series of models, with each being used to develop the succeeding model. The initial model contained second-order polynomial terms for age, size, and intensity as well as all possible combinations of two-way interactions. With each analysis, the nonsignificant variables were partitioned-out, i.e., not included in the model that followed. The test of significance to determine if each of the terms was to be retained in the model was based on Type I sums of squares (sequential). Analysis of variance for EASE of reading is shown in Table 27. From the final model, a regression equation was generated for the prediction of EASE of reading by age.

The polynominal equation for EASE of reading was:

Table 27. EASE of Reading Mean Square Values and Significance of F-ratios

Source	df	Mean square	
Total	2,242		
Size(s)	3	75.1766***	
Linear (L)	1		159.33***
Quadratic (Q)	1		65.45***
Intensity (i)	2	4.71***	
Linear (L)	1		9.46***
Quadratic (Q)	--[a]		--[a]
s x i	6	.9466***	
Ls x Li	1		.62*
Ls x Qi	--[a]		--[a]
Qs x Li	--[a]		--[a]
Qs x Qi	1		.004 NS
Age (ag)	5	.3065*	
Linear (L)	--[a]		--[a]
Quadratic (Q)	1		.24 NS
s x a	3	.1033*	
Ls x Lag	1		.89**
Ls x Qag	--[a]		--[a]
Qs x Lag	1		.63*
Qs x Qag	1		.03 NS
Residual	2,233		

[a]These terms were deleted in the previous model.

*p < .05

**p < .01

***p < .0001

NS p > .05

$$Y = -1.1050 + 1.3787 \text{ size} - 0.2173 \text{ size}^2 + 0.0391 \text{ intensity} + 0.0131 \text{ size} \times \text{intensity} + 0.0003 \text{ size}^2 \times \text{intensity}^2 + 0.0000 \text{ age}^2 - 0.0053 \text{ size} \times \text{age} + 0.0006 \text{ size}^2 \times \text{age} + 0.0000 \text{ size}^2 \times \text{age}^2.$$

From this equation, graphs were developed to illustrate the prediction of EASE of reading by age for four sizes of type and three levels of intensity of print. Contour graphs have been used to illustrate prediction percentages for size of type when intensity was increased from light to dark. Three-dimensional graphs illustrate more vividly the changes derived when size of type and intensity of print were increased. EASE of reading is illustrated for ages 45, 55, 65 and 75 years. Size of type is represented along the ordinate with a scale of 1.0 to 4.0. The sizes of type with corresponding locations are: 6-point (1.0), 8-point (2.0), 11-point (3.0), and 14-point (4.0). Intensity of print is represented along the abscissa by: light (1), medium (2), and dark (3).

The main effects of size and intensity as well as the interactions of size and intensity and second order size were significant at .0001 level (Table 26). Differences attributed to other effects varied in significance. The null hypothesis was rejected, and the conclusion was made that EASE of reading is significantly related to age.

Evaluation for age 45. From the equations, the following predictions estimate the means of a population of 45 year olds for EASE of reading.

1. For 6-point type of light intensity, EASE of reading can be predicted at a level of 4.0 percent (Figure 12), for medium intensity at 9.9 percent, and for dark intensity at 13.5 percent (Figure 13).

2. Prediction of EASE of reading for light intensity increased from a level of 4.0 percent for 6-point type (Figure 12), to 63.0 percent for 8-point type, to 87.0 percent for 11-point type, and decreased to 73.0 percent for 14-point type (Figure 13).

3. For 8-point type of light intensity, EASE can be predicted at a level of 63.0 percent, for medium intensity at 70.0 percent and for dark intensity at 77.5 percent (Figure 13).

4. For 11-point type of light intensity, EASE can be predicted at a level of 87.0 percent, for medium intensity at 95.2 percent, and for dark intensity at greater than 99.0 percent (Figure 13).

5. For 14-point type of light intensity, EASE can be predicted at a level of 73.0 percent, for medium intensity at 85.0 percent, and for dark intensity at 95.0 percent (Figure 13).

Evaluation for age 55. From the equations, the following predictions estimate the means of a population of 55 year olds for EASE of reading.

1. For 6-point type of light intensity, EASE of reading can be predicted at a level of 6.0 percent (Figure 14), for medium at 12.0 percent, and for dark intensity at 15.0 percent (Figure 15).

2. Prediction of EASE of reading for light intensity increased from a level of 6.0 percent for 6-point type (Figure 14), to 62.0 percent for 8-point type, to 85.5 percent for 11-point type, and then decreased to 72.0 percent for 14-point type (Figure 15).

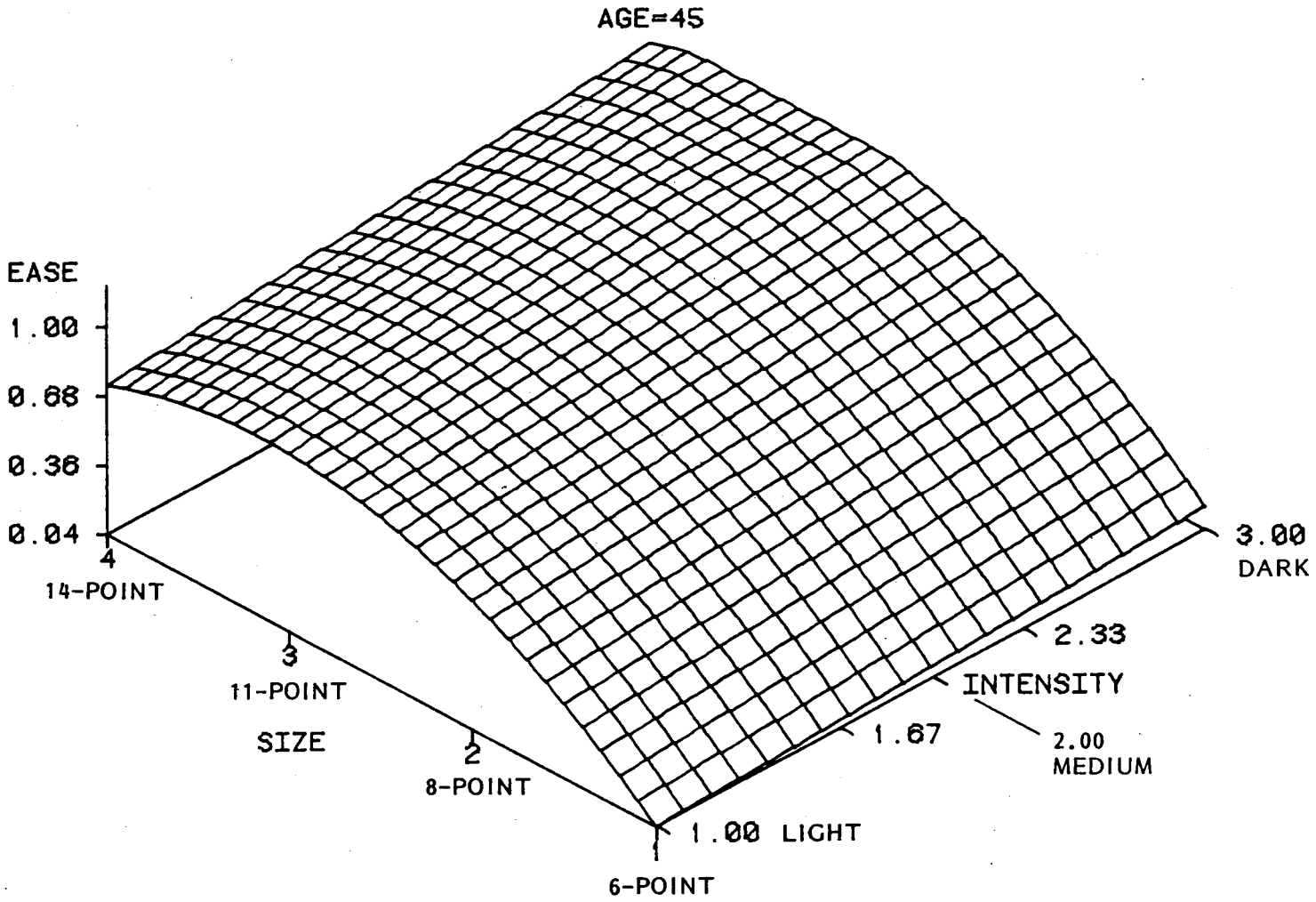


Figure 12. EASE of Reading, Prediction for Age 45 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

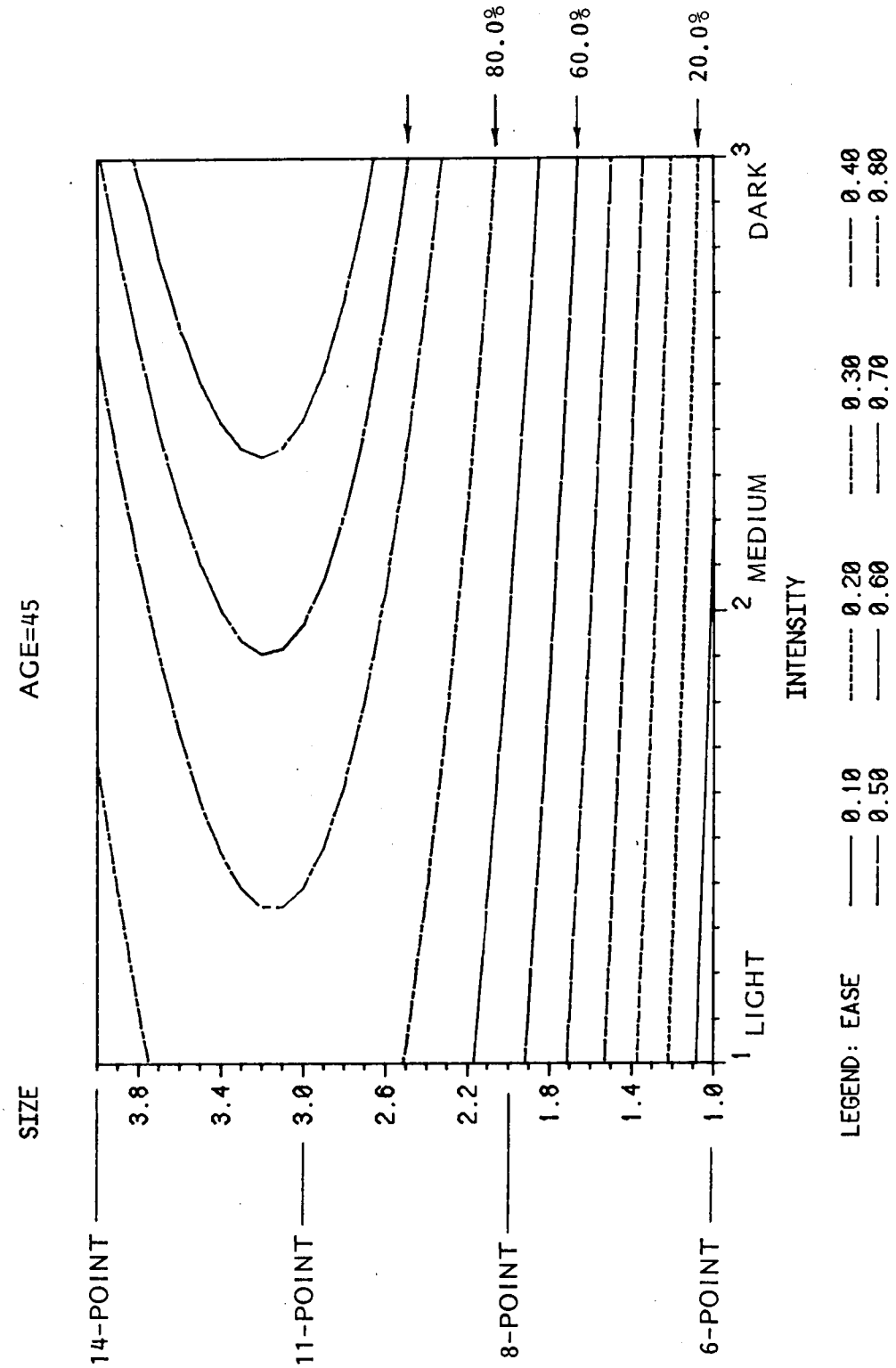


Figure 13. EASE of Reading, Prediction for Age 45 by Size of Type and Intensity of Print, Shown on Contour Graph.

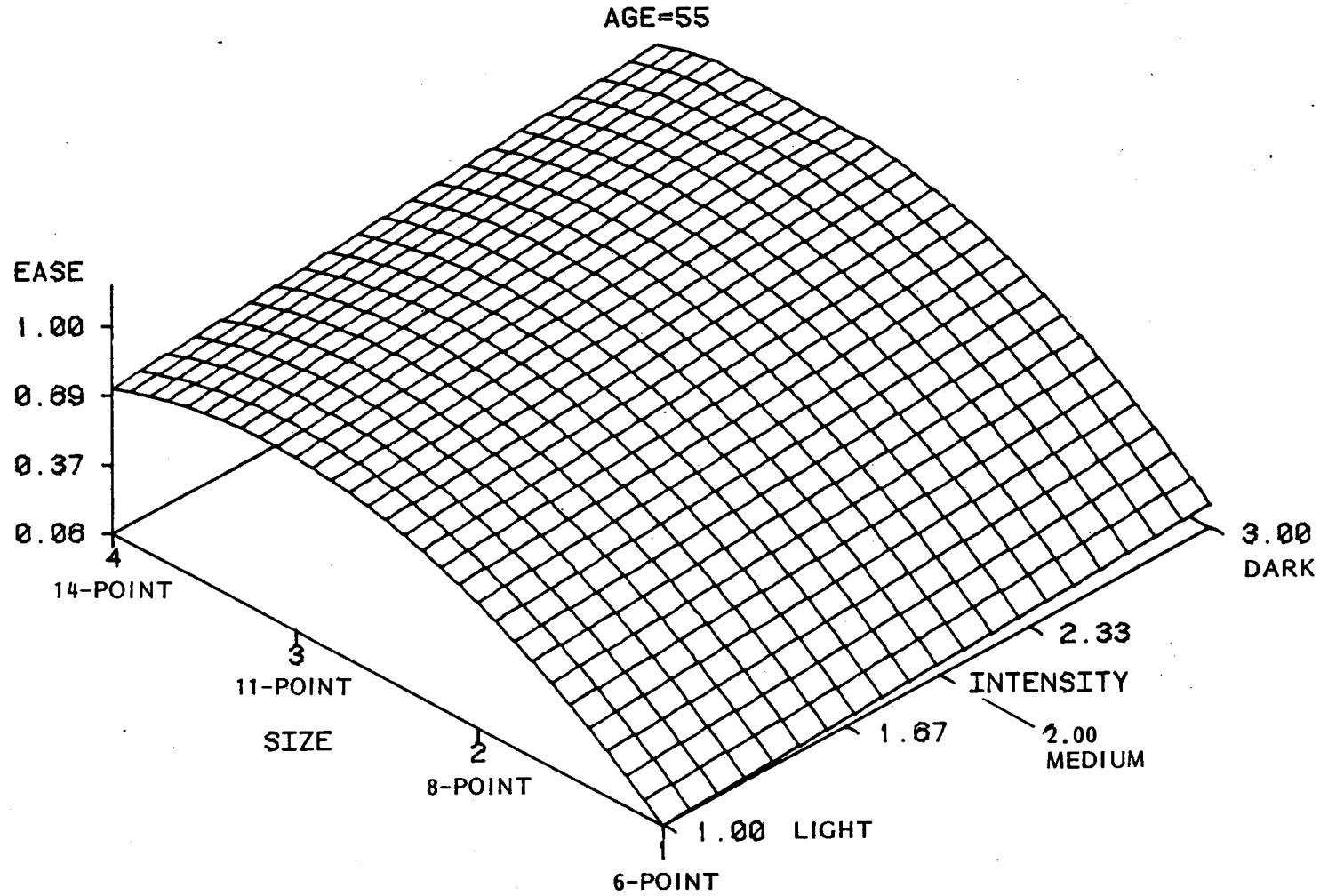


Figure 14. EASE of Reading, Prediction at Age 55 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

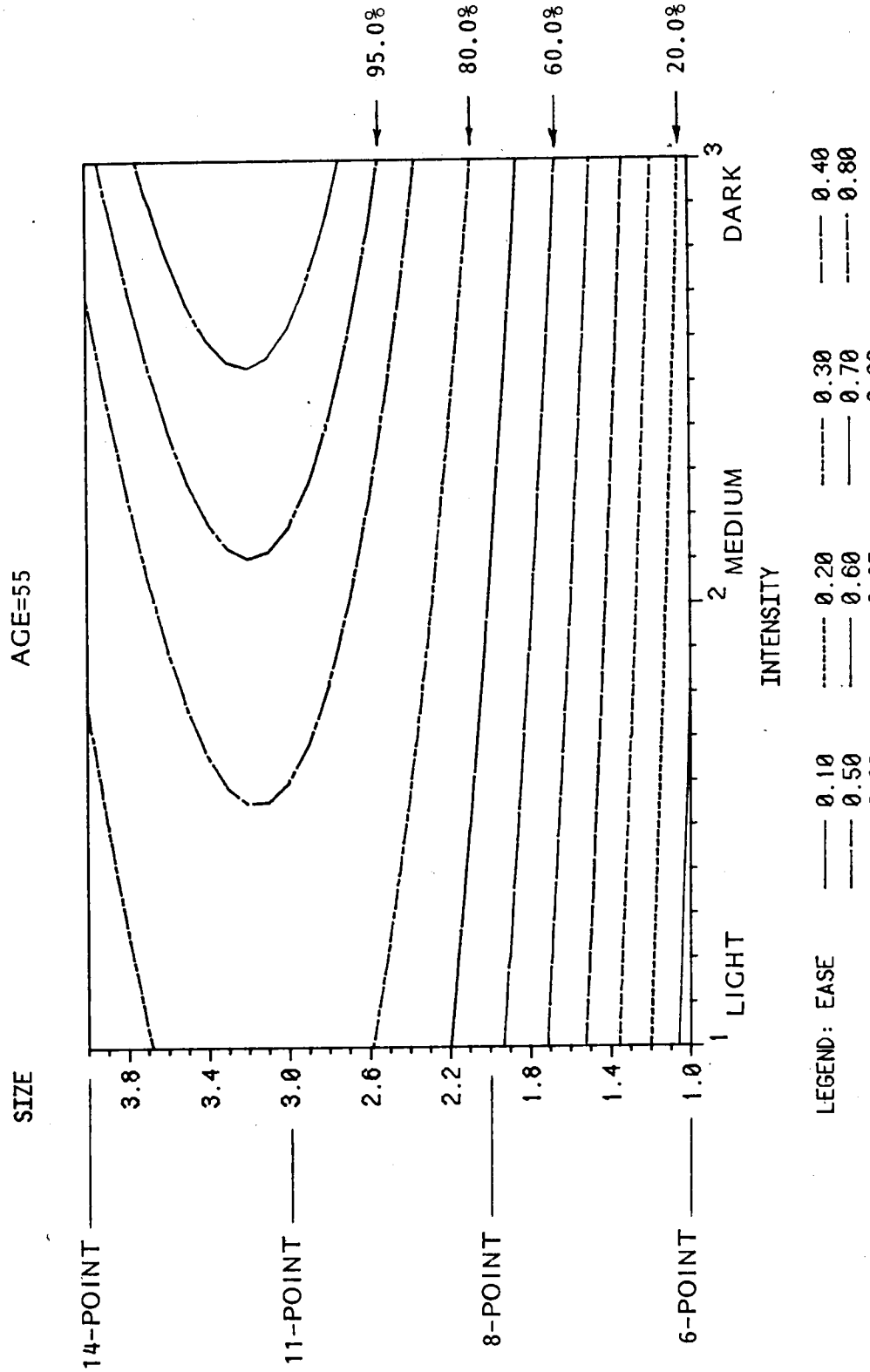


Figure 15. EASE of Reading, Prediction for Age 55 by Size of Type and Intensity of Print, Shown on Contour Graph.

3. For 8-point type of light intensity, EASE can be predicted at a level of 62.0 percent, for medium intensity at a 69.5 percent, and for dark intensity at 75.0 percent (Figure 15).

4. For 11-point type of light intensity, EASE can be predicted at a level of 85.5 percent for medium intensity at 94.0 percent, and for dark intensity at over 99.0 percent (Figure 15).

5. For 14-point type of light intensity, EASE can be predicted at a level of 72.0 percent, for medium intensity at 83.5 percent, and for dark intensity at 94.0 percent (Figure 15).

6. Prediction of EASE for age 55 differed only slightly from that of age 45 in that the range was shorter. The prediction range for age 55 was 6.0 to 100.0 percent (Figure 14), whereas the prediction range for age 45 was 4.0 to 100.0 percent (Figure 12). EASE could be predicted at a higher percentage for age 55 than age 45.

Evaluation for age 65. From the equations, the following predictions estimate the means of a population of 65 year olds for EASE of reading.

1. For 6-point type of light intensity, EASE of reading can be predicted at a level of 9.0 percent (Figure 16), for medium intensity at 14.0 percent, and for dark intensity at 20.0 percent (Figure 17).

2. Prediction of EASE of reading for light intensity increased from a level of 9.0 percent for 6-point type (Figure 16), to 63.0 percent for 8-point type, to 85.5 percent for 11-point type, and then decreased to 73.0 percent for 14-point type (Figure 17).

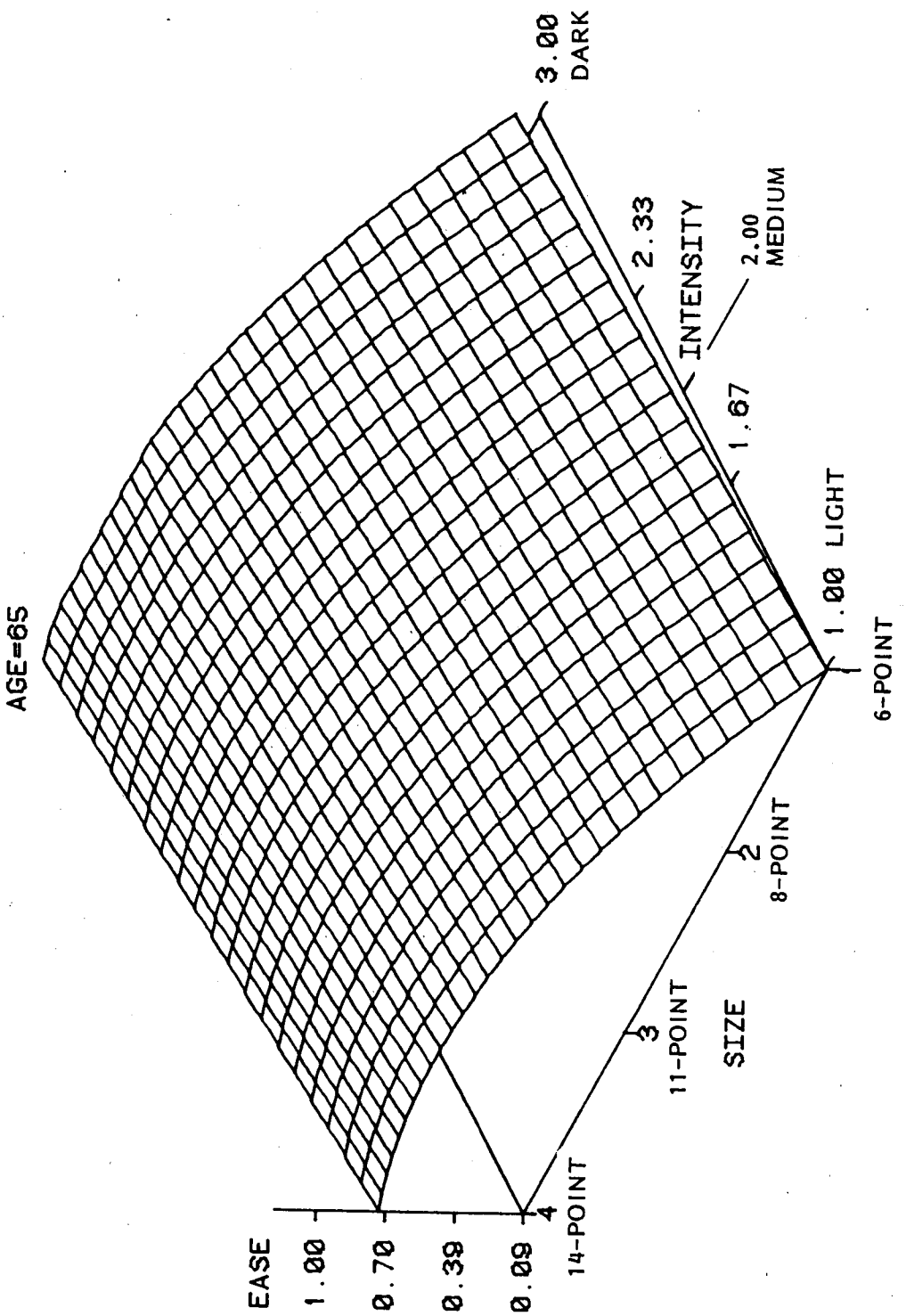


Figure 16. EASE of Reading, Prediction for Age 65 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

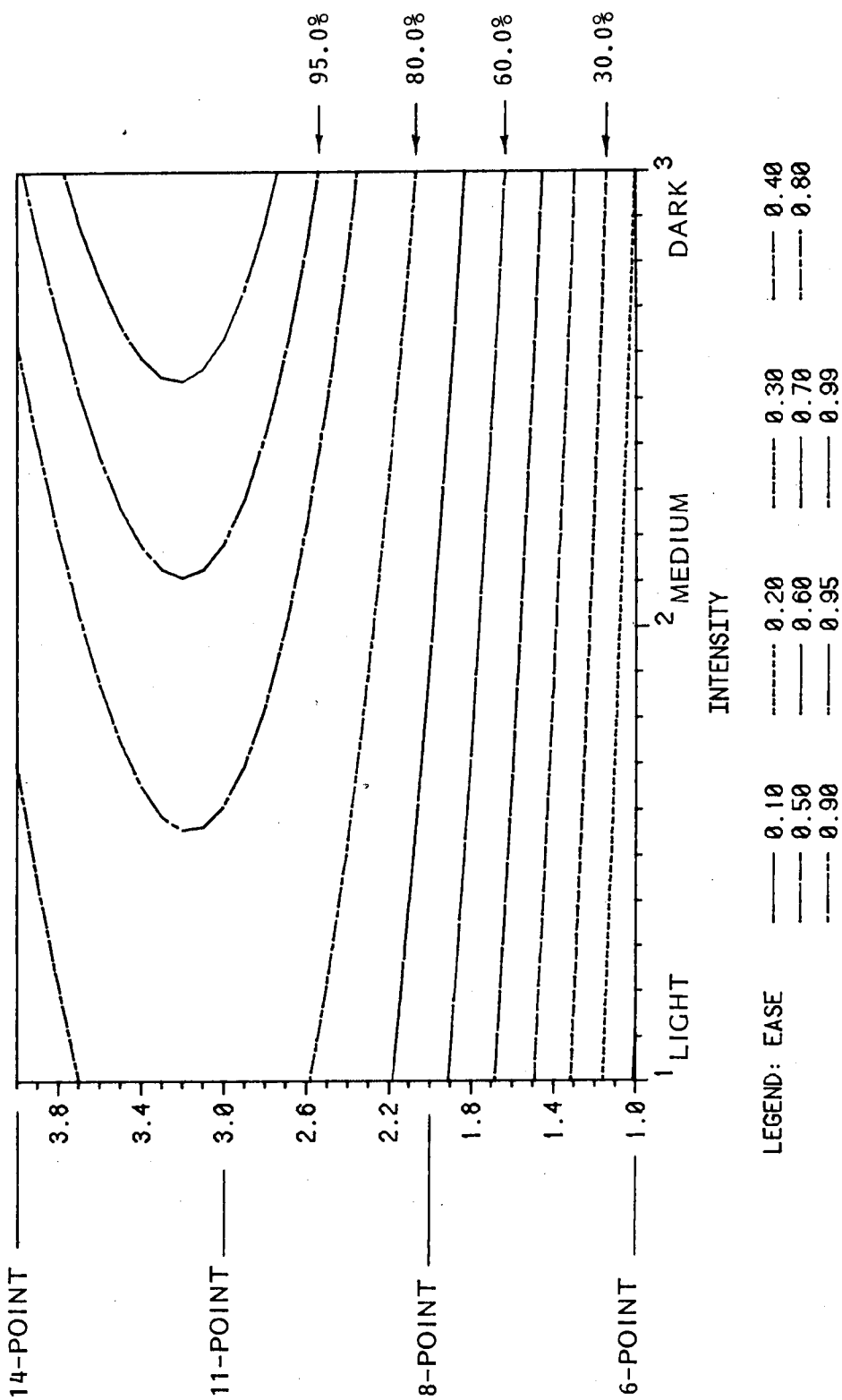


Figure 17. EASE of Reading, Prediction for Age 65 by Size of Type and Intensity of Print, Shown on Contour Graph.

3. For 8-point type of light intensity, EASE can be predicted at a level of 63.0 percent, at medium intensity at 70.0 percent and for dark intensity at 77.0 percent (Figure 17).

4. For 11-point type of light intensity, EASE can be predicted at a level of 85.0 percent, for medium intensity at a 93.5 percent, and for dark intensity at more than 99.0 percent (Figure 17).

5. For 14-point type of light intensity, EASE can be predicted at a level of 73.0 percent, for medium intensity at 83.0 percent, and for dark intensity at 94.5 percent (Figure 17).

6. Predictability of EASE for age 65 differed only slightly from that of age 55 in that the range was shorter. The prediction range for age 65 was 9.0 to 100.0 percent (Figure 16), whereas the prediction range for age 55 was 6.0 to 100.0 percent (Figure 14). EASE could be predicted at a higher percentage for age 65 than age 55.

Evaluation for age 75. From the equations, the following predictions estimate the means of a population of 75 year olds for EASE of reading.

1. For 6-point type of light intensity, EASE can be predicted at a level of 14.0 percent (Figure 18), for medium intensity at 19.5 percent, and for dark intensity at 24.5 percent (Figure 19).

2. Prediction of EASE of reading for light intensity increased from a level of 14.0 percent for 6-point type (Figure 18), to 66.0 percent for 8-point type, to 87.0 percent for 11-point type, and decreased to 75.0 percent for 14-point type (Figure 19).

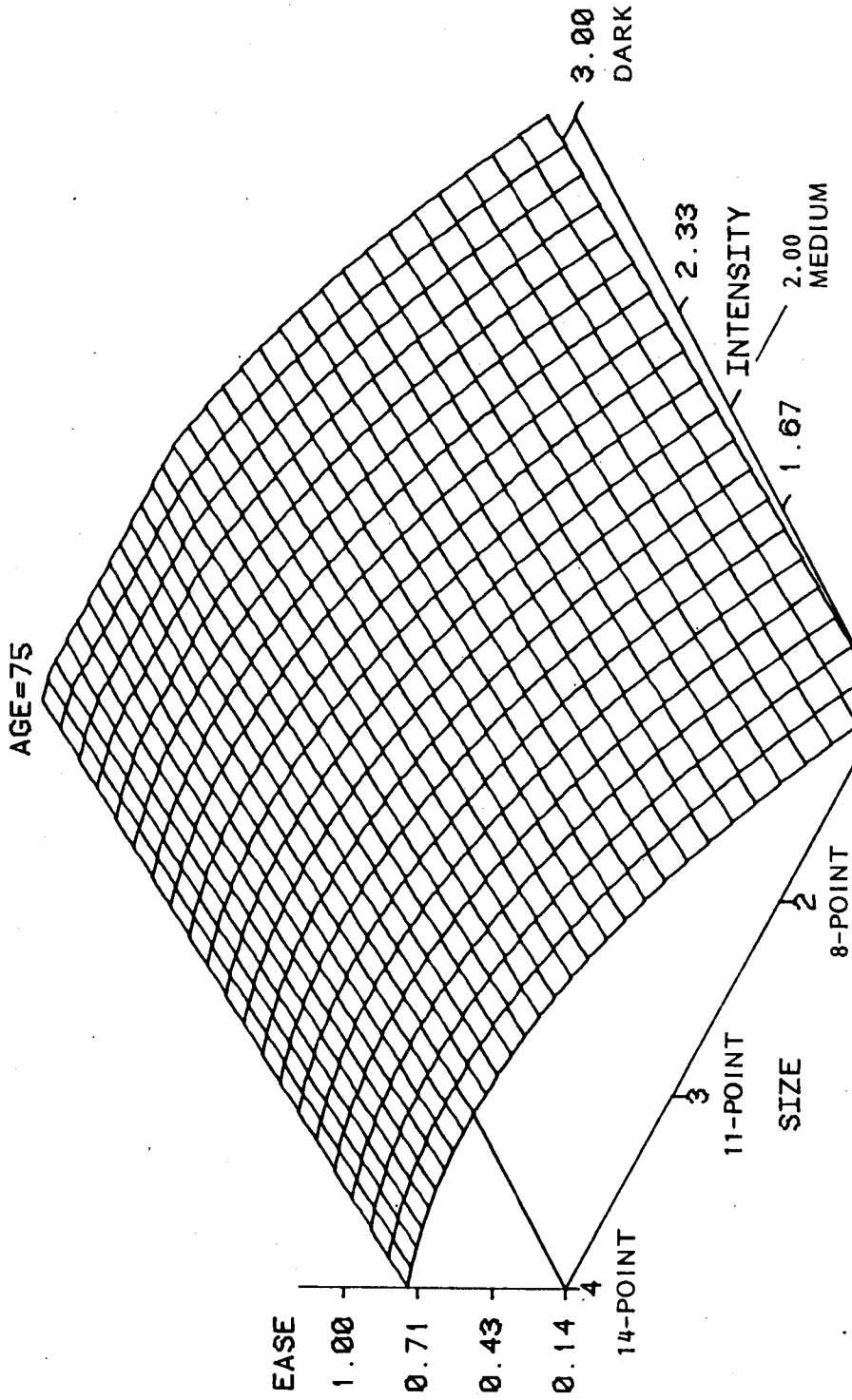


Figure 18. EASE of Reading, Prediction for Age 75 by Size of Type and Intensity of Print, Shown on Three-Dimensional Graph.

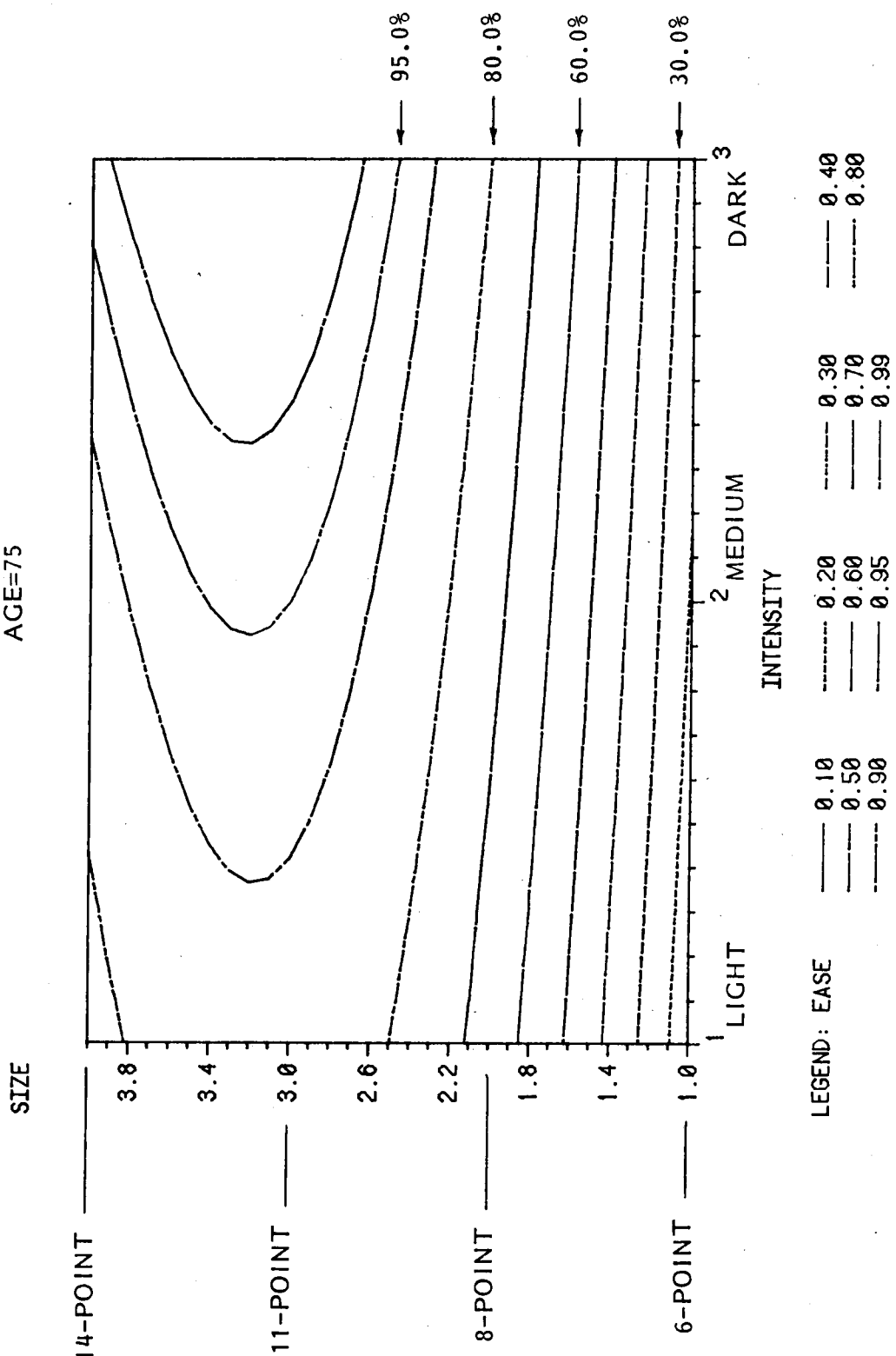


Figure 19. EASE of Reading, Prediction for Age 75 by Size of Type and Intensity of Print, Shown on Contour Graph.

3. For 8-point type of light intensity, EASE can be predicted at a level of 66.0 percent, for medium intensity at 70.0 percent and for dark intensities at 80.0 percent (Figure 19).

4. For 11-point type of light intensity, EASE can be predicted at a level of 87.0 percent, for medium intensity at 95.0 percent, and for dark intensity at greater than 99.0 percent (Figure 19).

5. For 14-point type of light intensity, EASE can be predicted at a level of 75.0 percent, for medium intensity at 86.5 percent, and for dark intensity at 97.5 percent (Figure 19).

6. Predictability of EASE for age 75 differed from that of age 65 in that the range was shorter. The prediction range for age 75 was 14.0 to 100.0 percent (Figure 18), whereas the prediction range for age 65 was 9.0 to 100.0 percent (Figure 16). EASE could be predicted at a higher percentage for age 75 than age 65.

Summary. The following statements summarize the findings of the prediction equation for EASE of reading:

1. The level of predictability for EASE of reading 6-point type of light intensity increased as age increased.

2. The prediction level for EASE of reading 6-point type of light intensity was considerably less than that of dark intensity for each age level.

3. The prediction level for EASE of reading increased as size of type was increased from 6-point to 11-point type but not for 14-point type of light intensity for all four age levels.

4. The prediction level for EASE of reading increased as intensity increased for each of the four sizes of type for all four ages.

5. The prediction level for EASE of reading was highest for 11-point type of dark intensity for the four age levels.

6. The prediction level for EASE of reading 14-point type of light intensity was substantially lower than that of 11-point type of dark intensity, 11-point type of light intensity, and somewhat lower than that of 8-point type of dark intensity.

7. The peak or break-point at which EASE could be predicted at the highest level was at 11-point type of dark intensity, for each of the four ages.

8. The prediction range for EASE of reading decreased as age increased, which means that at the oldest age level the people are more alike in their EASE of reading, therefore one can predict better for this age group than for the youngest.

Summary of Hypotheses One and Two

The findings of Hypothesis One, ACCURACY of reading, were quantitative—a right or wrong answer whereas the findings of Hypothesis Two, EASE of reading, were qualitative a personal judgement by the respondent regarding whether or not the stimuli were easy to read. Comparisons of the findings of the hypotheses follow.

The prediction level for ACCURACY of reading proceeded in the opposite direction to that of EASE of reading as size of type and intensity of print were increased (Table 28). As age increased, prediction level for ACCURACY for a specific size of type and intensity of print decreased up to and including 8-point type of dark intensity.

Table 28. Level for Prediction for ACCURACY and EASE of Reading by Four Sizes of Type and Two Levels of Intensity for Four Ages

Size of type and intensity of print	Accuracy				Ease			
	45 yrs.	55 yrs.	65 yrs.	75 yrs.	45 yrs.	55 yrs.	65 yrs.	75 yrs.
6-point, light	96.1	92.6	89.0	86.0	4.0	6.0	9.0	14.0
6-point, dark	99.9	96.6	93.2	88.9	13.5	15.0	20.0	24.5
8-point, light	99.7	99.3	98.8	98.3	63.0	62.0	63.0	66.0
8-point, dark	99.7	99.4	98.8	98.3	77.5	75.0	77.0	80.0
11-point, light	100.0	100.0	100.0	100.0	87.0	85.5	85.5	87.0
11-point, dark	100.0	100.0	100.0	100.0	99.0	99.0	99.0	99.0
14-point, light	100.0	100.0	100.0	100.0	73.0	72.0	73.0	75.0
14-point, dark	100.0	100.0	100.0	100.0	95.0	94.0	94.5	97.5

For 11-point type of light intensity and stronger stimuli the prediction level for ACCURACY was 100.0 percent. In general, the prediction level for ACCURACY for each specific age level increased as size of type and intensity of print were increased.

The prediction level for EASE of reading for a specific size of type and intensity of print increased as age increased, but with slight variations for ages 55 and 65 years. The prediction level for EASE for each specific age level increased as size of type and intensity of print were increased up to and including 11-point type of dark intensity, which was the highest point for EASE. This peak did not remain stable for stronger stimuli as for ACCURACY. The level decreased for each of the four ages for 14-point type of light intensity and rose for 14-point type of dark intensity but not to the level of 11-point type of dark intensity.

The stimuli used in the Readability Instrument for 11-point type and 14-point type were reexamined to determine if there could be a

reason due to style or appearance of these stimuli that the 14-point type was assessed easy to read at a lower level than was the 11-point type. The 11-point type was a clear printing in heavy lines of the words "no bleach" in capital letters. The 14-point type was a dot matrix printing in light lines of inconsistent weight of the numerals "20.44." A Knoxville optician was consulted who pointed out the clarity of the 11-point type over the 14-point type, but more important was the reading of words vs. numerals. Words can be easily and accurately read without having to see each individual letter, whereas in reading numerals each individual figure must be seen. Hence, the 11-point type stimulus had two advantages over the 14-point stimulus. The low prediction level assessed for ease of reading by all ages for the 14-point stimulus was concluded to be due chiefly to the general appearance of the stimulus, characterized by inconsistent depth of intensity of print combined with the difficulty inherent in reading numerals. A similar inconsistency in depth of intensity in the printing of a care label or fiber label likely would have been assessed at a higher prediction level.

The highest level for prediction of ACCURACY of reading was 100.0 percent for approximately 8½-point type of all three intensities (Figures 4, 6, 8, 10, pp. 112, 114, 117, 120 respectively). The highest level for prediction for EASE of reading was 11-point type of dark intensity (Figures 5, 7, 9, 11, pp. 113, 115, 118, 121 respectively).

The prediction range for ACCURACY increased as age increased (Table 29). The range for ACCURACY was markedly less than the

Table 29. Range of Level of Prediction for ACCURACY and EASE of Reading for Four Ages

	Range (percent)	
Age	Accuracy	Ease
45 yrs.	96.1-100.0	4.0-100.0
55 yrs.	92.6-100.0	6.0-100.0
65 yrs.	89.0-100.0	9.0-100.0
75 yrs.	86.0-100.0	14.0-100.0

range for EASE for each level (Figure 20). For ACCURACY of reading, the range of prediction for age 45 was 96.1-100.0 percent and for age 75 was 86.0-100.0 percent, indicating that higher levels of ACCURACY of reading could be predicted for the youngest age than for the oldest. For EASE of reading, the range of prediction for age 45 was 4.0-100.0 percent and for age 75 was 14.0-100.0 percent, indicating that higher levels of EASE could be predicted for the oldest age than for the youngest.

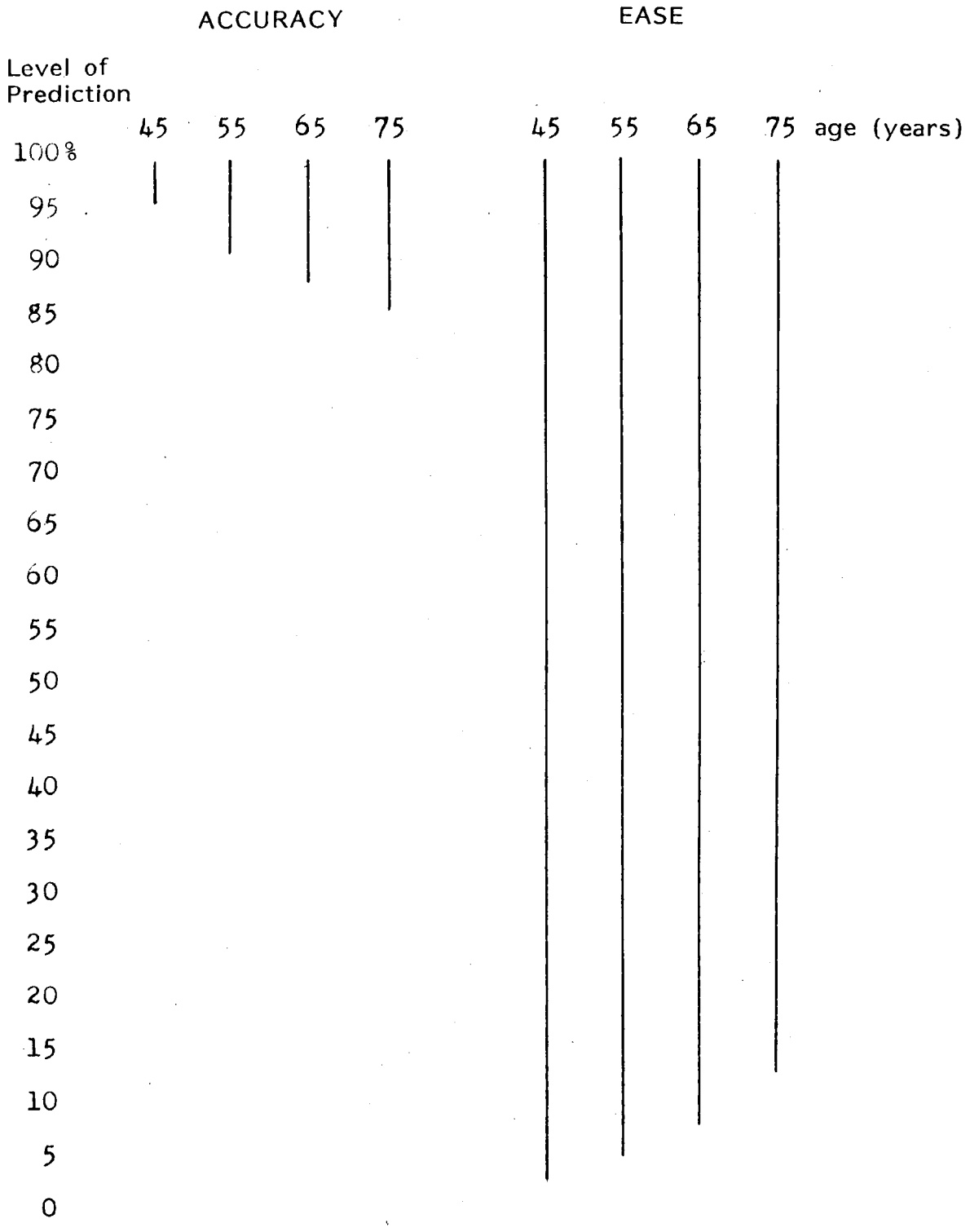


Figure 20. Range of Level of Prediction for ACCURACY and EASE of Reading for Four Ages.

Hypothesis Concerning Self-Assessment of Eyesight

Hypothesis Three was a test of self-assessment of the respondent's eyesight, using a 4-point scale: POOR (1), FAIR (2), GOOD (3), and EXCELLENT (4) (item 31).

Null Hypothesis Three

There will be no significant difference by age group in self-assessment of eyesight of women apparel shoppers (item 31).

Of the 189 respondents, 56 percent assessed eyesight as GOOD, 28 percent as EXCELLENT, and 17 percent as FAIR. The category of POOR was not included in the data analysis because of limited response (Table 30). The chi-square test was significant at the .0001 level, indicating there was a difference by age group in self-assessment of eyesight; hence, the null hypothesis was rejected. Eyesight was assessed to be unquestionably better by the younger age groups than by the older. The most frequent response by persons less than age 45 was EXCELLENT, while the most frequent response of persons age 45 and over was GOOD. More persons age 75 and over assessed their eyesight as FAIR than did any other group.

In the literature reviewed, only one marketplace study was found that addressed self-reported eyesight (Mason & Bearden, 1978). The elderly respondents rated their eyesight as: good by 42 percent, excellent by 16 percent, and fair by 32 percent. In the present research respondents tended to report a better assessment of their eyesight; however, there were important differences in the two

Table 30. Self-Assessment of Eyesight at Three Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Self-assessment of eyesight							
	Fair		Good		Excellent		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	4	26.67	11	73.33	15	7.94
35-44 yrs.	2	9.09	9	40.91	11	50.00	22	11.64
45-54 yrs.	8	25.00	21	65.63	3	9.38	32	16.93
55-64 yrs.	6	13.95	29	67.44	8	18.60	43	22.75
65-74 yrs.	7	14.89	26	55.62	14	29.79	47	24.87
75 yrs. and over	9	30.00	16	53.33	5	16.67	30	15.87
Total	32	16.93	105	55.56	52	27.51	189	100.00

Chi-square = 34,671; df = 10; $p < .0001$

samples. Mason and Bearden interviewed food shoppers in the homes of persons with one member of the household age 65 or over. The present research investigated all ages during an organizational meeting away from home. It would seem that persons who were able to attend a meeting away from home would be more likely to have adequate eyesight, whereas persons in the home may be there because of less adequate eyesight.

Schutz et al. (1979) investigated self-rated health of older Americans and found no relationship to age. Although eyesight was not rated, nearly one-fourth reported having a chronic vision disability.

Summary of Hypothesis Three

The assessment of EXCELLENT was reported by almost three-fourths of the respondents who were less than 35 years old, by half of

those 35-44 years, and by less than one-tenth of those 45-54 years. This is the age that near vision declines rapidly and reading lenses or bifocals are usually needed. Many people find it difficult to become accustomed to bifocals. Nearly three out of 10 in age group 65-74 rated their eyesight as EXCELLENT. Most likely this age group had learned to adjust to bifocals or trifocals. Only one out of six in age group 75 and over rated eyesight as EXCELLENT. For this oldest group, the effects of aging may have brought on decline in visual perception.

Hypotheses Concerning Selected Shopping Behavior Variables Specific to Eyesight Condition

Six hypotheses were formulated and tested by age group of women apparel shoppers concerning selected shopping behavior characteristics thought to be specific to eyesight condition. These characteristics were frequency of shopping, shopping companion, time of day for shopping, time spent shopping, need for sales assistance, and type of transportation used to get to a shopping area.

Null Hypothesis Four

There will be no difference by age group in frequency of shopping because of eyesight condition (item 35).

Of 191 respondents, 93 percent reported NO CHANGE in how often they went shopping, while 5 percent reported SHOP SOMEWHAT LESS, 2 percent reported SHOP MUCH LESS, and no one reported PREVENTS SHOPPING (Table 31). The chi-square test was significant

Table 31. Changes in Frequency of Shopping Due to Eyesight Condition at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Changes in frequency of shopping due to eyesight									
	Shop somewhat less		Shop much less		Prevents shopping		No change in frequency		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	0	.00	15	100.00	15	7.85
35-44 yrs.	0	.00	0	.00	0	.00	22	100.00	22	11.52
45-54 yrs.	0	.00	0	.00	0	.00	32	100.00	32	16.75
55-64 yrs.	4	9.09	1	2.27	0	.00	39	88.64	44	23.04
65-74 yrs.	2	4.08	0	.00	0	.00	47	93.92	49	25.65
75 years and over	3	10.34	3	10.34	0	.00	23	79.31	29	15.18
Total	9	4.71	4	2.09	0	.00	178	93.19	191	100.00

Chi-square = 20.020, df = 10, $p < .05$

at the .05 level, indicating there was a difference by age group in frequency of shopping because of eyesight condition; hence, the null hypothesis was rejected. When responses to SHOP SOMEWHAT LESS and SHOP MUCH LESS were combined, age group 55-64 reported 11 percent, age group 65-74 reported 4 percent, and age group 75 and over reported 20 percent. The behavior of the oldest group was somewhat consistent with their self-assessment of eyesight since 30 percent of those age 75 and over considered their eyesight condition only FAIR. No one under age 55 reported any changes in frequency of shopping because of eyesight condition.

This finding clearly showed that respondents who felt their shopping had been reduced because of eyesight condition were in older age groups. In the literature reviewed, no research was found concerning frequency of shopping and eyesight condition.

Null Hypothesis Five

There will be no significant difference by age group in shopping alone because of eyesight condition (item 36).

Five options were investigated. Respondents could circle one or two of the following statements:

(a). I shop alone only in familiar stores.

(b). I need a shopping companion occasionally.

(c). I need a shopping companion most of the time.

(d). I do not shop alone now.

(e). I do not need a shopping companion.

Since more than one option was possible for this hypothesis, the chi-square test of significance was performed for each option individually. For this analysis, each option was classified as having either a positive answer (was circled) or a negative answer (was not circled). The findings by options follow.

(a). Shop alone only in familiar stores. Of 188 respondents, 5 percent reported shopping ALONE ONLY IN FAMILIAR STORES because of eyesight condition (Table 32). These respondents were in age group 45-54 and older groups. Approximately one out of five persons age 75 and over responded positively. The chi-square test was significant at the .05 level, indicating there was a difference by age group in shopping alone only in familiar stores because of eyesight condition. This finding indicates that older persons, with recognized declining eyesight, continue to participate in shopping activities although they limit their shopping to familiar stores.

(b). Need a shopping companion occasionally. Less than 2 percent of 188 respondents indicated they needed a SHOPPING COMPANION OCCASIONALLY because of eyesight condition (Table 32). The chi-square test did not show a significant difference by age group.

(c). Need a shopping companion most of the time. Less than 1 percent of 188 respondents reported needing a shopping companion MOST OF THE TIME because of eyesight condition (Table 32). The chi-square test did not show a significant difference by age group.

(d). Do not shop alone now. Only 1 percent of 188 respondents reported DO NOT SHOP ALONE because of eyesight condition

Table 32. Shopping Alone Because of Eyesight Condition at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Shop alone or not									
	Shop alone only in in familiar stores		Need shopping companion occasionally		Need shopping companion most of the time		Do not shop alone		Do not need a shopping companion	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	0	.00	0	.00	15	100.00
35-44 yrs.	0	.00	0	.00	0	.00	0	.00	22	100.00
45-54 yrs.	1	3.13	0	.00	0	.00	0	.00	31	96.88
55-64 yrs.	1	2.27	2	4.55	0	.00	0	.00	41	93.18
65-74 yrs.	3	6.25	0	.00	1	2.08	1	2.08	44	91.67
75 years and over	5	18.52	1	3.70	0	.00	1	3.70	23	85.19
Total	10	5.32	3	1.60	1	.53	2	1.06	176	93.62
Chi-square	12.618		5.099		2.9232		3.477		6.623	
df	5		5		5		5		5	
p <	.05		.4039 n.s.		.7104 n.s.		.6269 n.s.		.2502 n.s.	

n = 188

(Table 32). The chi-square test did not show a significant difference by age group.

(e). Do not need a shopping companion. Ninety-four percent of 188 respondents reported DO NOT NEED A SHOPPING COMPANION because of eyesight condition (Table 32). The chi-square test did not show a significant difference by age group.

There was a limited need by persons in this sample for a shopping companion because of eyesight condition. Only one of the five response options, SHOP ALONE ONLY IN FAMILIAR STORES, was found to be significant by age group. Therefore, the null hypothesis was accepted with the exception of this option.

Null Hypothesis Six

There will be no significant difference by age group in time of day selected for shopping because of eyesight condition (item 37).

Ninety-two percent of 189 respondents reported shopping BOTH DAY AND EVENING, while 8 percent reported shopping DAYTIME ONLY (Table 33). The chi-square test was significant at the .01 level, indicating there was a difference by age group in time of day selected for shopping because of eyesight condition; hence, the null hypothesis was rejected. Respondents who shopped DAYTIME ONLY were in age 45 or older. One in 10 of age group 65-74 and one in four of age group 75 years and over preferred daytime shopping. These findings are consistent with Mason and Bearden (1978) and Glisan and Kiser (1979) in that elderly food shoppers indicated a

preference for daytime hours. These two studies, however, were not concerned with respondents' eyesight condition.

Table 33. Time of Day Selected for Shopping Due to Eyesight Condition at Two Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Time of day selected for shopping					
	Daytime Only		Both day and evening		Total	
Age group	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	15	100.00	15	7.94
35-44 yrs.	0	.00	22	100.00	22	11.64
45-54 yrs.	1	3.13	31	96.88	32	16.93
55-64 yrs.	2	4.55	42	95.45	44	23.28
65-74 yrs.	5	10.64	42	89.36	47	24.87
75 yrs. and over	7	24.14	22	75.86	29	15.34
Total	15	7.94	174	92.06	189	100.00

Chi-square = 15.784; df = 5; $p < .01$

Null Hypothesis Seven

There will be no significant difference by age group in amount of time spent shopping because of eyesight condition (item 38).

Of 190 respondents, 97 percent reported NO CHANGE, 2 percent SHORTENED SOMEWHAT, and 1 percent SHORTENED A GREAT DEAL (Table 34). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Table 34. Time Spent Shopping Due to Eyesight Condition at Three Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Time spent shopping							
	Shortened somewhat		Shortened a great deal		No change		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	15	100.00	15	7.85
35-44 yrs.	0	.00	0	.00	22	100.00	22	11.52
45-54 yrs.	1	3.13	0	.00	31	96.88	32	16.75
55-64 yrs.	0	.00	1	2.27	43	97.73	44	23.04
65-74 yrs.	1	2.04	0	.00	48	97.96	49	25.65
75 yrs. and over	2	6.90	1	3.45	26	89.66	29	15.18
Total	4	2.09	2	1.05	185	96.86	191	100.00

Chi-square = 8.719; df = 10; $p < .5590$ n.s.

Null Hypothesis Eight

There will be no significant difference by age group in need for sales assistance because of eyesight condition (item 39).

Of 191 respondents, 94 percent reported NEED NO ASSISTANCE, 5 percent reported NEED OCCASIONAL ASSISTANCE, and 1 percent reported NEED A GREAT DEAL OF ASSISTANCE (Table 35). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Nine

There will be no significant difference by age group in the type of transportation used to get to a shopping area because of eyesight condition (item 40).

Table 35. Need for Sales Assistance Due to Eyesight Condition at Three Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Need for sales assistance							
	Need a great deal		Need occasional		Need no assistance		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	15	100.00	15	7.85
35-44 yrs.	0	.00	1	4.55	21	95.45	22	11.52
45-54 yrs.	0	.00	2	6.25	30	93.75	32	16.75
55-64 yrs.	0	.00	2	4.55	42	95.45	44	23.04
65-74 yrs.	0	.00	2	4.08	47	95.92	49	25.65
75 yrs. and over	2	6.90	3	10.34	24	82.76	29	15.18
Total	2	1.05	10	5.24	179	93.72	191	100.00

Chi-square = 14.133; df = 10; $p < .1670$ n.s.

Four options were investigated. Respondents could circle one or two of the following statements:

(a). I no longer drive a car.

(b). I do not drive a car at night.

(c). I use public transportation more frequently now.

(d). I can use any type of transportation.

Since more than one option was possible for this hypothesis, the chi-square test of significance was performed for each option individually. For this analysis, each option was classified as having either a positive answer (was circled) or a negative answer (was not circled). The findings by options follow.

(a). No longer drive a car. Three percent of 187 respondents reported NO LONGER DRIVE because of eyesight condition (Table 36). These respondents were in the two oldest age groups, with most being

Table 36. Type of Transportation Used for Shopping Because of Eyesight Condition at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Type of transportation to shopping							
	No longer drive a car (a)		Do not drive at night (b)		Use public transportation more frequently (c)		Can use any type transportation (d)	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	0	.00	15	100.00
35-44 yrs.	0	.00	0	.00	0	.00	22	100.00
45-54 yrs.	0	.00	1	3.13	0	.00	31	96.88
55-64 yrs.	0	.00	1	2.33	0	.00	42	97.67
65-74 yrs.	1	2.13	6	12.77	1	2.13	39	82.98
75 yrs. and over	5	17.86	9	32.14	2	7.14	15	53.57
Total	6	3.21	17	9.09	3	1.60	164	87.70
Chi-square	23.236		26.231		7.349		42.859	
df	5		5		5		5	
P <	.001		.0001		.1960 n.s.		.0001	

n = 187

age 75 or over. The chi-square test was significant at the .001 level, indicating there was a difference by age group in whether they no longer drive a car for shopping because of eyesight condition.

(b). Do not drive a car at night. Nine percent of 187 respondents reported DO NOT DRIVE AT NIGHT because of eyesight condition (Table 36). These respondents were in age group 45-54 and older groups. The percentage increased as age increased, with more than three out of 10 in age group 75 and over. The chi-square test was significant at the .0001 level, indicating there was a difference by age group in whether respondents drove a car at night for shopping because of eyesight condition.

(c). Use public transportation more frequently. Approximately 2 percent of 187 respondents indicated USE PUBLIC TRANSPORTATION MORE FREQUENTLY because of eyesight condition (Table 36). These respondents were in the two oldest age groups. The chi-square test did not show a significant difference by age group.

(d). Can use any type of transportation. Eighty-eight percent of 187 respondents reported CAN USE ANY TYPE OF TRANSPORTATION (Table 36). All in the two youngest age groups responded positively to this item. Positive responses decreased as age increased with slightly more than half of the 75 and over age group indicating they could use any type of transportation. The chi-square test was significant at the .0001 level, indicating there was a difference by age group in who could select any type of transportation for shopping because of eyesight condition.

Very few of the participants reported they no longer drove a car, less than one in 10 no longer drove at night, and very few used public transportation more often than previously. The two oldest groups led other age groups in not driving at night and in not being able to use any type of transportation. Schutz et al. (1979) found the self-driven automobile the most frequent mode of transportation by two-thirds of the respondents and public transportation by one-tenth. In the research of Samli and Palubinskas (1972) approximately one-third of the senior citizens owned a car and over half rode the bus for shopping. The present research differed from the above studies in that the sample was heavily weighted with automobile drivers. The

explanation may be that this research focused on socially active persons, and the socially active more likely may be automobile drivers. The limited use of public transportation may be attributed to the fact that Knoxville does not have a readily available transportation system for many residential areas. Since three of the four response options were significant by age group, the null hypothesis was rejected except for the option, USE PUBLIC TRANSPORTATION MORE FREQUENTLY.

Summary of Hypotheses Four Through Nine

These six hypotheses were concerned with shopping behavior variables thought to be specific to eyesight condition. A summary of the statistical significance is shown in Table 37. Significant findings concerning shopping behavior specific to eyesight condition can be summarized:

1. Frequency of shopping was reduced by older age groups with age group 55-64 showing an 11 percent reduction and age group 75 and over showing a 20 percent reduction (H_4).

2. Shopping alone only in familiar stores increased with age beginning with 3 percent for age group 45-54, to 6 percent for age group 65-74, and to 19 percent for persons 75 years and over (H_{5a}).

3. Shopping in daytime only was reported by 3 percent for age group 45-54 and increased with each age group thereafter to 24 percent for those age 75 and over (H_6).

4. Almost one-fifth of respondents age 75 and over reported they no longer drive a car (H_{9a}).

Table 37. Shopping Behavior Variables Specific to Eyesight Condition: Summary of Hypotheses Significant by Age Group

Null hypotheses	Significance levels[a]
H_4 -- frequency of shopping	.05
H_5 -- shopping alone	
(a) only in familiar stores	.05
(b) need shopping companion occasionally	n.s.
(c) need shopping companion most of the time	n.s.
(d) do not shop alone	n.s.
(e) do not need shopping companion	n.s.
H_6 -- time of day	.01
H_7 -- amount of time spent shopping	n.s.
H_8 -- need for sales assistance	n.s.
H_9 -- type of transportation	
(a) no longer drive a car	.001
(b) do not drive a car at night	.0001
(c) use public transportation more frequently	n.s.
(d) can use any type of transportation	.0001

[a] n.s. = nonsignificant

5. No longer driving a car at night increased with age beginning with age group 45-54 with 3 percent to 32 percent for persons age 75 and over (H_{9b}).

6. Can use any type of transportation was 100 percent for the two youngest age groups, and decreased with each succeeding age group to 83 percent for age group 65-74 and more than half for those 75 years and over (H_{9d}).

Hypotheses Concerning General Shopping Behavior

Hypotheses were formulated and tested concerning eighteen general shopping behavior characteristics by age groups of women apparel shoppers.

Null Hypothesis Ten

There will be no significant difference by age group in method of acquiring clothing (item 1).

Of 190 respondents, 92 percent reported RETAIL STORE, 3 percent reported RECEIVE AS GIFTS, 1 percent reported CATALOG BY MAIL, and 1 percent reported CATALOG BY TELEPHONE (Table 38). For the 3 percent who reported OTHER, answers included use of dressmaker services and order by telephone from newspaper advertisements. The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Eleven

There will be no significant difference by age group in extent of shopping for personal clothing (item 2).

Table 38. Method of Acquiring Clothing at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Method of acquiring clothing											
	Retail store		Catalog by mail		Catalog by telephone		Gifts		Other		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	14	93.33	0	.00	0	.00	1	6.67	0	.00	15	7.89
35-44 yrs.	20	90.91	0	.00	1	4.55	1	4.55	0	.00	22	11.58
45-54 yrs.	29	87.88	1	3.03	1	3.03	1	3.03	1	3.03	33	17.37
55-64 yrs.	44	100.00	0	.00	0	.00	0	.00	0	.00	44	23.16
65-74 yrs.	44	91.67	0	.00	0	.00	1	2.08	3	6.25	3	25.26
75 years and over	23	82.14	1	3.57	0	.00	2	7.14	2	7.14	28	14.74
Total	174	91.58	2	1.05	2	1.05	6	3.16	6	3.16	190	100.00

Chi-square = 19.252, df = 20, $p < .5055$ n.s.

Of 192 respondents, approximately 69 percent reported shopping FOR ALL personal clothing, 23 percent FOR MOST, almost 5 percent FOR A FEW, nearly 4 percent FOR ABOUT HALF, and no one reported I DO NOT SHOP FOR MY CLOTHING (Table 39). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Twelve

There will be no significant difference by age group in type of shopping area frequented for clothing shopping (item 3).

Of 190 respondents, 56 percent reported usually shopping at ENCLOSED MALL, nearly 15 percent at OPEN SHOPPING CENTER, 14 percent at DOWNTOWN, over 9 percent at NEIGHBORHOOD STORE, and 5 percent reported OTHER (Table 40). The predominant answer for OTHER was out-of-town retailers. The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Thirteen

There will be no significant difference by age group in type of store most frequently shopped for clothing (item 4).

Of 191 respondents, 61 percent reported DEPARTMENT STORE, 17 percent reported MASS MERCHANDISER, over 10 percent SPECIALTY STORE, nearly 5 percent FACTORY OUTLET, 4 percent DISCOUNT STORE, 2 percent OTHER, and 1 percent SECOND HAND STORE (Table 41). The chi-square test was significant at the .10

Table 39. Extent of Shopping for Own Clothing at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Extent of shopping for own clothing											
	For all		For most		For about half		For a few		Do not shop		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	9	60.00	5	33.33	1	6.67	0	.00	0	.00	15	7.81
35-44 yrs.	15	68.18	6	27.27	0	.00	1	4.55	0	.00	22	11.46
45-54 yrs.	20	60.61	11	33.33	1	3.03	1	3.03	0	.00	33	17.19
55-64 yrs.	35	79.55	9	20.45	0	.00	0	.00	0	.00	44	22.92
65-74 yrs.	34	69.39	10	20.41	2	4.08	3	6.12	0	.00	49	25.52
75 years and over	19	65.52	3	10.34	3	10.34	4	13.79	0	.00	29	15.10
Total	132	68.75	44	22.92	7	3.65	9	4.69	0	.00	192	100.00

Chi-square = 20.701, df = 15, $p < .1467$ n.s.

Table 40. Type of Shopping Area Frequented at Five Levels by Six Age Groups Using Two-Way Contingency Table Analysis

	Type of shopping area frequented											
	Enclosed mall		Open shopping center		Neighborhood store		Downtown		Other		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	13	92.86	1	7.14	0	.00	0	.00	0	.00	14	7.37
35-44 yrs.	11	50.00	5	22.73	3	13.64	1	4.55	2	9.09	22	11.58
45-54 yrs.	17	53.13	7	21.88	4	12.50	1	3.13	3	9.38	32	16.84
55-64 yrs.	29	65.91	5	11.36	1	2.27	7	15.91	2	4.55	44	23.16
65-74 yrs.	33	47.92	7	14.58	6	12.50	10	20.83	2	4.17	48	25.26
75 years and over	14	46.67	3	10.00	4	13.33	8	26.67	1	3.33	30	15.79
Total	107	56.32	28	14.74	18	9.47	27	14.21	10	5.26	190	100.00

Chi-square = 27.928, df = 20, $p < .1111$ n.s.

Table 41. Type of Store Shopped at Seven Levels by Six Age Groups Using Two-Way Contingency Table Analysis

	Type of store shopped													
	Department store		Specialty store		Mass merchandiser		Discount store		Factory outlet		Second hand store		Other		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	9	60.00	1	6.67	2	13.33	0	.00	3	20.00	0	.00	0	.00	15	7.85
35-44 yrs.	11	50.00	5	22.73	4	18.18	1	4.55	1	4.55	0	.00	0	.00	22	11.52
45-54 yrs.	16	48.48	6	18.18	7	21.21	0	.00	3	9.09	1	3.03	0	.00	33	17.28
55-64 yrs.	33	78.57	1	2.38	3	11.90	3	7.14	0	.00	0	.00	0	.00	42	21.99
65-74 yrs.	25	51.02	6	12.24	12	24.49	3	6.12	1	2.04	1	2.04	1	2.04	49	25.65
75 years and over	22	73.33	1	3.33	3	10.00	1	3.33	1	3.33	0	.00	2	6.67	30	15.71
Total	116	60.73	20	10.47	33	17.28	8	4.19	9	4.71	2	1.05	3	1.57	191	100.00

Chi-square = 42.626, df = 30, $p < .10$

level, indicating there was a difference by age group in the type of store most frequently shopped; hence, the null hypothesis was rejected. Half or more in all age groups shopped in a DEPARTMENT STORE, with age groups 55-64 and 75 and over as the strongest groups. One-fourth of persons age 65-74 and one-fifth of age 45-54 shopped a MASS MERCHANDISER. Approximately one-fifth of age group 35-44 and age group 45-54 shopped a SPECIALTY STORE. One-fifth of those less than 35 years shopped a FACTORY OUTLET. Few persons shopped DISCOUNT, SECOND HAND, or OTHER retailers.

The finding that older people are frequent shoppers at a department store is consistent with other investigations (Bernhardt & Kinnear, 1975; Lumpkin & Greenberg, 1982; Rich & Jain, 1968; Schutz et al., 1979; and Sivils & Williams, 1981). According to Martin (1976) over half of the elderly shopped at a high-fashion specialty store. Gelb (1978) found that four out of 10 older people preferred small stores over larger ones. That few older people shopped at a discount store is in agreement with Bernhardt and Kinnear (1976), "The 1975 Discount Store Study," (1975), Rich and Jain (1968) and Schutz et al. (1979). In the present research, the number of older people who shopped in factory outlets was low, but was one out of five for persons less than 35 years. In a national survey of off-price shoppers by Associated Merchandising Corporation, the typical customer was age 34, with a heavy concentration between ages 30 and 49 (Lagnado, 1983). The survey further revealed a major dissatisfaction with the limited selection of sizes, particularly large sizes. Many

respondents in the present research were large-size customers, which may account partially for limited shopping in the factory outlets.

Null Hypothesis Fourteen

There will be no significant difference by age group in frequency of shopping for clothing (item 5).

Of 193 respondents, approximately 72 percent reported SEVERAL TIMES A YEAR, over 12 percent reported SEVERAL TIMES A MONTH, 8 percent ONCE A MONTH, nearly 5 percent ONCE A WEEK, and 3 percent ONCE A YEAR (Table 42). The chi-square test was significant at the .05 level indicating there was a difference by age group in frequency of shopping; hence, the null hypothesis was rejected. The two youngest age groups were the most frequent shoppers reporting shopping ONCE A MONTH or more often. Respondents age 45 and over tended to shop SEVERAL TIMES A YEAR.

Other researchers have reported that older people shop less frequently for apparel than do younger people (Lumpkin & Greenberg, 1982; Tongren, 1981). In the study of older consumers by Schutz et al. (1979), over half reported shopping for clothing several times a year and one-fourth once a month or more. Findings of Gillett et al. (1982b) differed somewhat. Although away-from-home activity was reduced with advancing age, frequency of shopping visits did not seem to diminish for those of advanced ages.

Null Hypothesis Fifteen

There will be no significant difference by age group in choice of shopping companion (item 6).

Table 42. Frequency of Shopping at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Frequency of shopping											
	Once a week		Several times a month		Once a month		Several times a year		Once a year		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	1	6.67	4	26.67	10	66.67	0	.00	15	7.77
35-44 yrs.	0	.00	7	31.82	1	4.55	14	63.64	0	.00	22	11.40
45-54 yrs.	1	3.03	3	9.09	3	9.09	25	75.76	1	3.03	35	17.10
55-64 yrs.	2	4.55	7	15.91	2	4.55	33	75.00	0	.00	44	22.80
65-74 yrs.	3	6.12	4	8.16	4	8.16	37	75.51	1	2.04	49	25.39
75 years and over	3	10.00	2	6.67	2	6.67	19	63.33	4	13.33	30	15.54
Total	9	4.66	24	12.44	16	8.29	138	71.50	6	3.11	193	100.00

Chi-square = 34.189, df = 20, $p < .05$

Seven options were investigated: FRIEND, SPOUSE, MOTHER, CHILDREN, OTHER RELATIVE, NO ONE IN PARTICULAR, and SHOP ALONE. Respondents could circle one or two of the options. Since more than one option was possible for this hypothesis, the chi-square test of significance was performed for each option individually. For this analysis, each option was classified as having either a positive answer (was circled) or a negative answer (was not circled). The findings by options follow.

(a). Friend. Of 193 respondents 15 percent reported choosing a FRIEND as a shopping companion (Table 43). From 10 to 20 percent in all age groups went shopping with a FRIEND. The chi-square analysis did not show a significant difference by age.

(b). Spouse. Of 193 respondents, 15 percent reported shopping with SPOUSE (Table 43). The chi-square test was significant at the .05 level, indicating there was a difference by age group in the choice of SPOUSE as shopping companion. Approximately three out of 10 respondents who were less than 35 years of age reported SPOUSE as a shopping companion, none in age group 35-44, approximately two out of 10 in each group between 45 and 74 years, and none age 75 and over. That the highest percentage who shopped with a spouse was the youngest age group may be explained by the fact that many young couples currently have been delaying or choosing not to have children. Hence, time is more likely to be available for shopping together. The report that no one in age group 35-44 went shopping with spouse may be due to the trend of both spouses being employed and sharing child care and household tasks; thus, time for shopping together is limited.

Table 43. Choice of Companion for Shopping at Seven Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Choice of companion for shopping													
	Friend (a)		Spouse (b)		Mother (c)		Children (d)		Other relative (e)		No one in particular (f)		Shop alone (g)	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	2	13.33	4	26.67	6	40.00	2	13.33	0	.00	0	.00	7	46.67
35-44 yrs.	3	13.64	0	.00	1	4.55	6	27.27	0	.00	3	13.64	15	68.18
45-54 yrs.	7	21.21	6	18.18	2	6.06	7	21.21	1	3.03	5	15.15	10	30.30
55-64 yrs.	6	13.64	8	18.18	0	.00	7	15.91	1	2.27	7	15.91	24	54.55
65-74 yrs.	8	16.33	10	20.41	0	.00	6	12.24	7	14.29	9	18.37	23	46.94
75 years and over	3	10.00	0	.00	0	.00	7	23.33	4	13.33	6	20.00	14	46.67
Total	29	15.03	28	14.51	9	4.66	35	18.13	13	6.74	30	15.54	93	48.19
Chi-square	1.781		12.826		48.293		3.519		11.313		3.581		8.535	
df	5		5		5		5		5		5		5	
p <	.8785 n.s.		.05		.0001		.6206 n.s.		.05		.6111		.1291	

N = 193

Persons age 45 years and older tended to be less likely than younger respondents to have a spouse, as shown by the demographic data. Less than three-fourths of the respondents in age group 45-54 were married. The percentage of married respondents decreased with each advancing age group to slightly over one-fourth for persons 75 years and over; thus, the likelihood of shopping with a spouse lessened with age.

(c). Mother. Of 193 respondents less than 5 percent reported MOTHER as shopping companion (Table 43). The chi-square test was significant at the .0001 level, indicating there was a difference by age group in the choice of mother as shopping companion. Forty percent of the respondents under age 35 reported MOTHER as shopping companion, while very few between ages 35 and 54 and none above age 55 reported MOTHER. These findings follow demographic history that the middle aged and elderly are less likely to have a mother living. Rich and Jain (1968) considered the aspect of shopping with mother relative to social class and found that less than 10 percent in any social class went shopping with a mother.

(d). Children. Of 193 respondents 18 percent reported CHILDREN as shopping companion (Table 43). The chi-square test did not show a significant difference by age group.

(e). Other relative. Less than 7 percent of the 193 respondents reported OTHER RELATIVE as shopping companion (Table 43). The chi-square analysis was significant at the .05 level, indicating age groups differed in the selection of another relative as a shopping

companion. Shopping with OTHER RELATIVE tended to increase with age. No one in the two youngest age groups reported shopping with OTHER RELATIVE and very few in the middle age groups; however, approximately 14 percent in each of the two oldest age groups reported OTHER RELATIVE. For people in the upper years, members of the extended family tend to become more important particularly as closer relatives and friends die. In addition, older people may feel freer to call on other relatives for assistance than to call on a friend.

(f). No one in particular. Sixteen percent of the 193 respondents reported shopping with NO ONE IN PARTICULAR (Table 43). The chi-square test did not show a significant difference by age.

(g). Shop alone. Forty-eight percent of the 193 respondents reported SHOP ALONE (Table 43). The chi-square test did not show a significant difference by age. In the transgenerational comparison of fashion consumers, Martin (1976) found that the elderly consumer seldom or never shopped with another person. Rich and Jain (1968) concluded that very few respondents either above or below age 40 went shopping with others. In contrast, Glisan and Kiser (1979) determined that elderly food shoppers tended to shop with someone. In this research three of the seven response options, SPOUSE, MOTHER, and OTHER RELATIVE, were found to be significantly different by age group; therefore, the null hypothesis was accepted with the exception of these three options.

Null Hypothesis Sixteen

There will be no significant difference by age group in time of day selected for shopping for clothing (item 7).

The time of day selected by 192 respondents was approximately 38 percent for NO PARTICULAR TIME, over 23 percent for AFTERNOON, 21 percent for MORNING, 15 percent for EVENING, and 3 percent for NOON (Table 44). The chi-square test was significant at the .01 level indicating there was a difference by age group in time of day selected for shopping; hence, the null hypothesis was rejected. Respondents under age 65 tended to select AFTERNOON or EVENING, while those over age 65 tended to select MORNING or AFTERNOON. No one under age 45 selected MORNING and no one age 75 and over selected EVENING. Few respondents in any age group selected NOON. NO PARTICULAR TIME was the strongest response by all age groups except age 45-54 where EVENING was the strongest.

In the literature reviewed, the question of time-of-day for shopping for clothing was not approached. In a study of elderly food shoppers by Mason and Bearden (1978), over 85 percent preferred shopping in the morning and none in the evening. Elderly food shoppers, in the research of Glisan and Kiser (1979) equally chose morning or afternoon, while younger ages chose noon to 6:00 p.m.

Null Hypothesis Seventeen

There will be no significant difference by age group in the amount of time spent shopping for clothing (item 8).

Fifty-seven percent of 193 respondents reported spending ONE TO TWO HOURS each shopping trip, while almost 31 percent spent HALF A DAY OR MORE, and over 12 percent spent LESS THAN ONE HOUR each trip (Table 45). For the analysis, the original categories

Table 44. Time of Day for Shopping at Five levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Time of day for shopping											
	Morning		Noon		Afternoon		Evening		No particular time		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	0	.00	4	26.67	5	33.33	6	40.00	15	7.81
35-44 yrs.	0	.00	2	9.09	6	27.27	3	13.64	11	50.00	22	11.46
45-54 yrs.	8	24.24	0	.00	8	24.24	10	30.30	7	21.21	33	17.19
55-64 yrs.	7	15.91	1	2.27	11	25.00	7	15.91	18	40.91	44	22.92
65-74 yrs.	16	33.33	2	4.17	10	20.83	3	6.25	17	35.42	48	25.00
75 years and over	10	33.33	1	3.33	6	20.00	0	.00	13	43.33	30	15.63
Total	41	21.35	6	3.13	45	23.44	28	14.58	72	37.50	192	100.00

Chi-square = 38.387, df = 20, $p < .01$

Table 45. Length of Time Spent Shopping at Three Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Time spent shopping							
	Less than one hour		One to two hours		Half a day or more		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	10	66.67	5	33.33	15	7.77
35-44 yrs.	4	18.18	11	50.00	7	31.82	22	11.40
45-54 yrs.	3	9.09	19	57.58	11	33.33	33	17.10
55-64 yrs.	4	9.09	24	54.55	16	36.36	44	22.80
65-74 yrs.	3	6.12	36	73.47	10	20.41	49	25.39
75 yrs. and over	10	33.33	10	33.33	10	33.33	30	15.54
Total	24	12.44	110	56.99	59	30.57	193	100.00

Chi-square = 23.357; df = 10; $p < .01$

of HALF A DAY and ALL DAY were combined because of limited response. The chi-square test was significant at the .01 level, indicating there was a difference by age group in the amount of time spent shopping; hence, the null hypothesis was rejected. The pattern of answers was somewhat unclear, however. Approximately one-third of the respondents in each age group under 65 years spent HALF A DAY OR MORE shopping. For these age groups, one-half to two-thirds spent ONE TO TWO HOURS shopping. Persons 65-74 years spent the least amount of time shopping with four out of five spending two hours or less. One-third of those age 75 and over responded to each time level.

In the cross-cultural study of Hawes et al. (1977) shopping time for women in the United States decreased slightly as age increased. In the Houston study by Gelb (1978), more than one-fourth of the

elderly subjects reported shortening shopping trips short because of physical problems.

Null Hypothesis Eighteen

There will be no significant difference by age group in day(s) of the week preferred for shopping for clothing (item 9).

Eight options were investigated which included the seven days of the week and a no preference option. Respondents could circle one or two preferences. Since more than one option was possible for this hypothesis, the chi-square test of significance was performed for each option individually. For this analysis, each option was classified as having either a positive answer (was circled) or a negative answer (was not circled). The findings by options follow.

(a). Sunday. Approximately 5 percent of 192 respondents preferred SUNDAY, with persons age 35-44 leading this choice (Table 46). The chi-square test did not show a significant difference by age group.

(b). Monday. Nine percent of 192 respondents preferred MONDAY, with age groups 35-44 years and 65-74 years leading this choice (Table 46). The chi-square test did not show a significant difference by age group.

(c). Tuesday. Approximately 6 percent of the sample preferred TUESDAY (Table 46). Twenty percent of persons age 75 and over reported a preference for TUESDAY, while few persons in other age groups preferred TUESDAY. The chi-square test was significant at the .01 level, indicating there was a difference by age group in

Table 46. Preferred Day for Shopping for Clothing at Eight Levels by Six Age Groups Using Two-Way Contingency Table Analysis

	Preferred day for shopping													
	Sunday (a)		Monday (b)		Tuesday (c)		Wednesday (d)		Thursday (e)		Friday (f)		Saturday (g)		No preference (h)	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	1	6.67	0	.00	0	.00	1	6.67	2	13.33	6	40.00	9	60.00
35-44 yrs.	3	13.64	3	13.64	1	4.55	1	4.55	1	4.45	0	.00	7	31.82	11	52.38
45-54 yrs.	2	6.06	0	.00	0	.00	0	.00	1	3.03	1	3.03	7	21.21	25	75.76
55-64 yrs.	2	4.55	4	9.09	1	2.27	5	11.36	7	15.91	5	11.36	9	20.45	25	58.14
65-74 yrs.	1	2.08	7	14.58	3	6.25	5	10.42	7	14.59	5	10.42	2	4.17	30	62.50
75 years and over	0	.00	2	6.67	6	20.00	4	13.33	6	20.00	1	3.33	2	6.67	17	56.67
Total	9	4.69	17	8.85	11	5.73	15	7.81	23	11.98	14	7.29	33	17.19	117	61.58
Chi-square	6.420		6.051		15.284		6.886		6.884		5.895		17.549		4.109	
df	5		5		5		5		5		5		5		5	
p <	.2675 n.s.		.3013 n.s.		.01		.2293 n.s.		.2325 n.s.		.3166 n.s.		.01		.5338 n.s.	

n = 192

preference for TUESDAY as a shopping day. With a limited number of persons under age 75 selecting TUESDAY, those 75 years and older may be aware of more available sales help and less crowded stores and, thus, prefer TUESDAY for apparel shopping.

(d). Wednesday. Approximately 8 percent of 192 respondents preferred WEDNESDAY with the three oldest age groups leading this choice (Table 46). The chi-square test did not show a significant difference by age group.

(e). Thursday. Twelve percent of 192 respondents preferred THURSDAY with the three oldest age groups leading this choice (Table 46). The chi-square test did not show a significant difference by age group.

(f). Friday. Over 7 percent of 192 respondents preferred FRIDAY with persons less than 35 years leading this choice (Table 46). The chi-square test did not show a significant difference by age group.

(g). Saturday. Seventeen percent of 192 respondents reported a preference for SATURDAY (Table 46). This was the strongest preference shown for a particular day of the week. The chi-square test was significant at the .01 level, indicating there was a difference by age group in preference for SATURDAY as a shopping day. Forty percent of the youngest age group reported a preference for SATURDAY. This preference decreased as age increased. Few persons in the two oldest age groups preferred SATURDAY. These elderly may have been choosing week days when fewer younger people were shopping in order to avoid the crowds and shop leisurely.

(h). No preference. Sixty-two percent of 192 respondents reported NO PREFERENCE, with responses ranging from half of age group 35-44 to three-fourths of age group 45-54 (Table 46). The chi-square test did not show a significant difference by age group.

Only two of the eight options, TUESDAY and SATURDAY, were significantly different by age group; therefore, the null hypothesis was accepted for the other six options. In general, NO PREFERENCE was reported by far more respondents in every age group than any other option. One 69 year old respondent wrote, "I shop whenever convenient." TUESDAY was the preferred day for the oldest age group, and SATURDAY was the preferred day for the two youngest age groups and the two middle aged groups. Target Stores of Knoxville selected a Tuesday exclusively for senior citizens to do holiday shopping ("Special Shoppers," 1982).

In the literature reviewed, day of the week for shopping was considered for food shopping (Mason & Smith, 1974; McCall, 1977). Mason and Smith (1974) found that 44 percent of the senior citizens preferred Friday for food shopping. McCall (1977) examined shopping practices of women not working, working part-time, and working full-time. For food shoppers, Monday through Thursday was chosen by more than 60 percent of women not working and working part-time, but by only 38 percent of women working full-time. Also, one-third of the full-time workers chose Saturday, while only one-eighth of those not working and one-sixth of the part-time workers chose Saturday.

The choice of day for clothing shopping may be somewhat different from food shopping due to such factors as advertised price specials, personal needs, and social or business plans. However, shopping for both of these major products, food and clothing, has to be planned around other schedules that cannot be adjusted by the consumer, e.g., working hours, business hours, and social and professional meetings.

Null Hypothesis Nineteen

There will be no significant difference by age group in type of sales service preferred when shopping for clothing (item 10).

Over 53 percent of the 187 respondents reported a preference for SELF SERVICE, while nearly 47 percent preferred SALESPERSON'S ASSISTANCE (Table 47). The categories of TELEPHONE ORDER and

Table 47. Type of Sales Service Preferred at Two Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Type of sales service preferred					
	Self service		Salesperson's assistance		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	10	66.67	5	33.33	15	8.02
35-44 yrs.	13	59.09	9	40.91	22	11.76
45-54 yrs.	18	56.25	14	43.75	32	17.11
55-64 yrs.	27	61.36	17	38.64	44	23.53
65-74 yrs.	22	46.81	25	53.19	47	25.13
75 yrs. and over	10	37.04	17	62.96	27	14.44
Total	100	53.48	87	46.52	187	100.00

Chi-square = 6.3; df = 5; $p < .2781$ n.s.

MAIL ORDER were not included in the analysis because of minimum response. The chi-square test did not show a significant difference by age; therefore, the null hypothesis was accepted. In other consumer research, the elderly were found to shop very little by mail or telephone (Barnes & Peters, 1982; Lumpkin & Greenberg, 1982; and Mason & Bearden, 1978).

Null Hypothesis Twenty

There will be no significant difference by age group in method of payment used when shopping for clothing (item 11).

Forty-eight percent of 192 respondents reported CASH OR CHECK, approximately 21 percent reported CREDIT CARD; and approximately 31 percent reported BOTH CASH AND CREDIT (Table 48). The chi-square test was significant at the .01 level,

Table 48. Method of Payment at Three Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Method of payment							
	Cash or check		Credit card		Both cash and credit		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	3	20.00	2	13.33	10	66.67	15	7.81
35-44 yrs.	12	54.55	4	18.18	6	27.27	22	11.46
45-54 yrs.	15	45.45	9	27.27	9	27.27	33	17.19
55-64 yrs.	15	34.09	16	36.36	13	29.55	44	22.92
65-74 yrs.	32	66.67	5	10.42	11	22.92	48	25.00
75 yrs. and over	16	53.33	4	13.33	10	33.33	30	15.63
Total	93	48.44	40	20.83	59	30.73	192	100.00

Chi-square = 25.143; df = 10; $p < .01$

indicating there was a difference by age group in the method of payment used when shopping for clothing; hence, the null hypothesis was rejected. The heaviest users of CASH OR CHECK as the method of payment were persons age 65-74 with two-thirds reporting this method. Over half of the persons 75 years and over paid by CASH OR CHECK in contrast to one-fifth of those less then 35 years of age. The heaviest users of CREDIT CARDS were persons age 55-64 with over one-third reporting, while the lightest users were age 65-74. For age groups using BOTH CASH AND CREDIT methods of payment, the youngest age group led with two-thirds reporting, while the 65-74 age group was the lowest.

Similarities exist between these findings and those of other researchers. Martin (1976) found that over half of the elderly paid by check, and that two-thirds of the elderly maintained a charge account at the store of purchase. Weisenberger and Giese (1979) reported that persons less than age 35 had a more positive attitude toward use of credit than those over age 50.

Null Hypothesis Twenty-One

There will be no significant difference by age group in type of credit card used when shopping for clothing (item 12).

Over 36 percent of 192 respondents reported using STORE CARD, approximately 29 percent reported DO NOT USE CREDIT CARDS, almost 20 percent used BOTH STORE AND BANK CARD, and 15 percent used BANK CARD (Table 49). The chi-square test was significant at the .01 level, indicating there was a difference by age group

Table 49. Type of Credit Card Used at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Type of credit card									
	Store card		Bank card		Both		Do not use		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	4	26.67	4	26.67	5	33.33	2	13.33	15	7.81
35-44 yrs.	6	27.27	3	13.64	5	22.73	8	36.36	22	11.46
45-54 yrs.	9	27.27	3	9.09	14	42.42	7	21.21	33	17.19
55-64 yrs.	22	50.00	9	20.45	7	15.91	6	13.64	44	22.92
65-74 yrs.	14	29.17	6	12.50	6	12.50	22	45.83	48	25.00
75 yrs. and over	15	50.00	4	13.33	1	3.33	10	33.33	30	15.63
Total	70	36.46	29	15.10	38	19.79	55	28.65	192	100.00

Chi-square = 36.049, df = 15, $p < .01$

in type of credit card used; hence, the null hypothesis was rejected. Heaviest users of STORE CARDS were age groups 55-64 and 75 years and over with half in each of these groups reporting. Respondents less than 35 years were heaviest users of BANK CARDS, and respondents 45-54 years were heaviest users of BOTH STORE AND BANK CARDS. Age group 65-74 used credit cards the least with 46 percent reporting DO NOT USE.

Findings of other researchers differ somewhat. Bernhardt and Kinnear (1976) reported that persons age 50-64 were much stronger users of store cards than those over age 65. Gillett et al. (1982b) found that persons age 65-74 were stronger users of credit cards than persons age 75 and over, and the store card outranked the bank card for both age groups. This is in agreement with the present research in that the elderly who used credit cards preferred store cards over bank cards.

Null Hypothesis Twenty-Two

There will be no significant difference by age group in the type of transportation selected for shopping for clothing (item 13).

Approximately 82 percent of 186 respondents reported CAR, DRIVE MYSELF, while 18 percent reported CAR, SOMEONE ELSE DRIVES (Table 50). Responses to the categories WALK, TAXI, and PUBLIC TRANSPORTATION were minimum and were not included in the analysis. The chi-square test was significant at the .01 level, indicating there was a difference by age group in type of transportation selected; hence, the null hypothesis was rejected. All

Table 50. Type of Transportation for Shopping at Two Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Type of transportation for shopping					
	Car, drive myself		Car, someone else drives		Total	
Age group	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	14	100.00	0	.00	14	7.53
35-44 yrs.	22	100.00	0	.00	22	11.83
45-54 yrs.	28	87.50	4	12.50	32	17.20
55-64 yrs.	36	85.71	6	14.29	42	22.58
65-74 yrs.	34	70.83	14	29.17	48	25.81
75 yrs. and over	18	64.29	10	35.71	28	15.05
Total	152	81.73	34	18.28	186	100.00

Chi-square = 18.723; df = 5; $p < .01$

respondents in the two youngest age groups reported CAR, DRIVE MYSELF. Responses to this category decreased from 88 percent for age group 45-54 to 64 percent for age group 75 and over. More than one-fourth of persons 65-74 and over one-third of persons 75 and over reported CAR, SOMEONE ELSE DRIVES.

Findings from other research concerning the elderly and transportation for shopping vary widely and seemed to be influenced by geographic area, size of city, and availability of public transportation (Bernhardt & Kinnear, 1976; Mason & Smith, 1974; Samli & Palubinskas, 1972). Gelb's (1978) Houston study revealed that one-fourth of the senior citizens found that getting to a store was more difficult than previously and one-fourth had someone younger take them shopping. In metropolitan Phoenix, shoppers age 75 and over continued to drive and traveled widely to shop (Gillett et al., 1982b).

Null Hypothesis Twenty-Three

There will be no significant difference by age group in the frequency of shopping for clothing by catalog (item 14).

Forty-seven percent of 191 respondents reported NEVER shopping by catalog, almost 49 percent reported OCCASIONALLY, 3 percent reported shopping for APPROXIMATELY HALF by catalog, and 1 percent reported shopping for MORE THAN HALF by catalog (Table 51). No one reported SHOP EXCLUSIVELY by catalog. The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Twenty-Four

There will be no significant difference by age group in what circumstance respondent shopped for clothing items that cost less than $25 (item 15).

Fifty-six percent of 191 respondents reported BUY AS NEED, 36 percent reported WHEN PRICES ARE REDUCED, almost 7 percent reported ON IMPULSE, and less than 1 percent when clothing was FIRST DISPLAYED (Table 52). The chi-square test did not show a significant difference by age groups; therefore, the null hypothesis was accepted.

Null Hypothesis Twenty-Five

There will be no significant difference by age group in what circumstance respondents shopped for clothing items that cost from $25 to $50 (item 16).

Table 51. Frequency of Shopping by Catalog at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Frequency of shopping by catalog											
	Never		Occasionally		Approximately half		More than half		Shop exclusively		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	7	46.67	8	53.33	0	.00	0	.00	0	.00	15	7.85
35-44 yrs.	8	36.36	12	54.55	1	4.55	1	4.55	0	.00	22	11.52
45-54 yrs.	12	36.36	17	51.52	13	9.09	1	3.03	0	.00	33	17.28
55-64 yrs.	20	45.45	23	52.27	1	2.27	0	.00	0	.00	44	23.04
65-74 yrs.	26	55.62	21	44.68	0	.00	0	.00	0	.00	47	24.61
75 years and over	17	56.67	12	40.00	1	3.33	0	.00	0	.00	30	15.71
Total	90	47.12	93	48.69	6	3.14	2	1.05	0	.00	191	100.00

Chi-square = 14.788, df = 15, $p < .4668$ n.s.

Table 52. Circumstance for Shopping for Clothing Items That Cost Less Than $25 at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Circumstance for shopping for clothing items that cost less than $25									
	First displayed		As need		Prices reduced		On impulse		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	11	73.33	4	26.67	0	.00	15	7.85
35-44 yrs.	0	.00	11	50.00	9	40.91	2	9.09	22	11.52
45-54 yrs.	0	.00	17	51.52	12	36.36	4	12.12	33	17.38
55-64 yrs.	0	.00	25	56.82	15	34.09	4	9.09	44	23.04
65-74 yrs.	1	2.04	25	51.02	21	42.86	1	2.04	49	25.65
75 years and over	0	.00	18	64.29	8	28.57	2	7.14	28	14.66
Total	1	.52	107	56.02	69	36.13	13	6.81	191	160.00

Chi-square = 13.580, df = 20, $p < .8511$ n.s.

Fifty percent of 192 respondents reported BUY AS NEED, 38 percent reported WHEN PRICES ARE REDUCED, approximately 6 percent purchased ON IMPULSE, and nearly 5 percent purchased when clothing was FIRST DISPLAYED (Table 53). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Twenty-Six

There will be no significant difference by age group in what circumstance respondent shopped for clothing items that cost over $50 (item 17).

Forty-six percent of 191 respondents reported BUY AS NEED, 42 percent reported WHEN PRICES ARE REDUCED, almost 6 percent purchased when clothing was FIRST DISPLAYED, and nearly 4 percent purchased ON IMPULSE (Table 54). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Twenty-Seven

There will be no significant difference by age group in amount spent on clothing last year (item 18).

Of 191 respondents, 58 percent reported spending $100-$499 on clothing last year, 23 percent reported spending $500-$999, 10 percent reported LESS THEN $100, 5 percent reported $1000-$1999, and approximately 3 percent reported $2000 OR MORE (Table 55). The chi-square test was significant at the .01 level, indicating there was a

Table 53. Circumstance for Shopping for Clothing Items that Cost $25 to $50 at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Circumstance for shopping for clothing items that cost $25 to $50									
	First displayed		As need		Prices reduced		On impulse		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	4	26.67	8	53.33	1	6.67	15	7.81
35-44 yrs.	0	.00	11	50.00	9	40.91	2	9.09	22	11.46
45-54 yrs.	2	6.06	15	45.45	9	27.27	6	18.18	33	17.19
55-64 yrs.	2	4.55	21	47.73	19	43.18	2	4.55	44	22.92
65-74 yrs.	3	6.25	25	52.08	19	39.58	0	.00	48	25.00
75 years and over	1	3.33	20	66.67	9	30.00	0	.00	30	15.63
Total	9	4.69	96	50.00	73	38.02	11	5.73	192	100.00

Chi-square = 26.509, df = 20, $p < .1496$ n.s.

Table 54. Circumstance for Shopping for Clothing Items That Cost Over $50 at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Circumstance for shopping for clothing items that cost over $50									
	First displayed		Buy as need		Prices reduced		On impulse		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	2	13.33	4	26.67	8	53.33	0	.00	15	7.85
35-44 yrs.	1	4.55	12	54.55	8	36.36	1	4.55	22	11.52
45-54 yrs.	1	3.13	17	53.13	9	28.13	3	9.38	32	16.75
55-64 yrs.	2	4.55	17	38.64	22	50.00	2	4.55	44	23.04
65-74 yrs.	3	6.25	24	50.00	20	41.67	0	.00	48	25.13
75 years and over	2	6.67	14	46.67	13	43.33	1	3.33	30	15.71
Total	11	5.76	88	46.07	80	41.88	7	3.66	191	100.00

Chi-square = 16.790, df = 20, $p < .6665$ n.s.

Table 55. Amount Spent on Clothing at Five Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Amount spent on clothing											
	Less than $100		$100-$499		$500-$999		$1000-$1999		$2000 or over		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	4	26.67	7	46.67	3	20.00	0	.00	15	7.85
35-44 yrs.	1	4.55	12	54.55	6	27.27	1	4.55	2	9.09	22	11.52
45-54 yrs.	2	6.25	16	50.00	10	31.25	3	9.38	1	3.13	32	16.75
55-64 yrs.	2	4.55	26	59.09	11	25.00	3	6.82	2	4.55	44	23.04
65-74 yrs.	7	14.38	34	70.38	7	14.38	0	.00	0	.00	48	25.13
75 years and over	7	23.33	19	63.33	4	13.33	0	.00	0	.00	30	15.71
Total	20	10.47	111	58.12	45	23.56	10	5.24	5	2.62	191	100.00

Chi-square = 38.489, df = 20, $p < .01$

difference by age group in the amount spent on clothing last year; hence, the null hypothesis was rejected. Older persons spent less than younger persons. No one age 65 or over reported spending $1000 or more on clothing last year. More than eight out of 10 persons in the two oldest age groups spent less than $500 for clothing. Of persons that reported spending $1000 or more, 20 percent were younger than 35 years, 14 percent were in age group 35-44 years, and 12 percent were in age groups 45-54 and 55-64.

No studies were found that reported recent annual expenditures on clothing by age groups. Chen and Chu (1982) used data from the 1972-73 Consumer Expenditure Interview Survey of the Bureau of Labor Statistics to report expenditures for consumer goods, including clothing, by stages of the life cycle. Average budget shares for clothing in 1973 were 8.37 percent for age 35-44 years, 7.51 percent for age 45-54 years, 6.37 percent for age 55-64 years, 5.10 percent for age 65 and over, and 7.16 percent for all ages. The Bureau of Labor Statistics ("Retired Couple's Budget," 1982) developed hypothetical budgets for retired couples at three levels of living for autumn 1981:

	Lower budget	Intermediate budget	Higher budget
Total	$7,226	$10,226	$15,078
Clothing	$244 (3.38%)	$409 (3.99%)	$629 (4.17%)

In the present research, 70 percent of the elderly spent for clothing as if they were in the lower or intermediate budget groups, and 14 percent spent as if they were in the higher budget group.

Summary of Hypotheses Ten Through Twenty-Seven

These 18 hypotheses were concerned with general shopping behavior variables. A summary of statistical significances is shown in Table 56. Salient findings concerning general shopping behavior variables can be summarized as:

1. All ages shopped at the department store more than any other type of store. Department store shoppers were led by age groups 55-64 and 75 and over. The mass merchandiser was shopped most by the 65-74 age group, the specialty store by age groups 35-44 and 45-54, and the factory outlet by shoppers under age 35 (H_{13}).

2. In general, younger people tended to shop more frequently than older people, although for persons shopping once a week, the 75 and over age group led with 10 percent reporting. Age group 35-44 led those who shopped several times a month, and the age group less than 35 years led those who shopped once a month. All age groups tended to shop several times a year with two-thirds to three-fourths reporting. More persons age 75 and over reported shopping once a year than did any other age group (H_{14}).

3. Spouse, as a shopping companion, was strongest for the youngest age group, followed by persons 65-74 years, and then by those between ages 45 and 64 (H_{15b}).

4. Mother, as a shopping companion, was very strong for the youngest age group. No one over age 55 reported shopping with mother (H_{15c}).

Table 56. General Shopping Behavior: Summary of Hypotheses Significant by Age Group

Null hypotheses	Significance levels[a]
H_{10} -- how clothing is acquired	n.s.
H_{11} -- extent of shopping for clothing	n.s.
H_{12} -- where shop for clothing	n.s.
H_{13} -- type of store shopped	.10
H_{14} -- frequency of shopping	.05
H_{15} -- choice of shopping companion(s)	
(a) friend	n.s.
(b) spouse	.05
(c) mother	.0001
(d) children	n.s.
(e) other relative	.05
(f) no one in particular	n.s.
(g) shop alone	n.s.
H_{16} -- time of day for shopping	.01
H_{17} -- amount of time spent shopping	.01
H_{18} -- day(s) of the week for shopping	
(a) Sunday	n.s.
(b) Monday	n.s.
(c) Tuesday	.01
(d) Wednesday	n.s.
(e) Thursday	n.s.
(f) Friday	n.s.
(g) Saturday	.01
(h) no preference	n.s.
H_{19} -- type of sales service preferred	n.s.
H_{20} -- method of payment	.01
H_{21} -- type of credit card	.01
H_{22} -- type of transportation	.01
H_{23} -- frequency of catalog shopping	n.s.
H_{24} -- shop for items less than $25	n.s.
H_{25} -- shop for items $25 to $50	n.s.
H_{26} -- shop for items $50 or more	n.s.
H_{27} -- amount spent on clothing	.01

[a] n.s. = nonsignificant

5. Older age groups shopped with another relative while younger age groups did not. More than one in 10 age 65-74 and 75 and over shopped with another relative (H_{15e}).

6. Over one-third of the shoppers had no particular preference for time of day for shopping. Morning was chosen most often by persons over age 65, and evening by those less than 35 and 45-54. Afternoon was chosen about equally for all age groups (H_{16}).

7. One to two hours was the most preferred length of time for shopping, with three out of four in age group 65-74 reporting. Half a day or more was the preference of approximately one-third of every age group except for 65-74 which was one-fifth. Less than one hour was stronger for those 75 and over than any other age group (H_{17}).

8. Tuesday, as a preferred day for shopping, was strongest for persons 75 and over, and seldom chosen by any other age group (H_{18c}).

9. Saturday, as a preferred day for shopping, was strongest for the two youngest age groups, and seldom chosen by the two oldest age groups (H_{18g}).

10. Over half in each of the two oldest age groups and those 35-44 years used cash or check instead of credit cards as the preferred method of payment. Two out of three in the youngest age group used both cash and credit cards (H_{20}).

11. Store credit cards were used the most by age groups 55-64 and 75 and over. Bank cards were used the most by the youngest

age group. The least use of credit cards in general was by the 65-74 age group (H_{21}).

12. Transportation by car driven by self was very strong for the two youngest age groups (100 percent), and decreased with age to less than two-thirds for those age 75 and over. Transportation by car driven by another person increased with age, beginning with age group 45-54, to over one-third of those age 75 and over (H_{22}).

13. In general, the amount spent on clothing per year decreased as age increased. Clothing expenditures less than $499 increased with age, while expenditures greater than $500 decreased with age. No one age 65 or older spent more than $999 on clothing. Spenders of $2000 or more were in age group 35-44 (H_{27}).

Hypotheses Concerning Use of Information Sources

Hypotheses were formulated and tested concerning use of information sources by age group of women apparel shoppers. The 4-point scale used for analysis was: NEVER (0), OCCASIONALLY (1), FREQUENTLY (2), and ALMOST ALWAYS (3).

Null Hypothesis Twenty-Eight

There will be no significant difference by age group in use of the information source, visiting stores and window shopping (item 19).

Thirty-nine percent of 185 respondents reported visiting stores and window shopping OCCASIONALLY, nearly 30 percent reported FREQUENTLY, 21 percent reported ALMOST ALWAYS, and 10 percent reported NEVER (Table 57). The chi-square test did not show a

Table 57. Use of Information Source, Visiting Stores and Window Shopping, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Visiting stores and window shopping									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	6	40.00	4	26.67	4	26.67	15	8.11
35-44 yrs.	3	13.64	8	36.36	6	27.27	5	22.73	22	11.89
45-54 yrs.	8	24.24	7	21.21	13	39.39	5	15.15	33	17.84
55-64 yrs.	5	11.36	14	31.82	16	36.36	9	20.45	44	23.78
65-74 yrs.	1	2.17	23	50.00	11	23.91	11	23.91	46	24.86
75 years and over	1	4.00	14	56.00	5	20.00	5	20.00	25	13.51
Total	19	10.27	72	38.92	55	29.73	39	21.08	185	100.00

Chi-square = 21.342, df = 15, $p < .1262$ n.s.

significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Twenty-Nine

There will be no significant difference by age group in use of the information source, observing other people (item 20).

Forty-five percent of 178 respondents reported OCCASIONALLY seeking information by observing other people, 35 percent reported NEVER, 17 percent reported FREQUENTLY, and nearly 3 percent reported ALMOST ALWAYS (Table 58). The chi-square test was significant at the .05 level indicating there was a difference by age group in obtaining information about clothing by observing other people; hence, the null hypothesis was rejected. One-third of the persons less than 35 years responded to the two highest levels combined, FREQUENTLY and ALMOST ALWAYS, for observing other people. As age increased, observing other people became a less important source of information about clothing. Rich and Jain (1968) found that observing what other people wore was important to middle and upper social classes, but there was no significant difference found in the method used to obtain fashion information by women in various stages of the life cycle.

Null Hypothesis Thirty

There will be no significant difference by age group in use of information source, salespeople (item 21).

Forty-five percent of 178 respondents reported OCCASIONALLY seeking information from salespeople, 40 percent reported NEVER,

Table 58. Use of Information Source, Observing Other People, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Observing other people									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	4	26.67	6	40.00	3	20.00	2	13.33	15	8.43
35-44 yrs.	4	18.18	13	59.09	5	22.73	0	.00	22	12.36
45-54 yrs.	9	27.27	16	48.48	6	18.18	2	6.06	33	18.54
55-64 yrs.	19	45.24	17	40.48	6	14.29	0	.00	42	23.60
65-74 yrs.	12	28.57	23	54.76	6	14.29	1	2.38	42	23.60
75 years and over	15	62.50	5	20.83	4	16.67	0	.00	24	13.48
Total	63	35.39	80	44.94	30	16.85	5	2.81	178	100.00

Chi-square = 25.367, df = 15, $p < .05$

11 percent reported FREQUENTLY, and 4 percent reported ALMOST ALWAYS (Table 59). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted. These shoppers sought limited information from salespeople which is in agreement with the findings of Lumpkin and Greenberg (1982); Arnold, Ma and Tigert (1977); and Sivils and Williams (1981).

Null Hypothesis Thirty-One

There will be no significant difference by age group in use of the information source, friends and relative (item 22).

Over 45 percent of 178 respondents reported OCCASIONALLY seeking information through friends and relatives, 31 percent reported FREQUENTLY, more than 17 percent reported NEVER, and 6 percent reported ALMOST ALWAYS (Table 60). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted. Other researchers found friends and relatives to be influential information sources for elderly persons (Elderly Consumer Project, 1978; Lumpkin & Greenberg, 1982; Mason & Bearden, 1978; and Weisenberger & Giese, 1979).

Null Hypothesis Thirty-Two

There will be no significant difference by age group in use of the information source, newspaper advertisements (item 23).

Of the 180 respondents, more than 45 percent reported FREQUENTLY using newspaper advertisements for information, while 33 percent reported OCCASIONALLY, approximately 17 percent reported ALMOST ALWAYS, and 4 percent reported NEVER (Table 61).

Table 59. Use of Information Source, Salespeople, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Talking with salespeople									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	6	40.00	9	60.00	0	.00	0	.00	15	8.43
35-44 yrs.	9	40.91	10	45.45	2	9.09	1	4.55	22	12.36
45-54 yrs.	20	60.61	9	27.27	3	9.09	1	3.03	33	18.54
55-64 yrs.	17	40.48	19	45.24	5	11.90	1	2.38	42	23.60
65-74 yrs.	14	32.56	17	39.53	9	20.93	3	6.98	43	24.16
75 years and over	5	21.74	16	69.57	1	4.35	1	4.35	23	12.92
Total	71	39.89	80	44.94	20	11.24	7	3.93	178	100.00

Chi-square = 20.928, df = 15, $p < .1392$ n.s.

Table 60. Use of Information Source, Friends and Relatives, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Talking with friends and relatives									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	7	46.67	7	46.47	0	.00	15	8.43
35-44 yrs.	3	13.64	13	59.09	6	27.27	0	.00	22	12.36
45-54 yrs.	6	18.18	16	48.48	9	27.27	2	6.06	33	18.54
55-64 yrs.	13	30.95	18	42.86	9	21.43	2	4.76	42	23.60
65-74 yrs.	4	9.52	17	40.48	16	38.10	5	11.90	42	23.60
75 years and over	4	16.67	10	41.67	8	33.33	2	8.33	24	13.48
Total	31	17.42	81	45.51	55	30.90	11	6.18	178	100.00

Chi-square = 16.694, df = 15, $p < .3375$ n.s.

Table 61. Use of Information Source, Newspaper Advertisements, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Reading newspaper advertisements									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	6	40.00	5	33.33	3	20.00	15	8.33
35-44 yrs.	2	9.09	9	40.91	10	45.45	1	4.55	22	12.22
45-54 yrs.	2	6.06	12	36.36	14	42.42	5	15.15	33	18.33
55-64 yrs.	1	2.38	17	40.48	19	45.24	5	11.90	42	23.33
65-74 yrs.	1	2.27	8	18.18	22	50.00	13	29.55	44	24.44
75 years and over	1	4.17	8	33.33	12	50.00	3	12.50	24	13.33
Total	8	4.44	60	33.33	82	45.56	30	16.67	180	100.00

Chi-square = 14.789, df = 15, $p < .4667$ n.s.

The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted. Respondents of all ages made use of newspaper advertisements as indicated by 50 to 80 percent responding when the two highest levels, FREQUENTLY and ALMOST ALWAYS, were combined. In other research, newspaper advertisements similiarly represented an important source of information for older consumers (Elderly Consumer Project, 1978; Martin, 1976; Mason & Bearden, 1978; and Sivils & Williams, 1981).

Null Hypothesis Thirty-Three

There will be no significant difference by age group of women apparel shoppers in use of information source, newspaper articles (item 24).

Of the 178 respondents, almost 44 percent reported OCCASIONALLY reading newspaper articles for information, over 32 percent reported FREQUENTLY, more than 13 percent reported ALMOST ALWAYS, and 10 percent reported NEVER (Table 62). The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Null Hypothesis Thirty-Four

There will be no significant difference by age group in use of information source, catalogs (item 25).

Of 177 respondents, 45 percent indicated OCCASIONALLY using catalogs for information, 27 percent reported FREQUENTLY, 21 percent reported NEVER, and nearly 7 percent reported ALMOST ALWAYS (Table 63). The chi-square test was significant at the .05 level,

Table 62. Use of Information Source, Newspaper Articles, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Reading newspaper articles									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	7	46.67	6	40.00	1	6.67	15	8.43
35-44 yrs.	3	13.64	9	40.91	9	40.91	1	4.55	22	12.36
45-54 yrs.	5	15.63	14	43.75	9	28.13	4	12.50	32	17.98
55-64 yrs.	6	14.29	20	47.62	12	28.57	4	9.52	42	23.60
65-74 yrs.	1	2.33	14	32.56	16	37.21	12	27.91	43	24.16
75 years and over	2	8.33	14	58.33	6	25.00	2	8.33	24	13.48
Total	18	10.11	78	43.82	58	32.58	24	13.48	178	100.00

Chi-square = 18.660, df = 15, $p < .2296$ n.s.

Table 63. Use of Information Source, Catalogs, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Use of catalogs									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	0	.00	8	53.33	5	33.33	2	13.33	15	8.47
35-44 yrs.	0	.00	16	72.73	4	18.18	2	9.09	22	12.43
45-54 yrs.	5	15.63	12	37.50	14	43.75	1	3.13	32	18.08
55-64 yrs.	14	33.33	15	35.71	11	26.19	2	4.76	42	23.73
65-74 yrs.	9	21.43	20	47.62	10	23.81	3	7.14	42	23.73
75 years and over	9	37.50	9	37.50	4	16.67	2	8.33	24	13.56
Total	37	20.90	80	45.20	48	27.12	12	6.78	177	100.00

Chi-square = 27.341, df = 15, $p < .05$

indicating there was a difference by age group in use of catalogs as a source of information about clothing; hence, the null hypothesis was rejected. Younger age groups made greater use of catalogs than did older age groups. Approximately half of those less than 35 years indicated using catalogs FREQUENTLY to ALMOST ALWAYS, but only one-fourth of those 75 years and over. Lumpkin and Greenberg (1982) also found that younger people made greater use of catalogs as an information source than did older people.

Null Hypothesis Thirty-Five

There will be no significant difference by age group in use of information source, fashion magazines (item 26).

Forty-four percent of 173 respondents reported OCCASIONALLY using fashion magazines for clothing information, while over 25 percent reported NEVER, nearly 24 percent reported FREQUENTLY, and 7 percent reported ALMOST ALWAYS (Table 64). The chi-square test was significant at the .05 level indicating there was a difference by age group in use of fashion magazines as a source of information about clothing; hence, the null hypothesis was rejected. The direction of use of fashion magazines by age groups was unclear, however. Heaviest users were in age groups 65-74 with approximately two out of five reporting, followed very closely by groups 35-44 and 55-64 years. Only one out of 10 persons age 75 and over reported using fashion magazines. Decline in visual acuity during the later years may partially account for this limited use.

Table 64. Use of Information Source, Fashion Magazines, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Reading fashion magazines									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	1	6.67	10	66.67	2	13.33	2	13.33	15	8.67
35-44 yrs.	3	13.64	11	50.00	5	22.73	3	13.64	22	12.72
45-54 yrs.	12	37.50	13	40.63	7	21.88	0	.00	32	18.50
55-64 yrs.	11	25.58	16	37.21	15	34.88	1	2.33	43	24.86
65-74 yrs.	7	17.50	17	42.50	11	27.50	5	12.50	40	23.12
75 years and over	10	47.62	9	42.86	1	4.76	1	4.76	21	12.14
Total	44	25.43	76	43.93	41	23.70	12	6.94	173	100.00

Chi-square = 26.862, df = 15, $p < .05$

Respondents in this research appeared to be heavier users of fashion magazines for information purposes than those in other studies. Sivils and Williams (1981) found the 65-74 age group to be the heaviest users, but only 11 percent reported. Lumpkin and Greenberg (1982) found the importance of fashion magazines decreased with age and was not very strong for any age.

Null Hypothesis Thirty-Six

There will be no significant difference by age group in use of information source, TV advertisements (item 27).

More than 46 percent of 174 respondents reported OCCASIONALLY using TV advertisements as a source of fashion information, 30 percent reported NEVER, 20 percent reported FREQUENTLY, and more than 3 percent reported ALMOST ALWAYS (Table 65). The chi-square test was significant at the .05 level indicating there was a difference by age group in use of TV advertisements as a source of information about clothing; hence, the null hypothesis was rejected. The heaviest users of TV advertisements as shown by combining responses to FREQUENTLY and ALMOST ALWAYS were persons less than 35 years with almost half reporting, followed by age group 65-74 with two out of five. However, no clear direction regarding frequent use was shown among age groups. Persons in age groups 35-44 and 55-64 used TV advertisements the least for obtaining information about clothing.

The combined responses of NEVER and OCCASIONALLY ranged from half to almost all for the six age groups, indicating that television advertisements were not a major source of information about

Table 65. Use of Information Source, TV Advertisements, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Watching TV advertisements									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	3	20.00	5	33.33	7	46.67	0	.00	15	8.62
35-44 yrs.	7	31.82	14	63.64	1	4.55	0	.00	22	12.64
45-54 yrs.	10	31.25	15	46.88	6	18.75	1	3.13	32	18.39
55-64 yrs.	17	41.46	19	46.34	5	12.20	0	.00	41	23.56
65-74 yrs.	7	17.07	18	43.90	13	31.71	3	7.32	41	23.56
75 years and over	8	34.78	10	43.48	3	13.04	2	8.70	23	13.22
Total	52	29.89	81	46.55	35	20.11	6	3.45	174	100.00

Chi-square = 25.709, df = 15, $p < .05$

clothing. This seems logical since clothing advertisements do not comprise a major portion of television advertising. Apparel items that have been consistently advertised on television include hosiery, men's under shorts, bras, gloves, and jeans, some of which are not typically worn by elderly women. Additionally, most television advertisements for women's clothing feature young models having fashion figures with which the elderly woman could not identify.

Related advertising has included retail outlets such as local department stores, nationwide mass merchandisers, and discount stores. Investigators in the fields of marketing, communications, and gerontology have found that the elderly spend considerable time viewing television (Bernhardt & Kinnear, 1979; Davis, 1976; French & Crask, 1977; Graney, 1974; Hawes et al., 1978; Ross, 1981; and Wenner, 1976). The use of television advertising as an information source about clothing was considered by Lumpkin and Greenberg (1982) and Sivils and Williams (1981). Lumpkin and Greenberg (1982) used a 5-point scale for ranking the importance of TV advertisements as an information source and found the means to range from 2.28 for persons less than 35 years, decreasing with each age group to 1.56 for persons 65 years and over. Sivils and Williams (1981) also found a limited use of TV advertisements for information about clothing by older women, with persons age 65-74 stronger users than ages above or below. The major kinship of these studies to the present research is that use of TV advertisements as a source of information about clothing was limited for older age groups.

Null Hypothesis Thirty-Seven

There will be no significant difference by age group in use of information source, radio advertisements (item 28).

Fifty-one percent of 177 respondents reported NEVER using radio advertisements as a source of information, 38 percent reported OCCASIONALLY, 9 percent reported FREQUENTLY, and 2 percent reported ALMOST ALWAYS (Table 66). The chi-square test was significant at the .05 level indicating there was a difference by age group in use of radio advertisements as a source of information about clothing; hence, the null hypothesis was rejected. The use of radio advertisements was limited for all age groups; however, the oldest groups tended to be somewhat more frequent users than the youngest. Limited use of radio advertisements is in agreement with the findings of Lumpkin and Greenberg (1982) and Sivils and Williams (1981), although Lumpkin and Greenberg found a decrease in use with age.

Null Hypothesis Thirty-Eight

There will be no significant difference by age group in use of information source, fashion shows (item 29).

Fifty percent of the 177 respondents reported OCCASIONALLY attending fashion shows, 42 percent reported NEVER, approximately 6 percent reported FREQUENTLY, and 2 percent reported ALMOST ALWAYS (Table 67). Limited use of fashion shows was shown by all age groups. The chi-square test did not show a significant difference by age group; therefore, the null hypothesis was accepted.

Table 66. Use of Information Source, Radio Advertisements, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Listening to radio advertisements									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	3	20.00	11	73.33	1	6.67	0	.00	15	8.47
35-44 yrs.	15	68.18	5	22.73	2	9.09	0	.00	22	12.43
45-54 yrs.	17	53.13	11	34.38	3	9.38	1	3.13	32	18.08
55-64 yrs.	30	71.43	10	23.81	2	4.76	0	.00	42	23.73
65-74 yrs.	13	30.95	21	50.00	6	14.29	2	4.76	42	23.73
75 years and over	12	50.00	9	37.50	2	8.33	1	4.17	24	13.56
Total	90	50.84	67	37.85	16	9.04	4	2.26	177	100.00

Chi-square = 25.709, df = 15, $p < .05$

Table 67. Use of Information Source, Fashion Shows, at Four Levels for Six Age Groups Using Two-Way Contingency Table Analysis

	Attending fashion shows									
	Never		Occasionally		Frequently		Almost always		Total	
Age groups	frequency	percent	frequency	percent	frequency	percent	frequency	percent	frequency	percent
Less than 35 yrs.	8	53.33	7	46.67	0	.00	0	.00	15	8.47
35-44 yrs.	5	22.73	14	63.64	3	13.64	0	.00	22	12.43
45-54 yrs.	17	53.13	13	40.64	1	3.13	1	3.13	32	18.08
55-64 yrs.	17	40.48	22	52.38	3	7.14	0	.00	42	23.73
65-74 yrs.	17	40.48	22	52.38	3	7.14	0	.00	42	23.73
75 years and over	11	45.83	11	45.83	0	.00	2	8.33	24	13.56
Total	75	42.37	89	50.28	10	5.65	3	1.69	177	100.00

Chi-square = 19.079, df = 15, $p < .2101$ n.s.

Bernhardt and Kinnear (1976) found that very few elderly respondents attended fashion shows, which is in agreement with this research.

Summary of Hypotheses Twenty-Eight Through Thirty-Eight

Eleven hypotheses were concerned with the use of sources of information about clothing, and five were found to be significant by age group. A summary of statistical significances is presented in Table 68.

Table 68. Use of Information Sources: Summary of Hypotheses Significant by Age Group

Null hypotheses	Significance levels[a]
H_{28} -- visiting stores and window shopping	n.s.
H_{29} -- observing other people	.05
H_{30} -- talking with salespeople	n.s.
H_{31} -- talking with friends and relatives	n.s.
H_{32} -- reading newspaper advertisements	n.s.
H_{33} -- reading newspaper articles	n.s.
H_{34} -- use of catalogs	.05
H_{35} -- reading fashion magazines	.05
H_{36} -- watching T.V. advertisements	.05
H_{37} -- listening to radio advertisements	.05
H_{38} -- attending fashion shows	n.s.

[a]n.s. = nonsignificant

Salient findings concerning use of information sources can be summarized:

1. Observing other people was of somewhat limited importance to all age groups, but was strongest for the youngest age group and declined with age through the oldest age group (H_{29}).

2. Use of catalogs was strongest for the youngest age group and the 45-54 age group, but declined with each succeeding age group (H_{34}).

3. Use of fashion magazines, TV advertisements, and radio advertisements was somewhat low and had no clear direction by age group (H_{35}, H_{36}, H_{37}). Persons age 65-74 were the heaviest users for each of these information sources.

4. Of the six information sources that were found to be significantly different by age groups, catalogs and fashion magazines were the heaviest used with approximately one-third of all age groups reporting heavy usage. Radio advertisements was the least used source.

5. Of the information sources that did not show a significant difference by age groups, newspaper advertisements were the heaviest used followed by visiting stores and window shopping and newspaper articles. Talking with salespeople was the least important source of information.

CHAPTER V

SUMMARY

In this last chapter the research is summarized. Conclusions derived from the hypotheses that were found to be significant by age group are discussed and the limitations are detailed. Recommendations for future research are discussed.

Review of the Research

With the aging of the population in this country, business and industry have become increasingly cognizant of the potential the older consumer has as an important segment in the marketplace. Both the popular press and professional journals have emphasized the coming of age of age. Buyer behavior of upper aged people has been of interest to marketing and consumer researchers for the past two decades. However, the methodology used in research has been diverse, the findings have not always been in agreement, and many major issues concerning aging people have not yet been addressed. It is widely recognized that physiological conditions diminish as age increases. Research concerning the effects that changing physical conditions have on consumer behavior has been limited. Given the basic facts that the older population is increasing and people are living longer, that physical aging is inevitable, and that obtaining goods from the marketplace is an all-time necessity, research to increase knowledge about consumer behavior of older people deserves top priority. This

research is an interdisciplinary study designed to investigate one particular aspect of aging that affects shopping behavior—diminishing eyesight. When visual acuity declines, consumer information as presently presented by industry becomes less consumable, i.e., print that cannot be read cannot be used.

The prime purpose of this research was twofold: to investigate by age group the readability of retail printed information that would be used in the search, alternative evaluation, and choice processes of consumer decision making when shopping for apparel, and to examine shopping behavior of women apparel consumers by age group. Specific objectives of the research were to determine whether age groups differed in accuracy of reading and in assessment of ease of reading printed items of different sizes of type and intensities of print; to find out if eyesight was assessed differently by age groups; to determine if certain shopping patterns differed by age group because of eyesight condition; and to examine general shopping practices including use of information sources by age groups.

A self-administered questionnaire was designed for this research. The questionnaire consisted of two major components, a readability instrument and a set of survey questions that pertained to eyesight condition, shopping behavior, social activities, and demographics. The readability instrument was composed of 12 retail printed items which were varied by using four sizes of type and three intensities of print. The printed items included price tags, care labels, fiber labels, and

cash and credit receipts. These items were chosen because they provide important factual information used by the consumer in the search, alternative evaluation, and choice stages of the shopping decision process. Obtaining the needed information is crucial to a satisfactory purchase. The readability instrument was designed to test accuracy and ease of reading the printed items. Readability may depend on the print, the lighting provided, and/or the eyesight of the shopper. A controlled lighting situation of 20-30 foot candles was provided for the testing. Participants responded to the accuracy component by writing a specified answer and to the ease components by evaluating ease of reading on a 4-point scale.

The data were analyzed using the general linear models procedure, followed by a series of models in which age, size, intensity, and the interactions were treated as categorical variables. Significant variables were maintained in each model and the nonsignificant variables were partitioned-out. From the final model, an equation was generated for the prediction of accuracy and ease of reading by age.

The survey portion of the questionnaire included descriptive items pertaining to eyesight, social activities, and demographics. These data were compiled in the form of frequency tables. A major portion of the survey pertained to shopping behavior. These data were tested for significance by age groups using chi-square analysis.

The purposive sample was composed of 204 women from age 26 to 89 years. Participants were socially active members of organizations in the Knoxville, Tennessee area. The research instrument was administered at a regular organizational meeting.

Conclusions and Implications of Findings

Conclusions and implications regarding the findings are discussed under four headings: readability, self-assessment of eyesight, shopping behavior specific to eyesight condition, and general shopping behavior including use of information sources.

Readability

Readability of retail printed items was measured by two variables, accuracy of reading and ease of reading. The data allowed the building of a model from which predictions for specific age groups were possible. Four ages were entered into the model and prediction graphs were drawn to depict accuracy and ease of reading for four sizes of type and three intensity levels of print. Ages 45, 55, 65, and 75 years were selected for use in the models. These are typical ages used in census data and labor statistics. The prediction model is an appropriate perspective from which to consider implications. Predictions for the four ages built on the models can be applied to customers of similar backgrounds and ages.

Accuracy of reading increased slightly when size of type was increased from 6-point to approximately 8½-point type for all ages. For 11-point and 14-point type, accuracy of reading was 100 percent. With each size of type, accuracy of reading increased slightly when the intensity was increased from light to dark for all ages. Accuracy of reading was reasonably high for all ages for the smallest size of type of the three intensities. From the prediction graphs the lowest

level of accuracy was 86 percent for 6-point type of light intensity for the 75 year old. This is a reasonably high percentage and may be explained by the numerous ways that a correct answer can be achieved when print is difficult to read. These include squinting or stretching the eyelids, moving the print closer or farther away, changing the position of the eyeglasses, or making a correct guess. Measurement of the use of such accommodations was not a part of this study; however, it was apparent that the 6-point type of light intensity was difficult to read since only 4 percent at age 45 and only 14 percent at age 75 could be predicted to assess this stimulus as easy to read.

Accuracy of reading decreased as age increased for each size-intensity combination, which is logical with the diminishing eyesight that typically occurs with aging. This finding supports Buseck (1980) who pointed out that discrimination of detail becomes more difficult with age.

The findings indicated that accuracy of reading was lowest for the small sizes of type of light intensity, and was stronger for 11-point and 14-point type of any intensity. The findings show that the older the shopper is, the more difficult accuracy of reading becomes. Weale (1975) stated that loss of visual acuity begins at age 45 and could amount to 80 percent by age 85. Increasing the size of type from 6-point to 8-point, was more important to accuracy of reading than increasing the intensity from light to dark for either of these sizes of type.

Ease of reading increased dramatically when size of type was increased from 6-point to 11-point type for all ages. Ease of reading

11-point type of light intensity was greater than for 14-point type of light intensity. The reason for this is believed to lie in the inconsistency of the intensity displayed in the dot-matrix type of printing used for the 14-point type illustration. This further emphasizes the necessity for clear printing at a consistent level of intensity for printed items used by the consumer/shopper.

With each size of type, from the smallest to the largest, ease of reading increased for all ages when intensity was increased from light to dark. The importance of dark intensity, which gives a high contrast in print and background, is evident here. Importance of contrast has been emphasized in the IES Lighting Handbook (1981).

Ease of reading increased for each specific size-intensity combination as age increased. This is the reverse of the finding for accuracy of reading. The assessment of easy to read for the smallest size of type, although not high, was much stronger for the 75 year old than the 45 year old. This finding is contrary to what most observers would expect. Since the rating of ease was a subjective measure, the reason for the higher assessment may be that older people have become accustomed to confronting life and its changes, and difficulties seem less pronounced. Kalish (1975) pointed out that older people are quite capable of coping with changes and know how to compensate when necessary. A contrasting explanation may be that older people may be less inclined to acknowledge or admit that a problem exists. Respondents age 45 rated the ease of reading as low. This is the age at which eyes physically change and people become very aware of not

being able to see as well as previously. Couch (1967) stated that visual deficiency generally reaches unexpected proportions around age 45.

The level at which the four age groups could be predicted to read both accurately and with ease was 11-point of dark intensity; therefore, the research recommends this size and intensity for the retail printed items that would be used by the shopper during the search, evaluation, and choice for consumer products.

The level at which the four ages could be predicted to read both accurately and with ease was 11-point of dark intensity. In the retail setting where lighting is 20-30 footcandles, the researcher recommends 11-point type of dark intensity, using black ink on white matte paper for consumer printed items that would be used by the shopper during the search, evaluation, and choice of apparel products. Further, the researcher recommends a lighting level of 100 footcandles in product areas frequented by shoppers age 45 and over. This lighting level is also recommended by the Illuminating Engineering Society of North America for merchandise that is purchased frequently and where evaluation and viewing time are rapid (IES Lighting Handbook, 1981). Adequate illumination reduces the time needed to focus, a characteristic of diminishing eyesight of aging people (Buseck, 1980). It can be expected that with adequate illumination, consumer decisions can be made swiftly, retail sales will increase, and shopping satisfaction will be enhanced.

Self-Assessment of Eyesight

Self-assessment of eyesight by age group tended to follow changes that physiologists have described as natural to aging. The lowest assessments were by persons 45-54 years and 75 years and over, two age levels for which natural decline can be expected. Near vision declines for the middle-aged person and bifocal lenses become necessary. Eyesight of the older elderly often declines because of disease.

In general, persons over 45 years of age assessed their eyesight as good. Since a large percentage of the shopping population is over age 45, then a large percentage of customers perceive their eyesight as diminishing. This finding has several implications for the retailing industry regarding readability of print. When the ability of the eye to discriminate small detail has diminished, and the print is small, dim, or blurred, and surrounding lighting is limited, product sales and customer satisfaction will be reduced. Retailers have no control over an individual's eyesight, but they are in a position to effect other changes. Portnoy (1982) emphasized the need for more light by older people since their pupils become smaller. Retailers are responsible for store lighting. Even with the energy controls that have been of concern the past years, innovations in special lighting can be employed to improve visibility within both specific areas and overall areas.

Printed consumer information is as important to a person with poor eyesight as to the person with excellent eyesight. The information that is attached to a product is one of the strongest influences

in the decision to purchase. Many printed items are provided by the manufacturer rather than the retailer. New technology for printing labels is constantly being devised, but these innovations have centered primarily around speed of production and cost cutting methods. No literature was found that indicated consideration had been given to the legibility of the final printed product. Print that is not readable is of little or no use to the consumer regardless of the cost effective methods of producing. Both the retailer and the manufacturer need to understand this fact and act on improving readability of labels and tags.

In addition to needing to read small printed items, shoppers also need to be able to distinguish certain product details in order to determine quality. Keen near-vision and good lighting or other innovations are important for examining the weave or knit of fabric, construction details on apparel, accessories and shoes (stitching, eyelets, rivets, lace, buttons), design detail of fine jewelry, the cut of precious stones, labels on cosmetics and health aids, warranties and guarantees, and instruction manuals. Retailers need to be aware that customers over age 45 assess their eyesight as less than excellent, and consider new approaches within the retail environment that will assist this customer during the shopping process. Luckiesh and Eastman (1946) found that low vision was aided by raising footcandles and applying direct light to the task.

Shopping Behavior Specific to Eyesight Condition

Eyesight condition was found to have brought about several changes in shopping behavior as age increased. Although some

significant differences were found as early as age 55, more noticeable changes occurred by age 65, and even greater changes occurred by age 75.

These upper aged people were strongest for shopping less frequently, shopping alone only in familiar stores, choosing daytime rather than evening for shopping, driving a car less frequently than in previous years, driving less at night, and not choosing all types of transportation. Numerous conclusions can be drawn from these findings. Older shoppers with diminishing eyesight are making efforts to accomplish their shopping in fewer trips. If they are attempting to accomplish the selection and purchase of several items in one trip, readable product information will reduce search time, speed choice for the shopper, and increase sales for the retailer.

As respondents aged, they tended to shop alone only in familiar stores. This finding can be important to retailers regarding continued patronage of long-time customers. A practical application lies in designing retail strategies that maintain the customers who have been loyal over the years.

Older shopper's transportation habits changed as eyesight diminished. One-sixth age 75 no longer drove a car and one-third no longer drove at night. The daytime shopping preference was emphasized by a decreased participation in nighttime driving. Implications for increasing retail sales may lie in a daytime transportation program for the retired, initiated by a firm or a shopping mall. Further, daytime special events, pertaining to fashion, social, or community issues,

targeted to the older customer may have the potential of solidifying store loyalty and enhancing store image.

Shopping Behavior and Use of Information Sources

Age groups differed significantly in 13 of the shopping behavior variables tested: type of store shopped, frequency of shopping, certain shopping companions (spouse, mother, and other relative), time of day for shopping, amount of time spent shopping, particular day of the week for shopping (Tuesday and Saturday), method of payment, type of credit card, type of transportation, and amount spent on clothing. For certain of these variables, there were wide differences by age groups, but for others the differences were narrow. For some variables, differences showed up in a well ordered pattern such as an increase or decrease from young age to old, while for other variables, there were no clear directions by age groups.

Conclusions and implications regarding shopping patterns and behavior will be discussed principally in terms of findings pertaining to the three major age segments—the young, those less than 45 years; the middle aged, those 45-64 years; and the elderly, those 65 years and older. Further differences for certain variables will be pointed out regarding the youngest or oldest group of a major age segment. For several variables, the responses by age segments tended to overlap.

All ages showed a preference for the department store for shopping for clothing, but persons over age 55 were the strongest. For persons 55-64 years and 65 years and over, department store shopping

has long been a habit, which suggests they are satisfied with this mode of retailing. Evidently customer confidence has been maintained at a high level over the years. Also, the department store continues to offer more special services than its competitors, particular sales personnel which is still important to the older customer. Additionally, the attraction of one-stop shopping may be important in reducing search time, saving personal physical energy, and cutting transportation costs. The mass merchandiser was important for persons over age 45, and particularly for the 65-74 age group. This may be accounted for because of a perceived price advantage. Further, the mass merchandiser typically has offered classic apparel with an up-to-date flare, in contrast to trend-setting fashions which may not be the choice of the older customer.

Persons age 35 to 54 years, the ages when income is usually good and increasing, were strongest shoppers in the specialty store. This group would likely have a high interest in contemporary styling and top quality lines and would be able to afford the higher prices usually found at the specialty stores.

The youngest age segment was strong for shopping several retail modes. This diversified shopping practice suggests they are willing to undergo a more extensive search and are not concerned with transportation problems. Additionally, they may not be habit bound or store loyal as older customers, and may be willing to spend more time and energy before making a final decision. Persons under age 35 were the strongest shoppers in the factory outlet, which are often located in

out-of-the-way areas. For older segments, transportation to factory outlets may present a problem. Many apparel factory outlets are known for quality merchandise at an advantageous price. Shoppers in the early stages of the family life cycle are generally receiving a beginner's salary, yet their needs and desires for personal clothing as well as many other consumer goods are extensive. Shopping at factory outlets has proved to be one way of stretching the income dollar.

These findings have strategy implications for the retailers. The various age groups decidedly have preferences for different modes of retailing. Aging customers seem to be comfortable with old habits and familiar places, while the upwardly mobile shop the specialty store and the young shop many types of retail outlets. With the aging population becoming increasingly important, retailers may want to reconsider their customer orientation. For retailers that are currently attractive to the older shopper, policies concerning continued patronage are important. For those that are attractive to younger market segments, marketing plans that are flexible with the changing ages of the customer may be appropriate. All customers are aging, and needs and wants of today's target market no doubt will be quite different in as little time as five years. Whatever the policy decision by a given retailer, recognition of the ever changing demographics is crucial, and flexibility of plans is important.

The young were more frequent shoppers than the middle-aged or the elderly. Although all ages reported shopping for clothing only several times a year, this lower frequency was particularly strong for

persons over age 45. This shopping practice may indicate that the search process is a seasonal event, hence it may involve a search for several items or a complete wardrobe. Consequently, customers may be involved in extensive evaluations of multiple selections. Readable consumer information is necessary for a satisfactory choice, and decision-making becomes more complex when the customer is confronted with many choices. Further, advertising and sales promotions geared to the seasonal shopper should prove profitable to the retailer and beneficial to the shopper as well.

Interestingly, persons age 75 and over had the highest response to shopping once a week. The intentions of these more frequent shoppers is not known. Tauber (1972) found that some of the many reasons for going shopping other than making a purchase included need for diversion, social experience, and physical activity. Older people may view shopping areas, particularly shopping malls, as a safe, comfortable, and stimulating place to spend their discretionary time.

Half or more of the three age segments spent only one or two hours shopping, while approximately one-third in each segment spent half a day or more. The two age groups strong for shopping less than one hour were those 35-44 years and 75 years and over. Determinants of the length of time spent is unknown. Questions arise as to whether this is the amount of time available, whether shopping needs are accomplished, and whether the time length is related to physical condition. It is important for the retailer to recognize that benefits will be derived if information is presented clearly so that search and

evaluation processes will foster a choice in a short time. For shoppers spending half a day or more, questions arise as to whether they are making purchases or "just looking." Other questions include how much search and comparison shopping are involved, what kinds of purchases are made, and what are the expenditures per shopping trip.

Over one-third of the participants in the three age segments had no particular time of day for shopping. Elderly shoppers were strongest for shopping in the morning, followed by the middle-aged. Both of these groups also shopped in the afternoon, thus daytime shopping was preferred over evening. Elderly shoppers may have chosen mornings because their energy level is higher at this time. Additionally, with stores less crowded with other shoppers, sales assistance and other services will be more readily available. Under these circumstances older shoppers can search and make evaluations at a relaxed pace and will likely be more satisfied with their product choice and the shopping trip in general. Persons age 45-54 and under 35 years were the strongest evening shoppers. Knowledge of who shops when can be of benefit to the retailer for planning product promotions, sales personnel, and special events.

Two out of three of the respondents had no preferred day of the week for shopping, but more elderly went shopping on Tuesday than any other age group and more young went shopping on Saturday. Perhaps, as with time of day, the elderly had determined Tuesday to be less crowded and salespeople would be more readily available. Retailers have the opportunity to further efficient decision-making by

their elderly customers through appropriate sales and merchandising techniques that include readable consumer information.

Age groups that went shopping with husbands were the youngest, the middle-aged, and those 65-74 years. Persons who went shopping with their mother were the youngest, and those who went shopping with another relative were the elderly. Shopping appeared to be a family affair but differed throughout the life cycle. Few elderly have a spouse still living. Even fewer have a mother living and if so she would not likely have been physically able to be a shopping companion. Persons in the empty-nest stage of the family life cycle, particularly those age 55 and over, have more time to go shopping with their spouse. Other relatives, than spouse, mother, or children, may be important support persons for the elderly segment. Often, when the spouse and mother are no longer living and children do not live near-by or have full-time schedules, other relatives become increasingly important in the daily lives of older people. It is not known whether persons who went shopping with another person did so out of need for shopping assistance, or for companionship, or for physical assistance. It appears that the retailer can expect shopping companions to be important, and perhaps influential, in the purchase decision of older shoppers.

Persons age 55-64 were the strongest users of credit cards, with store cards preferred over bank cards. The elderly preferred to pay by cash or check, but for those who used credit cards, store cards were preferred over bank cards. This suggests that certain retailers

have gained the confidence of these people and they will likely continue as customers. The youngest age groups used all methods of payment including both types of credit cards.

Respondents in all age groups were strong in response to driving their car for shopping. However, older shoppers drove less and depended on another driver more. Whether some older people actually go shopping or not may depend on the availability of a driver, a ride with a friend, or some other dependable transportation. An opportunity exists for retailers and shopping malls to become directly involved in transportation services for older shoppers. A regular van service to and from retirement centers could serve both the shoppers and the shop owners.

Expenditures of less than $500 on clothing were strong for persons over 65 years of age. Elderly shoppers spent less on clothing than other age groups. It is not known whether the low spending on clothing by the elderly was because of limited budget, unsatisfactory products, or a lack of need. Middle-aged shoppers in general spent up to $2000. The strongest age group for spending more than $2000 was the 35-44 group.

Eleven sources used to obtain information about clothing were tested and five were found to be significant by age group. Two of the significant variables involved reading small print—catalogs and fashion magazines.

Use of catalogs was the strongest source of information found to be significant by age group. Persons less than 35 and those 45-54,

the group that assessed eyesight the lowest, were the strongest users of catalogs for information. Persons from 55 to 75 years made some use of catalogs, and age group 75 and over used catalogs the least. Various factors may explain why older age groups make limited use of catalogs for information purposes. One, they are low purchasers by catalog and may not have a catalog available. Reasons for limited purchases through catalogs may center around biases developed earlier in life when catalog merchandise was not high quality and sales were aimed at the rural population. Another reason may be the perceived difficulty in physically returning an unsatisfactory order. Younger age groups have been more responsive to catalog purchasing, thus are exposed to catalog information. They make use of catalogs from a wide range of specialty retailers.

Catalogs have the potential of being a valuable information source. Succinct but basic and accurate information is usually presented, and color photography has been advanced to produce a near likeness in color. Catalogs can be studied at home at a time convenient to the user, where lighting can be adjusted to suit the reader, and magnifiers can be used if needed. Typical drawbacks to readability of catalogs include the small print, colored background, and high gloss paper. Sales advantages from catalogs could develop for the retailer if improved guidelines for the readability of the consumer information were established and followed.

Of the older ages that read fashion magazines, those 65-74 years were the strongest. This age group also assessed their eyesight as

best of the older groups. Persons age 75 years and over made the least use of fashion magazines. Perhaps declining eyesight could account for this, although it is not likely since the oldest age was a reasonably strong user of other reading materials, newspaper articles and advertisements, for information. The limited use of fashion magazines may imply a waning interest in fashion or that the fashions publicized are not appropriate to the older reader.

Television advertisements in general were not a strong source of information about clothing for this sample. This information source would seem to have potential for the retirement age since they are TV watchers. The youngest age group indicated the strongest usage of TV advertisements, followed by the 65-74 age group. Persons 35-44 years were the least users. The advertising of apparel on television has been limited. Two general types of advertisements seem to have user potential. One is for products that are not typically bound to fashion trends and that can be used by a wide range of ages. Another is for advertisements that promote the retail firm by emphasizing its importance in the community or by announcing special events and sales.

Radio advertisements were of little importance as a source of information about clothing. Elderly people were the strongest users of radio advertisements. Persons age 45-54 were also reasonably strong users of radio advertisements. Since product details are not visible on radio, as in newspaper or television advertising, the sample's response to this question seems appropriate. Perhaps the respondents were

conscious of brand advertisements and institutional promotions, which are often used in radio advertising.

Observing other people was of limited importance to persons over age 55. There are several possible reasons for this finding. Observation can produce limited information at best, most of which consists of style detail and color, and these may be obscure for persons with declining eyesight. Additionally, older people generally are self-directed and independent thinkers and may be less likely to copy or emulate peers, cohorts, or trendsetters. Further, these older people may not have considered other people as a competent source of information. The implications are that methods other than observing other people are more effective for obtaining information about clothing for older people.

In Conclusion

The findings of this research provide a beginning for other investigations concerning health and physical variables that affect shopping behavior of older consumers.

This country is undergoing a first in demographic changes—the aging of its people. Never has the older population been so large, the older people lived so long, or the older population been projected to increase at such a dramatic rate. Additionally, these older people are the most educated, most healthy, most affluent, and live the most active lives of any older group yet. Furthermore, there are good reasons to expect these characteristics to continue to increase.

Dr. Robert N. Butler has said, "The time is now to build into our personal and corporate behavior the realities of a long life ending not in the 60s and 70s but in the 80s and 90s." (Butler, 1983, p. 37). Now is the time for the marketplace to design approaches to satisfy the needs and wants of the older population. This is not a fly-by-night segment; the older population is here to stay. There are no guidelines from the past from which to draw insights. The few older people of 10 to 20 years ago were strikingly different from those of today and the differences 10 to 20 years hence will be even more conspicuous.

Vast differences exist among shoppers by age, particularly for those over age 45, and even more so for those over age 65. A study of consumers by 10 year increments will be important for distinguishing these differences. Segmenting by age is convenient and easy because the age of a person is a definite answer. The one group of people that has needs common with its age segment is the infants. Next is the preschooler and continuing up the age ladder, needs and wants of the different age groups become more diversified. At the upper age levels the individuals are the most heterogeneous. The needs and wants are different because the reasons behind these differences are extensive. The varied backgrounds and life experiences contribute to personal characteristics and life styles that are so diverse among older people. An overall research goal concerning the older consumer/shopper must be to develop marketing programs and retail strategies that can be adjusted to the increasing population and the heterogeneity of the segment.

Limitations of the Findings

Limitations of the findings center around the sampling procedures, the method of testing, and certain survey questions.

The sample was a purposive sample composed of socially active women who attended an organizational meeting on the day the questionnaire was administered. The organizations selected were those willing to participate and to give time during a regular meeting to complete the questionnaire. A few organizations declined to participate and many were not approached; therefore, this sample may not have been representative of socially active women of the area.

Although a wide variety of types of organizations were approached—business, professional, religious, social—these were groups that involved its membership principally as listeners, i.e., as sedentary participants. No organizations whose purpose and activities centered on active sports or physical fitness were approached. These groups may have given a different dimension to the findings.

While a sizeable number of respondents were included in each age group, no attempt was made to keep the numbers equal. Rather, the numbers represented the ages in the organizations. Additionally, race was reflective of the racial mix of the city.

Certain limitations existed in the testing situation. An attempt was made to replicate an average range of lighting found in the local retail setting. An in-store experiment or a laboratory controlled experiment may have produced different results. As pointed out in the methodology chapter, foot-candle readings differed even in a small

area depending on the relationship of the light meter to light source. Control of the lighting within a quasi-laboratory setting (the meeting room) was sometimes difficult. It was possible to remain within the range of 20-30 foot candles, but it was not possible to control each participant's lighting.

Participation in social activities was determined by a minimum index score of four. This cut-off point was a research decision based on the fact that if a person attended one meeting a week (and no other social activities) the total score would equal four. A higher minimum score may have produced different results, but the sample would have been smaller which was less desirable. Further, the social activities section was made up of activities requiring little or no physical exertion. Activities requiring physical fitness or involving team sports were not included.

Answers to certain survey questions may be considered to be limited. The question concerning the amount spent yearly on clothing was at best a "guesstimate," since it was not likely that an accurate record had been kept and the expenses actually known. The estimate was appropriate for this survey, but should be recognized as less than accurate.

Two demographic questions in any research may yield spurious information—income and education. The income reported gives an answer to last year's entry on the federal income tax form, but tells nothing about personal wealth, discretionary income, or attitudes toward spending. The years of education reported is the number of

years of formal schooling which tells nothing about life-long learning through work experience, informal education through lectures and workshops, nor learning through the media. Additionally, the number of years of formal education tells nothing about the ability to apply knowledge— think, create, problem solve, or make decisions. Answers to these two demographic questions merely help to describe the participants.

With the above limitations in mind, the findings are truly representative of the group studied. Further, these findings provide an initial exploration into the relationships of physical changes with age and consumer behavior.

Recommendation for Further Research

The findings of this research have stimulated questions that suggest a need for further research regarding readability of consumer printed information and shopping behavior of older people.

This research was centered around one particular product category—clothing. Readability of printed items needs to be researched in other product areas, particularly foods where unit prices and labels are important to budget and nutritional concerns of the purchaser. Other products for the study of readability of labels include health aids, cosmetics, household cleaners, and insecticides.

If increasing legibility of the print is not a feasible answer, the retailer needs to determine other means to assist the customer, e.g., strategically placed lighting or magnifying instruments. Research

needs to be conducted to determine which means will improve readability for the consumer and be cost-effective for the retailer.

Research concerning adaptive behaviors of persons with reduced eyesight is needed to learn how individuals adjust when they cannot see to read the consumer information. Do they make some type of personal adjustment, ask for assistance, or leave without purchasing? On what do adaptive behaviors depend, urgency of need or some personal characteristics of the shopper? What are the consequences for the retailer when a customer cannot see the print—loss of sales, loss of patronage, or increased ill-will?

The readability component of this research lends itself to an experimental design using a carefully designed laboratory setting where footcandles and other variables can be controlled for the respondents. Participants could be tested for accuracy and ease of reading at several light levels and the differences compared. Another research design might employ an in-store observation procedure using a technology whereby the observer could unobtrusively record data. The readability or "see-ability" component can be further tested by observation of customers in specific shopping situations, e.g., matching colors or examining fine jewelry, situations where visual acuity is important.

Many questions arise from the survey findings pertaining to shopping behavior. This research centered around shopping for personal clothing. and the findings indicated that annual expenditures in clothing by the elderly were somewhat low. It is known that many older

people have discretionary money and they shop throughout the retail firm. Retailers need to know what these other purchases are, for whom they are purchased, in which departments they shop, are purchases for basic needs or gifts, and what other textile products than clothing do older people purchase? Retailers need to know what store-wide strategies may be applied to encourage the elderly to shop in all departments.

More extensive research is needed regarding the type of retail outlet older people choose, e.g., why do older people shop so little at discount stores, by catalog or telephone, and what potential do home parties and other in-home methods have for clothing sales? The limited use of certain information sources stimulates numerous questions. Why do older people not seek information from salespeople, are more effective means of communication needed, why is so little apparel advertising aimed at the older woman, why are fashion shows unattended by older women, and can fashion shows be made of interest to the older segment? Other questions that are important are why do the elderly spend so little time shopping, is this related to physical condition, what time- and energy-saving strategies do they use, and what effect does widowhood or single life have on shopping behavior?

Some of the findings of this research tended to suggest the elderly may be locked-in to shopping habits and patterns established earlier in life. Research needs to be conducted regarding willingness to change, adopt new habits, and try new products.

Retailing personnel, from top management to part-time salespeople, need to be surveyed regarding their perceptions of the older

customer and their needs in the apparel marketplace and the results compared to a similar survey of the elderly customers. These findings would point to what the retailer is doing correctly and to what might be changed to benefit both consumer and retailer.

Many researchers have emphasized the need for large scale national surveys. Research concerning readability of consumer printed information using a nationwide probability sample is important.

For studying shopping behavior, this researcher would emphasize the importance and need for well planned local or area research to benefit a specific population and retailer. The importance of localized research rests on the heterogeneity of the segment combined with the homogeneity of the region. Psychographic data gathered by Bartos (1980), Langer ("The Over-Fifty Set," 1982), and Towle and Martin (1976) support the hetereogeneity of the older consumer. For a group of consumers as diverse as the elderly, certain life-style patterns and consumer needs accrue from geographic location and climate. Additionally, ethnicity, religiousity, community values and political bent are often defined within a given market area. Local retailers who survey their patrons would benefit from specific input pertaining to their shopping practices. The findings would support the heterogeneity of the older segment within the local setting and would emphasize the importance of retail strategies specific to the location/firm and for the older consumer.

The research, or revisions thereof, should be continued periodically at approximately five year intervals as tomorrow's elderly will be

decidedly different from today's. The need for certain changes in the retail setting are anticipated for this newly evolving segment. These may include a new retail environment, new or redesigned products, a different approach to pricing and promotion, modified architecture and interiors, innovative methods of distribution, and greater emphasis on sales assistance, shopper services, and delivery systems.

Researchers and academicians, heretofore, have tended to think through consumer behavior models assuming that the consumer to be in good physiological condition and consequently well and able to function in the marketplace. With normal aging and diminishing sensory and motor systems the older consumers will be faced with less ability to see, hear, and move about, hence many components of the models, e.g., life-style, search, alternative evaluation, marketer dominated stimuli, exposure, attention, and dissatisfaction (dissonance) deserve to be looked at from a different vantage point. The buying process will be seen as more difficult and complicated for the older consumer.

Business and industry have become accustomed to marketing to the young, beautiful, energetic, and healthy. Physiological changes of aging need to be incorporated into both consumer behavior models and marketing plans and strategies.

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APPENDICES

APPENDIX A*

SURVEY OF

SHOPPING FOR CLOTHES AND

READABILITY OF RETAIL PRINTED ITEMS*

This is a study of various age groups in the marketplace.

- Clothing includes everything you wear, such as: suits, dresses, coats, underwear, hosiery, shoes, and accessories.
- Your answers are very important.
- Please make careful and thoughtful choices.
- There are no right or wrong answers.
- Please answer all questions.
- Your answers will be kept strictly confidential.
- Your participation is greatly appreciated.

Textiles, Merchandising & Design
COLLEGE OF HOME ECONOMICS / THE UNIVERSITY OF TENNESSEE KNOXVILLE 37996-1900

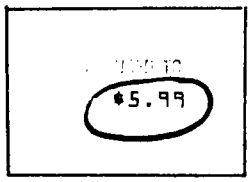
*This questionnaire has been reduced 23 percent to meet margin requirements.

SECTION I: This section is about READABILITY of retail printed items, such as prices and labels.

A-1 Write the price circled _____

A-2 How readable is this price?
(circle one number)

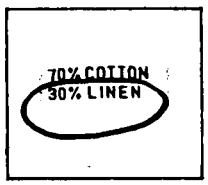
1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



B-1 Write the words circled _____

B-2 How readable are these words?
(circle one number)

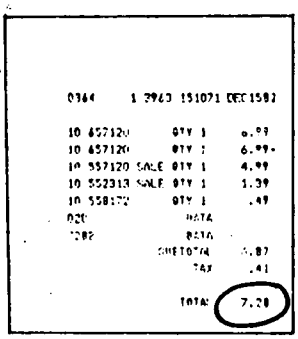
1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



C-1 Write the price circled _____

C-2 How readable is this price?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ

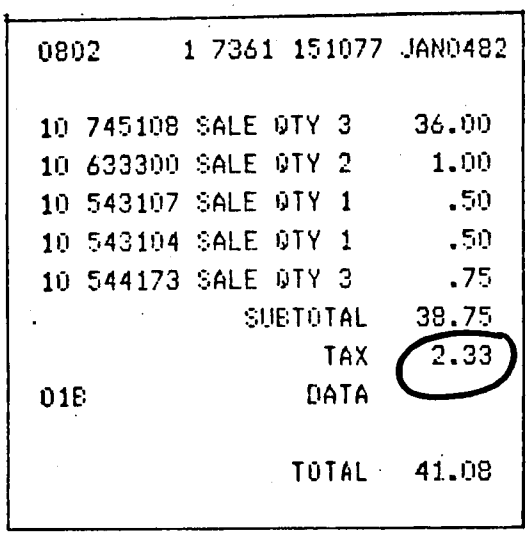


D-1 Write the price circled

_____

D-2 How readable is this price?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



E-1 Write the words circled _____

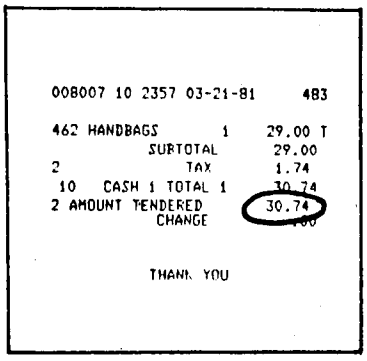
E-2 How readable are these words?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ

F-1 Write the price circled _____

F-2 How readable is the price?
(circle one number)

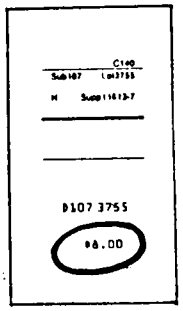
1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



G-1 Write the price circled _____

G-2 How readable is this price?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ

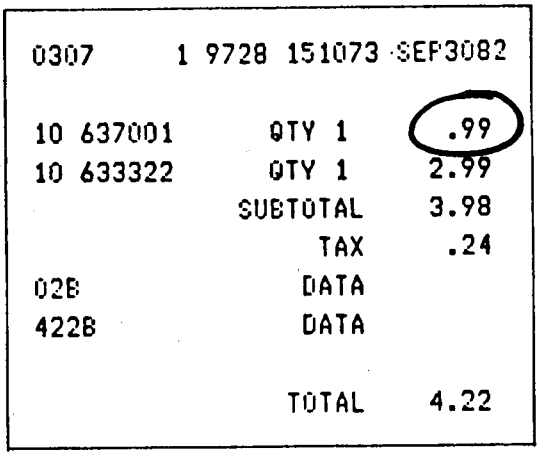


H-1 Write the price circled

_____

H-2 How readable is this price?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ

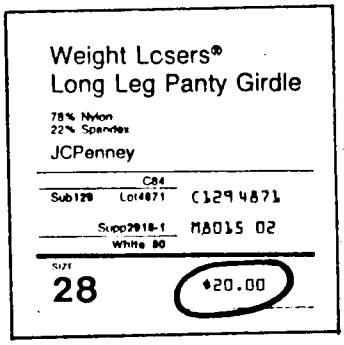


J-1 Write the price circled

_____

J-2 How readable is this price?
(circle one number)

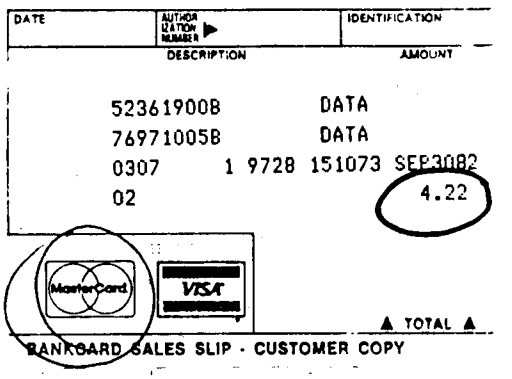
1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



K-1 Write the price circled _____

K-2 How readable is this price?
(circle one number)

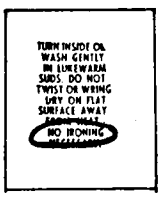
1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



L-1 Write the words circled _____

L-2 How readable are these words?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ

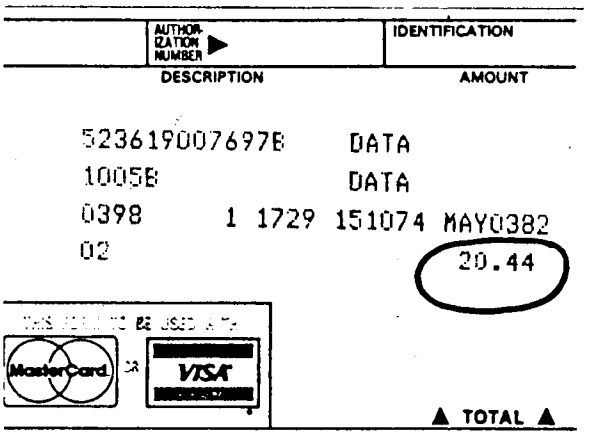


M-1 Write the price

circled _____

M-2 How readable is this price?
(circle one number)

1 NOT READABLE
2 BARELY READABLE
3 READABLE WITH SOME EFFORT
4 CLEAR AND EASY TO READ



SECTION II: These questions are about SHOPPING for YOUR CLOTHES.

1. How do you acquire most of your own clothing?
(circle one number)

1 BUY AT A RETAIL STORE
2 ORDER FROM CATALOG BY MAIL
3 ORDER FROM CATALOG BY TELEPHONE
4 RECEIVE AS GIFTS
5 OTHER (Specify) _____

2. To what extent do you shop for your own clothing?
(circle one number)

1 I SHOP FOR ALL MY CLOTHING
2 I SHOP FOR MOST OF MY CLOTHING
3 I SHOP FOR ABOUT HALF OF MY CLOTHING
4 I SHOP FOR ONLY A FEW ITEMS
5 I DO NOT SHOP FOR MY CLOTHING

3. Where do you usually shop for your own clothing?
(circle one number)

1 ENCLOSED SHOPPING MALL (for example: West Town, Outlets Ltd., Foothills)
2 OPEN SHOPPING CENTER (for example: Bearden, Suburban, Cedar Bluff)
3 NEIGHBORHOOD STORE
4 DOWNTOWN
5 OTHER (Specify) _____

4. In which type of store do you shop most frequently for your clothes? (circle one number)

1 DEPARTMENT STORE (for example: Millers, Proffitt's)
2 SPECIALTY STORE (for example: Hall & Brown, Wendell's Lilli Rubin, Schriver's)
3 MASS MERCHANDISER (for example: J.C. Penney's, Sears, K-Mart)
4 DISCOUNT STORE (for example: J. Brannam, Target, Wal-Mart)
5 FACTORY OUTLET (for example: Palm Beach Mill Outlet)
6 SECOND HAND STORE
7 OTHER (Specify) _____

5. How often do you go shopping for your clothes?
(circle one number)

1 ONCE A WEEK
2 SEVERAL TIMES A MONTH
3 ONCE A MONTH
4 SEVERAL TIMES A YEAR
5 ONCE A YEAR

6. With whom do you usually go shopping for your clothes?
(circle one or two numbers)

1 FRIEND
2 SPOUSE
3 MOTHER
4 CHILDREN
5 OTHER RELATIVE
6 NO ONE IN PARTICULAR
7 I SHOP ALONE

7. What time of day do you usually shop for your clothes?
(circle one number)

1 MORNING
2 NOON HOUR(S)
3 AFTERNOON
4 EVENING
5 NO PARTICULAR TIME

8. How much time do you usually spend shopping for your clothes?
(circle one number)

1 LESS THAN ONE HOUR
2 ONE TO TWO HOURS
3 HALF A DAY
4 ALL DAY

9. Which day or days do you prefer to shop for your clothes?
(circle one or two numbers)

1 SUNDAY
2 MONDAY
3 TUESDAY
4 WEDNESDAY
5 THURSDAY
6 FRIDAY
7 SATURDAY
8 NO PREFERENCE

10. Which best describes the type of sales service where you most frequently shop for your clothes?
(circle one number)

1 SELF SERVICE
2 SALESPERSON'S ASSISTANCE
3 TELEPHONE ORDER
4 MAIL ORDER
5 OTHER (Specify) _____

11. How do you usually pay for your clothes?
(circle one number)

1 CASH OR CHECK
2 CREDIT CARD
3 BOTH

12. Which type of credit card do you use for clothes?
(circle one number)

1 STORE CARD
2 BANK CARD (for example: MasterCard, Visa)
3 BOTH STORE AND BANK CARDS
4 I DO NOT USE CREDIT CARDS FOR CLOTHING

13. How do you usually get to a clothing store to shop?
(circle one number)

1 WALK
2 TAXI
3 PUBLIC TRANSPORTATION
4 CAR, DRIVE MYSELF
5 CAR, SOMEONE ELSE DRIVES
6 OTHER (Specify) _____

14. How often do you usually shop for your clothing by catalog?
(for example: Penney's, Sears, L. L. Bean, Talbot's)
(circle one number)

1 NEVER
2 OCCASIONALLY
3 APPROXIMATELY HALF BY CATALOG
4 MORE THAN HALF BY CATALOG
5 SHOP EXCLUSIVELY BY CATALOG

15. Which of the following best describes when you shop for clothing items that cost less than $25? (such as, underwear, hosiery) (circle one number)

1 WHEN NEW CLOTHES ARE FIRST DISPLAYED IN THE STORE
2 BUY AS I NEED
3 AT SALES WHEN PRICES ARE REDUCED
4 ON IMPULSE
5 OTHER _____

16. Which of the following best describes when you shop for clothing items that cost from $25 to $50? (such as, shoes, slacks, dresses) (circle one number)

1 WHEN NEW CLOTHES ARE FIRST DISPLAYED IN THE STORE
2 BUY AS I NEED
3 AT SALES WHEN PRICES ARE REDUCED
4 ON IMPULSE
5 OTHER _____

17. Which of the following best describes when you shop for clothing items that cost over $50? (such as, jackets, suits, coats) (circle one number)

1 WHEN NEW CLOTHES ARE FIRST DISPLAYED IN THE STORE
2 BUY AS I NEED
3 AT SALES WHEN PRICES ARE REDUCED
4 ON IMPULSE
5 OTHER _____

18. How much did you spend on your personal clothing the last year? (circle one number)

1 LESS THAN $100
2 $100 to $499
3 $500 to $999
4 $1000 to $1999
5 $2000 or OVER

How often do you use the following sources to obtain information about clothing? (circle one number for each question)

		NEVER	OCCASIONALLY	FREQUENTLY	ALMOST ALWAYS
19.	VISITING STORES, WINDOW SHOPPING	1	2	3	4
20.	WATCHING OTHER PEOPLE.	1	2	3	4
21.	TALKING WITH SALES PEOPLE.	1	2	3	4
22.	TALKING WITH FRIENDS AND RELATIVES . . .	1	2	3	4
23.	READING NEWSPAPER ADVERTISEMENTS	1	2	3	4
24.	READING NEWSPAPER ARTICLES	1	2	3	4
25.	LOOKING AT CATALOGS.	1	2	3	4
26.	READING FASHION MAGAZINES.	1	2	3	4
27.	WATCHING TV ADVERTISEMENTS	1	2	3	4
28.	LISTENING TO RADIO ADVERTISEMENTS. . . .	1	2	3	4
29.	ATTENDING FASHION SHOWS.	1	2	3	4
30.	OTHER (specify)_____	1	2	3	4

SECTION III: These questions are about your EYESIGHT.

31. How do you rate your eyesight for reading (with glasses if you usually wear them)? (circle one number)

    1 POOR
    2 FAIR
    3 GOOD
    4 EXCELLENT

32. Do you have any of the following vision problems? (circle one or more numbers)

1 FARSIGHTED (have trouble seeing close objects)
2 NEARSIGHTED (can see close objects better than far)
3 CATARACTS
4 GLAUCOMA
5 ASTIGMATISM
6 INTRAOCULAR IMPLANT
7 NO VISION PROBLEMS
8 I DON'T KNOW
9 OTHER VISION PROBLEMS (Specify) _____

33. When was the last time your eyes were examined by an eye specialist? (circle one number)

1 LESS THAN A YEAR AGO
2 ONE TO TWO YEARS AGO
3 THREE TO FIVE YEARS AGO
4 FIVE OR MORE YEARS AGO
5 I DON'T KNOW

34. What type of glasses or contact lenses do you wear for shopping? (circle one number)

1 GLASSES WITHOUT READING LENSES
2 BIFOCALS
3 TRIFOCALS
4 READING GLASSES (Granny Glasses)
5 CONTACT LENSES WITH GLASSES
6 CONTACT LENSES WITHOUT GLASSES
7 NEITHER GLASSES NOR CONTACTS

35. Has your eyesight brought about any changes in the past five years in how often you go shopping for your clothes? (circle one number)

1 YES, I SHOP SOMEWHAT LESS NOW
2 YES, I SHOP MUCH LESS NOW
3 YES, MY EYESIGHT PREVENTS ME FROM SHOPPING AT ALL
4 NO, THERE IS NO CHANGE IN HOW OFTEN I GO SHOPPING

36. Has your eyesight brought about any changes in the past five years in whether you shop alone or not?
(circle one or two numbers)

1 YES, I SHOP ALONE ONLY IN FAMILIAR STORES
2 YES, I NEED A SHOPPING COMPANION OCCASIONALLY
3 YES, I NEED A SHOPPING COMPANION MOST OF THE TIME
4 YES, I DO NOT SHOP ALONE NOW
5 NO, I DO NOT NEED A SHOPPING COMPANION

37. Do you shop at a certain time of the day because of your eyesight?
(circle one number)

1 YES, I SHOP IN DAYTIME ONLY
2 NO, I SHOP BOTH DAY AND EVENING

38. Does your eyesight have any effect on how much time you spend shopping? (circle one number)

1 YES, I HAVE SHORTENED MY SHOPPING TIME SOMEWHAT
2 YES, I HAVE SHORTENED MY SHOPPING TIME A GREAT DEAL
3 NO, THERE HAS BEEN NO CHANGE IN SHOPPING TIME DUE TO EYESIGHT

39. Does your eyesight have any effect on the type of sales service you prefer? (circle one number)

1 YES, I NEED A GREAT DEAL OF ASSISTANCE FROM SALESPEOPLE
2 YES, I NEED OCCASIONAL ASSISTANCE FROM SALESPEOPLE
3 NO, I NEED NO ASSISTANCE BECAUSE OF EYESIGHT

40. Does your eyesight have any effect on the type of transportation that you use to get to a shopping area?
(circle one or two numbers)

1 YES, I NO LONGER DRIVE A CAR
2 YES, I DO NOT DRIVE A CAR AT NIGHT
3 YES, I USE PUBLIC TRANSPORTATION MORE FREQUENTLY
4 NO, I CAN USE ANY TYPE OF TRANSPORTATION

SECTION IV: These questions are about your SOCIAL ACTIVITIES

How frequently did you participate in the following activities during the past year? (circle one number for each activity)

		NOT AT ALL	ONCE OR TWICE A YEAR	SEVERAL TIMES A YEAR	ONCE A MONTH	ONCE A WEEK OR MORE
41.	ATTENDED A CIVIC OR PROFESSIONAL MEETING.	1	2	3	4	5
42.	ATTENDED RELIGIOUS SERVICES OR MEETINGS	1	2	3	4	5
43.	ATTENDED A SOCIAL ORGANIZATION FUNCTION	1	2	3	4	5
44.	ATTENDED A LECTURE, SEMINAR, WORKSHOP OR CLASS.	1	2	3	4	5
45.	DID VOLUNTEER WORK FOR A HOSPITAL OR SERVICE ORGANIZATION.	1	2	3	4	5
46.	ATTENDED A MUSICAL CONCERT	1	2	3	4	5
47.	ATTENDED A MOVIE OR PLAY	1	2	3	4	5
48.	ATTENDED A SPECTATOR SPORTS EVENT SUCH AS BALL GAMES OR RACES.	1	2	3	4	5
49.	ATTENDED A TOURNAMENT OR SHOW SUCH AS BRIDGE TOURNAMENT OR DOG SHOW . . .	1	2	3	4	5
50.	GAVE OR ATTENDED A LUNCHEON OR DINNER PARTY	1	2	3	4	5
51.	WENT OUT TO DINNER AT A RESTAURANT OR CAFETERIA	1	2	3	4	5
52.	VISITED OR VACATIONED OUT-OF-TOWN. . . .	1	2	3	4	5
53.	WENT ON A TRIP OUTSIDE THE U. S.	1	2	3	4	5
54.	OTHER (specify)_____	1	2	3	4	5

SECTION V: These questions are about YOU. Please answer all questions. Confidentiality is absolutely guaranteed.

55. What is your sex? (circle number of your answer)

1 MALE
2 FEMALE

56. What is your present marital status? (circle number)

1 NEVER MARRIED
2 MARRIED
3 DIVORCED
4 SEPARATED
5 WIDOWED

57. What year were you born? _____

58. What is your race or ethnic origin? (circle number)

1 WHITE
2 BLACK
3 OTHER (Specify) _____

59. What is the highest level of education you completed? (circle number)

1 SOME GRADE SCHOOL
2 COMPLETED GRADE SCHOOL
3 SOME HIGH SCHOOL
4 COMPLETED HIGH SCHOOL
5 SOME COLLEGE
6 COMPLETED COLLEGE
7 SOME GRADUATE WORK
8 A GRADUATE DEGREE

60. What is your present employment status outside the home? (circle number)

1 EMPLOYED PART TIME
2 EMPLOYED FULL TIME
3 NOT EMPLOYED, BUT NOT RETIRED
4 RETIRED, NOT WORKING
5 RETIRED, WORKING PART TIME
6 RETIRED, WORKING FULL TIME

61. What was the combined yearly income before taxes for you and your spouse last year? (circle number)

1 LESS THAN $5000
2 $5000 to $9,999
3 $10,000 to $14,999
4 $15,000 to $19,999
5 $20,000 to $24,999
6 $25,000 to $34,999
7 $35,000 to $49,999
8 $50,000 to $99,000
9 $100,000 OR MORE

62. In what type of housing do you live? (circle number)

1 HOME THAT I OWN
2 HOME THAT I RENT
3 CONDOMINIUM OR APARTMENT THAT I OWN
4 CONDOMINIUM OR APARTMENT THAT I RENT
5 RENTED ROOM
6 SUBSIDIZED HOUSING
7 OTHER (Specify) _____

APPENDIX B

MEMORANDUM

TO: Associations, Retired and Older People

FROM: Bill C. Wallace, Chairman, Knoxville-Knox County Council on Aging

DATE: June 16, 1983

RE: University of Tennessee Research Project

Importance of the market place to the aging population is increasing day by day with rising prices and inflation. At the same time, as the shopper ages, his or her health and physical condition generally diminishes. Changes in ability to read fine print is one of the earliest and most recognizable physical changes that is crucial to successful shopping.

At UTK research is underway to study changing eyesight by age groups and readability of price tags and labels by the clothing shopper. This research, conducted by Mary K. Tims, a doctoral candidate, will demonstrate to the retailer what the needs of older shoppers are relative to legibility of fine printed information. The research further purports to evoke changes in the retail setting that will aid shoppers whole eyesight is declining.

I wholeheartedly support this research and would like to solicit your cooperation with the researcher. Without subjects of your caliber research of this kind could not be done.

APPENDIX C

THE UNIVERSITY OF TENNESSEE, KNOXVILLE
KNOXVILLE 37996-0140

OFFICE OF THE VICE CHANCELLOR
FOR RESEARCH

404 ANDY HOLT TOWER

AREA 615
TELEPHONE 974-3466

July 14, 1983

Mary K. Tims
Textiles, Merchandising and Design
Home Economics
CAMPUS

Dear Ms. Tims:

The project which you submitted entitled, "Shopping Behavior and Print Readability by Socially Active Women Apparel Consumers: Middle Age through Elderly," CRP #A-126, has been reviewed.

This project comes within the guidelines which permit me to certify that the project is exempt from review by the Committee on Research Participation.

The responsibility of the project director includes the following:

1. Prior approval from the Dean for Research must be obtained before any changes in theproject are instituted.

2. A statement must be submitted (Form D) at 12-month intervals attesting to the current status of the project (protocol is still in effect, project is terminated, etc.).

The Committee wishesyou success in your research endeavors.

Sincerely,

Marla Peterson

Marla Peterson
Dean for Research

scw

cc: Dr. L. Evans Roth
Dr. Jay Stauss
Dr. Mary F. Drake
Dr. Charles E. Cox

VITA

Mary K. Tims grew up in Poplarville, Mississippi where she attended public schools and junior college. She received her B.S. in Home Economics from Our Lady of the Lake University, San Antonio, Texas and M.S. in Home Economics at the University of Alabama.

Ms. Tims taught in the textiles and clothing department at the University of Alabama for two years and the University of Missouri for four years, in the evening extension program at North Carolina State University for one year, directed the fashion merchandising program at John Robert Powers School in Raleigh, North Carolina for one year, taught in the textiles, clothing and merchandising department at the University of Kentucky for one year, and was a graduate teaching assistant in the textiles, merchandising and design department at The University of Tennessee, Knoxville for one year. In addition, she has several years experience in retailing having worked in a wide variety of firms including mass merchandisers, department stores, and specialty stores.

Ms. Tims is a member of the American Council on Consumer Interests, American Home Economics Association, American Marketing Association, Association of College Professors of Textiles and Clothing, Association for Consumer Research, The Gerontological Society of America, International Council for Small Business, the National Council on Aging, and the Southern Gerontological Society.

She has four children, Bobby, Carol, Tricia, and Diane and three grandchildren, Lauren, Raymond, and Dawn.