Applying Rogers' Theory of Diffusion of Innovations to Examine Older Females' Perceptions of Size Labels for Apparel

by

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ABSTRACT

This research applied Rogers' theory of the diffusion of innovations to examine 42 older women's responses to three ways of communicating information about apparel size: a numerical code only, a hang tag containing body measurements which were not representative of older women, and another hang-tag which did contain representative measurements. Older women, aged 55 to 93 years, were interviewed to ascertain their satisfaction with the numerical code, impressions of the two hang-tags, relative advantage of the hang-tags, and attitude toward them. Results showed that older women were not clearly satisfied or dissatisfied with the numerical code. Satisfaction with the numerical code was not correlated with the perceptions of relative advantage of or attitude toward the two Hang-tags which bore body measurement information. Perceptions of relative advantage of the hang-tags were correlated with attitude toward them. Older women responded more favourably to and formed more positive attitude toward the hang-tag containing body measurement information which was not representative of older females.

TABLE OF CONTENTS

LIST OF TABLES

TABLE

LIST OF FIGURES

FIGURE

CHAPTER ONE

INTRODUCTION

It seems unmistakable that the population of Canada is aging. In Canada in 1999, approximately nine per cent of women and nine per cent of men were aged between 55 and 64 years of age (Statistics Canada, 2000). At the same time, approximately 14% of women and 11% of men were aged 65 or older. By the year 2026, adults between 55 and 64 may comprise 14% of the population, while the size of the 65-plus groups is expected to double (Statistics Canada, 2001a). The continuing growth of this population group is bound to have widespread implications for the marketers of consumer goods.

In the area of clothing, there is abundant research regarding the physical dimensions of older females. Many researchers have concluded that the sizing of ready-to-wear garments does not adequately accommodate the physical characteristics of older females.

Sizing of Ready-to-Wear in North America

The current women's apparel sizing system in North America was developed from the American Voluntary Product Standard PS 42-70, which was created in 1958. The data were collected in 1941 and consisted of body measurements from a sample of 10,042 women of whom 275 subjects were over 65 years of age (Goldsberry, Shim, & Reich, 1996a). This amounts to 2% of the total sample.

Goldsberry et al. (1996a) compared body measurements of females aged 55 and older to corresponding measurements in PS 42-70 and found significant differences between nine body measurements. This evidence suggests that PS 42-70 does not address any potential differences that might exist between older and younger figure types due to the aging process.

The ASTM Standard D5586

The ASTM publication D5586 Standard Tables of Body Measurements for Women Aged 55 and Older was published in 1993 (Goldsberry et al., 1996a). The data consisted of

body measurements of 6656 American women aged 55 or older from 38 states.

Using this new standard to develop clothing could help manufacturers respond to the chronic problem of poor fit experienced by mature women. At the University of Manitoba, research has been completed that ascertained older women's satisfaction with trousers made according to D5586 body measurements and those made according to Canada Standard Sizing (CSS) measurements (Campbell & Horne, 2001). This thesis is an outgrowth of this product development project at the University of Manitoba.

Assuming that clothing which truly accommodates the physical characteristics of older women will eventually be made available to older females, it will be important to convey to them information that will communicate the benefit of the new product. Currently, the Canada Standard Size program is one system of informing consumers how a garment will accommodate their body dimensions. CSS, which is a voluntary standard, specifies that size labels must contain a numerical code, a pictogram, and a list of key body dimensions. In this thesis, the researcher wants to determine how a label that bears the attributes of a CSS

label can be used as a vehicle to convey to older females how well a garment will accommodate body measurements.

The Role of Size Labels

The purpose of size labels is to help consumers choose apparel that fits their bodies properly, in order to save time and reduce consumer frustration (Chun-Yoon & Jasper, 1995). The researcher has not been able to locate empirical evidence to suggest that older females find labels or hang-tags useful in clothing purchases. Furthermore, Tamburrino (1992b) stated that, according to a survey of 16 American apparel manufacturers, dimensions for bust, waist and hips differed greatly among manufacturers for garments labelled to be the same size. In other words, little consistency exists among the standards used by manufacturers, which are often developed according to a firm's specifications.

Size labels may communicate garment size in different ways. Chun-Yoon and Jasper (1995) found that consumers most preferred a size label that contained a numerical code, a list of key body dimensions, and a pictogram

showing location of key dimensions. A label that contained only a numerical code only was least preferred.

Purpose

The purpose of this research was to examine three ways of informing older females whether a garment will accommodate measurements for the lower body, specifically waist and hip measurements. Size labels were the means used to communicate this information. The three variations of size labels, as shown in Figure 1, were:

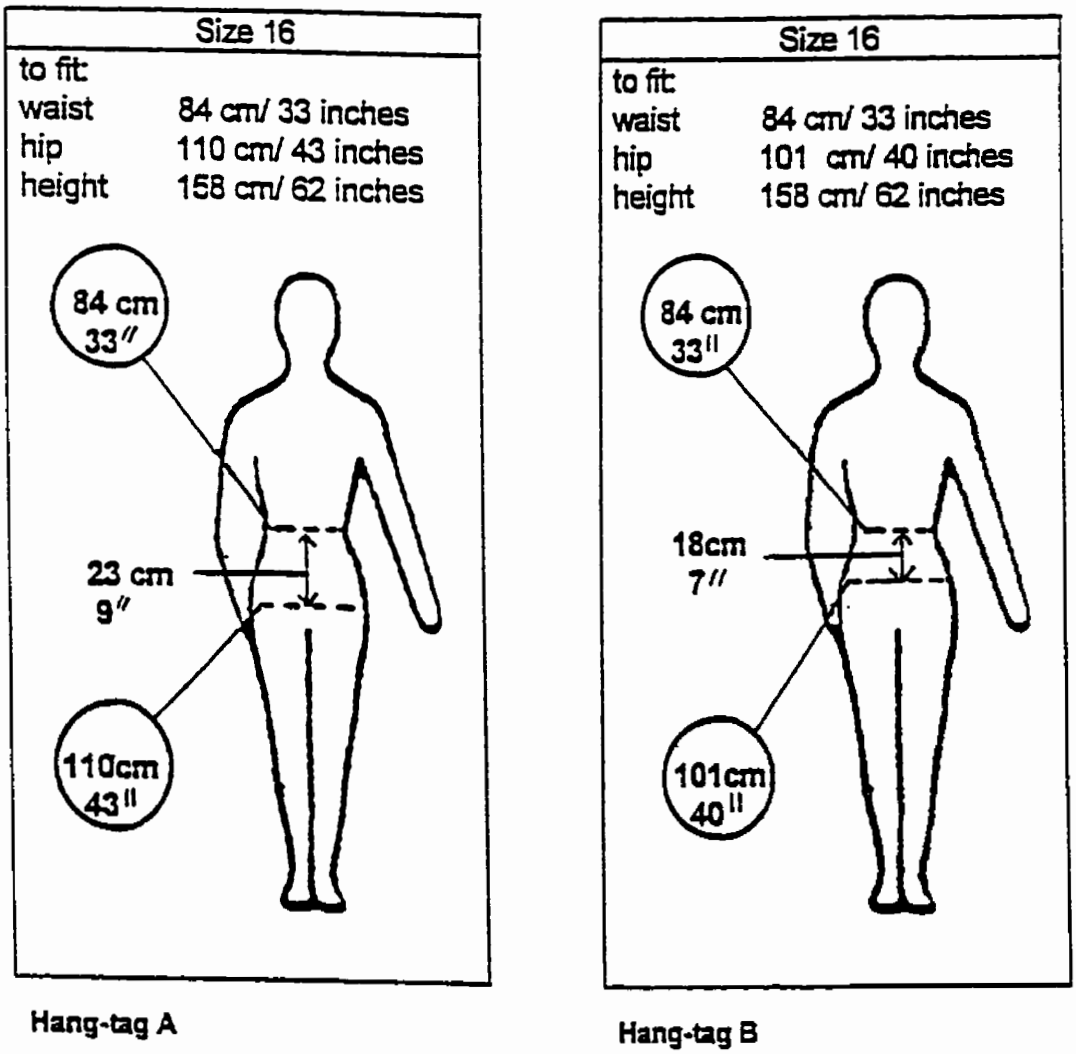
1. A label for a Misses' Petite size 16 that contained a numerical code only.

2. A label for a Misses' Petite size 16 with CSS attributes that included waist and hip measurements specified by CSS sizing standard for women's apparel (Hang-tag A). The hip measurement was labelled at 23 centimeters (nine inches) below the waist.

3. A label for a Misses' Petite size 16 with CSS attributes that included waist and hip measurements specified by ASTM D5586 (Hang-tag B). The hip measurement

Size 16

Numerical size label



Hang-tag A **Hang-tag B**

Figure 1. Three variations of hang-tags to communicate lower body measurements.

was labelled at 18 centimeters (seven inches) below the waist.

ASTM D5586 acknowledges the physical characteristics of older women. For the lower body, Goldsberry et al. (1996a) stated that hip height of a sample of 6652 women aged 55 or older could be up to three inches higher than the corresponding measurement of younger females. This means that, for older females, the area of greatest hip girth may occur at a higher location on the body. Including a high hip measurement may be more informative to older females than a hip measurement which is based on a younger figure type. However, no empirical evidence exists to suggest how older females would respond to this measurement.

Although both labels contain attributes of CSS, a voluntary system, clothing manufacturers have frequently used numerical codes, rather than body measurements, to communicate garment size to consumers. It was this infrequent use of CSS that made labels with CSS attributes innovative.

Theoretical Framework

The researcher examined older females' behavior toward innovative size labels by applying Rogers' (1995) theory of the diffusion of innovations. The research was conceptualized according to a specific set of relationships in this theory. According to Rogers (1995), satisfaction with previous practice may predict perceptions of relative advantage for the innovation, which in turn may predict attitude toward an innovation.

To test the relationships among these concepts, three questions were formulated:

1. How satisfied are older females with numerical size labels?

2. Does satisfaction with numerical size labels affect perceptions of relative advantage for two different versions of size labels with CSS attributes?

3. Are attitudes toward each of two different size labels with CSS attributes affected by perceptions of relative advantage of each of the two labels?

Assumptions and Limitations

This research assumed that older females used numerical size codes to assess whether a garment would accommodate their body measurements. It also assumed that older females were aware of any age-related physical changes that have occurred to them.

Given the limited amount of empirical evidence relating to older females' preferences for size labels, this research was exploratory in nature. Results of the research cannot be generalized beyond the sample or the geographical location of the research. Since there is no standardized way to convey body measurements for apparel, the researcher was limited to using the attributes in CSS to design the labels.

CHAPTER TWO

REVIEW OF LITERATURE

To accomplish the research objectives, the researcher reviewed literature from two disciplines, clothing and marketing. Therefore, this chapter reports research findings from these two different areas. A description of the theoretical model and its applications follows.

The Aging Canadian Population

According to the 1995 Canadian Census, the number of adults aged 65 or older had increased by 50% since 1981, to 3.6 million people, and accounted for 12% of the population (Lindsay, 1997). In 2000, adults in this age group number 3.8 million, or about 13% of the Canadian population. Women aged 65 or older comprised 7.2% of the population. Adults aged 55 to 64 numbered 2.8 million, and accounted for approximately nine per cent of the Canadian population, with women aged 55 to 64 comprising approximately 4.6% of the total population (Statistics Canada, 2001b).

Furthermore, growth projections for this age group indicate that adults aged 55 years or older will comprise a larger percentage of the population as the wave of baby boomers born between 1946 and 1964 reaches their later years. By the year 2016, it is estimated that six million adults aged 65 years or older will live in Canada (16.5% of the population); by 2041, this number is forecast to be 10 million (23%) (Lindsay, 1997; Statistics Canada, 2001b). Between 1995 and 2036, the median age of the population is projected to increase from 33.8 years to 49.9 years (McKie, 1993).

Not only are the numbers of older people increasing, but their life expectancy is as well. Between 1921 and 1996, the average life expectancy for older adults increased by three years for man and seven years for women (Statistics Canada, 2000). In 1996, a 65 year old woman could expect to live 20 more years, while a 55 year old man could live 16 years, on average (Statistics Canada, 2000).

What exactly can one infer from all these facts and figures? McKie (1993) states that the growing number of older adults will affect the social and economic structure of Canadian society because "the needs and priorities of

the dominant age group will likely...change the nature of privately and publicly provided goods and services" (p.6). Older adults will influence not only the types of goods and services that appear in the marketplace, but also how they are marketed.

Clothing is one of these products that older consumers are bound to influence. Manufacturers of apparel must understand the clothing needs of older consumers in order to produce satisfactory products and to ensure a firm's profitability. They will also have to provide older consumers with appropriate information about their products. However, the current literature makes it clear that a lack of understanding of the needs of the older consumer exists.

Clothing and Older Females

Many researchers have investigated older females' satisfaction with the fit of ready-to-wear clothing available in the marketplace. For a summary of these results one may refer to Horne, Campbell and Scholz (1999), who state that since at least the 1950s numerous

researchers have documented the lack of well-fitting clothing for older females. As the majority of the literature dealing with older peoples' satisfaction with clothing fit has used female subjects, the researcher thought it prudent to limit the scope of this research to include only females. In this way, it is possible to build upon an existing body of research.

Recent research indicates that this trend toward ill-fitting clothing for older women continues. McCreight (1990) stated that 58.5% of a sample of 174 Manitoba women aged 65 or older found it necessary to alter clothing at least sometimes to achieve proper fit. Also in Manitoba, 38% of a sample of 814 women with an average age of 76 years reported that they were dissatisfied with fit of ready-to-wear apparel (Canadian Aging Research Network [CARNET], 1994).

Goldsberry, Shim, and Reich (1996b) found that 70% of a sample of 5912 women who were at least 55 years old reported dissatisfaction with fit. Examples of self-reported fitting problems include tightness in the shoulder seam and bust areas and excessive pant, sleeve and hem length. Also, Goldsberry et al. (1996a) found that the

sample generally had a higher hip height measurement than was specified in PS 42-70; that is, the fullest part of the hip was located up to four inches (ten centimeters) higher than the corresponding measurement in PS 42-70. An ASTM Misses Petite size 16, for example, has a hip height that was two inches (five centimeters) higher than the corresponding measurement in PS 42-70 (Goldsberry et al., 1996a).

Other researchers have identified inadequacies in the current sizing standard in accommodating the physical changes of older females, which could influence satisfaction with fit. Patterson and Warden (1983-84) found that 25 body measurements from a sample of 205 American women aged 65 or older were significantly different from those specified in the current sizing standard. Older females' measurements for bust, waist, and hip circumferences have also been found to be significantly larger than sizing standard measurements (Horridge & Woodson, 1988). Woodson and Horridge (1990) found that the current sizing standard did not accommodate the shoulder length, armscye depth or hipline height measurements of older females.

Sizing Standards

A sizing standard for clothing provides body measurement data for a range of body sizes in tabular form, based on gradation of dimensions for a particular body type (Canadian General Standards Board [CGSB], 1992a; Glock & Kunz, 1990). These measurements may be used as guidelines in constructing garments which are intended to fit a person of a particular size. A sizing standard is based on a sizing system; that is, it "gives an indication of the degrees of fit which the sizing system can provide with respect to certain of the size indicator body dimensions (CGSB, 1992b)." Size indicator body dimensions are those which require an accurate fit, and it is these dimensions which define sizes (CGSB, 1992a; CGSB, 1992b).

Some systems are based upon body dimensions which require fitting, such as waist, hip, or bust measurements. Others are based on non-fitted dimensions like height (CGSB, 1992a). Body types are organized according to proportional relationships among body measurements as related to age and gender (Glock & Kunz, 1990). Body types

can include infants, toddlers, children's, men's and women's.

Sizing standards have been developed with the intention of benefiting manufacturers, consumers and retailers. If manufacturers use these standards, they will provide clothing that consistently fits consumers. Consumers would not experience the frustration that results from manufacturer inconsistencies, or lose time trying on an excessive number of garments to achieve proper fit (Consumer and Corporate Affairs Canada [CCAC], 1989). Mail order shopping and gift buying could be facilitated (CCAC). Retailers would benefit from the use of standards because the number of returned items could decrease, as would soiling and damage due to try-ons (CCAC).

Sizing Standards for Women's Clothing in North America

O'Brien and Shelton (1941) were responsible for developing the database of women's body measurements which formed the basis for the current women's apparel sizing standard in North America. The American Voluntary Product Standard PS 42-70 was created in 1958. The data were

collected in 1941 from a sample of 10,042 American women, of whom only 275 were over 65 years of age (Goldsberry et al., 1996a; O'Brien & Shelton, 1941). This amounted to 2% of the total sample. The apparel sizing standard developed from this database (PS 42-70) was based primarily on the body measurements of younger women, and would not reflect any measurement differences of the older female (Goldsberry, 1995).

The Canada Standard Sizing System (CSS)

The Canada standard system for sizing women's apparel was prepared and published by the Canadian General Standards Board in 1992, following revisions to a 1978 version (CGSB, 1992a). The database from O'Brien's and Shelton's 1941 study was used to develop this standard (CGSB, 1992a). Sizing standards for women's apparel in Canada and the United States are voluntary standards and no apparel manufacturers are obliged to adhere to them (CCAC, 1989; O'Brien & Shelton, 1941). Though the standard is intended to provide adequate fit for virtually all of the

adult female population (CGSB, 1992a), research is scarce regarding the effectiveness of CSS.

Marshall (1988) compared body measurements from a sample of 92 women aged 65 to 85 to the body measurements specified in CSS. Results suggested that CSS did not wholly accommodate the mature figure, and that certain body dimensions could prove problematic with regard to fit. For example, only 43% of the sample had waist girth measurements that were within 2.5 centimeters (one inch) of the CSS measurements (Marshall, 1988). To accommodate 90% of the sample, a tolerance of +/- 7.5 cm (three inches) would be necessary in the standard.

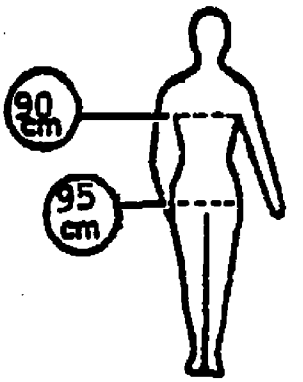
If Canadian manufacturers do follow CSS for women's apparel, a system directly based on the American sizing system, they must obey certain regulations regarding size labels on garments. According to CCAC, a label or hang-tag must include the CSS trademark (CCAC, 1989). It must also include the key body dimensions that the garment is intended to accommodate for either the lower body or the upper body. The size designation must also be indicated on labels or hang-tags by either the appropriate numerical size code or the pertinent size indicator body dimensions,

or both. A pictogram indicating location of key dimensions may also be used in place of a measurement list. These measurements include bust and hip measurements for garments fitting the whole or upper body, or waist and hip measurements for garments fitting the lower body. Figure 2 shows examples of labels which meet these requirements for women's size 12 garments.

In reality, few Canadian manufacturers do follow the Canada Standard system. Tamburrino (1992a) reported a similar situation in the United States, where there has been little adherence to either sizing standards (standardized size measurements) or labeling standards (specifications dictating what information size labels should contain.) Although virtually all manufacturers do follow some sort of sizing guidelines, these are often arbitrary and vary not only among manufacturers but also for single manufacturers over time (Chun-Yoon & Jasper, 1994, 1995; Tamburrino, 1992b). Indeed, Tamburrino (1992b) collected 16 manufacturers' self-reported key dimensions for a Misses size 8. Measurements for the bust measurement varied up to 3.5 inches among the manufacturers, while

For garments fitting the upper or whole body:

size/taille 12	
to fit/ajusté pour:	
bust/poitrine	90 cm
hip/hanches	95 cm



For garments fitting the lower body:

size/taille 12	
to fit/ajusté pour:	
waist/ceinture	68 cm
hip/hanches	95 cm

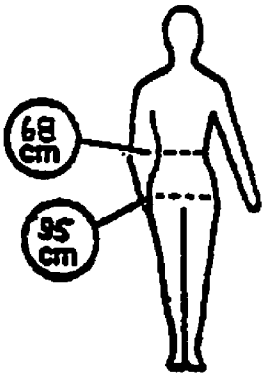


Figure 2. Examples of size labels that adhere to CSS specifications.

waist and hip measurements varied up to 3.0 inches and 4.0 inches, respectively.

Because adherence to sizing and labeling standards is voluntary in North America, most sizes of women's garments are represented by simple numerical codes which have no direct relationship to body measurements (Tamburrino, 1992a). Furthermore, no anthropometric information is generally included on most size labels in North America (Chun-Yoon & Jasper, 1993, 1995). This lack of meaningful information on size labels results in confusion for female consumers, who may find it necessary to try on several sizes of a garment to find one with correct fit (Chun-Yoon & Jasper, 1995; Tamburrino, 1992b).

An Alternate Sizing System

Although it is evident from the literature that current sizing standards for clothing in North America do not meet the needs of older women, no effort has been made until recently to solve this problem. Recently, a new standard has been developed for the American Society for Testing and Materials (ASTM) that specifically addresses

the inadequacies of PS 42-70. This database, called D5586 Standard Tables of Body Measurements for Women Aged 55 and Older, was developed from body measurement tables of 6,656 American women aged 55 and older, who represented 38 states (Goldsberry et al., 1996b). The development of this standard is important because, for the first time, age-related physical changes are represented in a sizing standard; if the standard were to be applied by manufacturers, many problems of fit that older females experience could be alleviated.

If manufacturers of clothing for older females choose to apply D5586 to product development in the future, it will be essential for them to communicate the benefit of improved fit to older females. However, it is important to realize that research regarding effective methods to communicate garment fit (ASTM garments or not) to consumers may benefit all consumers.

Marketing Communications

McCarthy, Shapiro, and Perreault (1989) portray the marketing communications process as a source, trying to

reach a receiver, usually a potential customer, with a message. A firm can have different objectives when sending a message, which can be intended to inform, persuade, or remind a consumer. Informative messages simply let consumers know that a product exists, or educate them about a product attribute. They will provide information that is not necessarily intended to persuade a consumer to purchase, but rather to aid them in the decision-making process.

Wolfe (1990) elaborates on marketing communications strategies that will best appeal to mature consumers. According to his "antihyberbole factor" (p. 161), older consumers have strong aversions to embellished claims and misleading imagery in marketing communications. Mature consumers like to make informed decisions, and like to be provided with straightforward and truthful information that will help them do so. Mature consumers "want facts, not fancy, to use in making purchase decisions" (Wolfe, p. 162). These ideas will shortly prove relevant to the purpose at hand.

Clothing Labels as a Means of Communicating Product Information

For clothing, labels serve the purpose of informing consumers of the fiber content and care procedures of a garment. Care labels are intended to inform the consumer of recommended washing, bleaching, drying, ironing, and dry cleaning procedures for textile products. They may "serve as part of the evaluative criteria used in the decision-making process to purchase a product" (Wall, 1978, p. 265).

Some American studies have shown that consumers do pay attention to information on care labels, and find such information useful (Hatch & Lane, 1980). Saltford, Daly, and Rushman (1978) found that consumers believed that information on clothing care labels should be easy to understand, reliable, and most importantly, standardized, to best benefit consumers. Furthermore, care label instructions can influence consumer perceptions of a product attribute, such as future performance of a garment (Workman & Johnson, 1991).

A size label system is a way of describing garment size to the consumer with labels attached to a garment in

some manner (Chun-Yoon & Jasper, 1995). Size labels are informative, rather than a promotional, forms of communication. Knowing the correct size of apparel can reduce the number of consumer try-ons of garments, thereby saving the consumer's time, and reducing frustration (Consumer and Corporate Affairs Canada, 1989).

Different authors have advocated changing size labels on apparel in North America. Chun-Yoon and Jasper (1996) and Tamburrino (1992b) recommended that labels include the key body dimensions a garment is intended to fit. The International Standards Organization developed such a size labeling system in 1991 (Chun-Yoon & Jasper, 1993), while the CSS outlined similar specifications in 1979 ("One system fits all," 1979).

Chun-Yoon and Jasper (1995) compared reactions of 332 men and women aged 19 or older to six different size labels with varying amounts and types of information. One label simply stated a numerical size, while others included key body dimensions, descriptions of body measurements for key body dimensions, and pictograms showing locations of key body dimensions. Subjects strongly preferred the label that contained a numerical size, key dimensions,

descriptions for body measurement of key dimensions, and a pictogram with key dimensions. The label which simply stated a numerical size was least preferred.

Empirical evidence suggests that mature consumers in particular do consult product labels when purchasing apparel. Lumpkin, Greenberg, and Goldstucker (1985) determined that adults aged 65 or older rated "readable labels/tags on products" as the seventh most important attribute in the retail environment from a total of thirteen. A subsequent study showed that a sample of 1482 65-plus adults responded that labels or tags were the fourth most important attribute out of a total of 22 attributes (Lumpkin & Hite, 1988). Lumpkin and Festervand (1987-88) found that subjects aged 65 and older did rely on certain sources of point-of-purchase (POP) information when evaluating the price and quality of apparel.

The Importance of Labels

It is evident from the literature that mature female consumers are dissatisfied with the fit of ready-to-wear clothing. From mature female consumers' points-of-view, it

would be advantageous to know if garments being considered for purchase will fit their body dimensions. Research on care labeling systems suggests that care labels can influence consumers' perceptions of product attributes. Consumers also perceive that they provide useful information. It seems reasonable to assume that size labels could also prove useful to the older female consumer if they provided meaningful information with which to assess fit. Considering that garments sized according to ASTM standard D5586 may be produced in the future, it is essential that manufacturers know how to communicate the benefit of improved fit to the older female consumer. Size labels may have other practical advantages. They could be a time-saving device for female consumers who may experience difficulty trying on clothing due to decreased mobility or difficulty in movement; fewer try-ons would be necessary. For those consumers with a limited clothing budget, an informative size label would help them make informed decisions about clothing purchases. Also, in accordance with Wolfe's (1990) antihyberole factor, it would seem that mature consumers would prefer a size label that is truly informative, as opposed to a numerical code.

Apparel firms could also benefit from an alternate means to convey garment size as part of a marketing communications strategy. A meaningful and informative size label may encourage brand loyalty. Retail buyers of apparel for retail stores might also show increased brand loyalty to products that carry informative size labels, if they proved to be profitable items to carry.

Theoretical Framework

Rogers' theory of the diffusion of innovations has been applied to study the diffusion of many kinds of innovations. The earliest applications of the theory were in the area of rural sociology (Rogers, 1995). Currently, even the most cursory search on a computerized database shows a broad and varied number of innovations that have been studied using this theory, including computers, solar heating technology, supermarket bar-code scanners, and employee training programs.

With regard to apparel, researchers have used Rogers' theory to study socio-psychological characteristics of fashion adopters. Schrank and Gilmore (1973) studied

innovativeness as a predictor of fashion leadership. The theory has also been used as a framework to examine the need for variety of different types of fashion consumers, including fashion opinion leaders, fashion innovators, innovative communicators, and fashion followers (Workman & Johnson, 1993). Huddleston, Ford, and Bickle (1993) applied the concept of fashion opinion leadership to identify predictors of this trait in fashion consumers. Coelho (1994) applied the theory to study clothing manufacturers' perceptions of the relative advantage of a computer-aided design service.

With regard to older consumers, Strutton, Lumpkin, and Vitell (1994) investigated the appropriateness of Rogers' perceived innovation attribute typology when marketing to older consumers. Their results indicated that this model was appropriate to use, especially when discontinuous innovations, or those involving fundamental changes in consumer consumption patterns, were being marketed (Strutton et al., 1994).

Rogers' Theory of the Diffusion of Innovations

Rogers (1995) defines diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). An innovation is an idea, practice, or object that is perceived as new by the individual or group who may adopt it. The idea, practice, or object does not have to be something never before seen; it is people's perception of newness that makes the diffusion process unique.

Characteristics of Innovations

According to Rogers (1995) individuals or groups perceive that innovations have different characteristics. These perceptions influence their rates of adoption and diffusion. Relative advantage is "the degree to which an innovation is perceived as being better than the idea it supersedes" (Rogers, 1995, p. 15). Compatibility is the degree to which an innovation is perceived as being consistent with the values, experiences and needs of potential adopters. Trialability is the degree to which

potential adopters may experiment with an innovation before deciding to adopt it. Observability consists of how well the results of using an innovation may be seen by potential adopters.

Relative advantage, compatibility, trialability, and observability are positively related to the likelihood of adoption. The more they are in evidence, the greater the probability of adoption. The last attribute, complexity, is negatively related to adoption. Complexity is the degree to which potential adopters perceive the innovation as being difficult to use.

Decision-Making

Rogers (1995) portrays the decision-making process regarding the adoption of an innovation as consisting of five stages. The first stage, knowledge, occurs when the individual or group first learns of the innovation. During the second stage, persuasion, the decision-making unit forms positive or negative attitudes towards the innovation, based on the attributes that the unit perceives it to possess. The decision-making unit takes steps to

adopt or reject an innovation during the third stage, decision. Trial use of the innovation may occur. During the fourth stage, implementation, the unit exhibits some overt behavior toward the innovation, like purchasing it. At the fifth stage, confirmation, the unit seeks reinforcement for the decision that has been made, to reduce dissonance.

Conceptualization

The literature review shows that little research exists about older females' responses to clothing size labels. Although Chun-Yoon and Jasper (1995) found that size labels that were preferred had certain attributes, their sample consisted mainly of university students. It is not known whether older females will share the same preferences for size labels.

Different researchers have suggested that mature consumers do consult labels and tags on garments, but these studies did not focus on consumer preferences for size labels (Lumpkin et al., 1985; Lumpkin & Hite, 1988). It was therefore of interest to determine how older females

reacted to labeling devices that contain attributes of a Canada Standard Sizing label. In accordance with Wolfe's (1990) anti-hyperbole factor, one may conjecture that older females would prefer labels that contain meaningful and useful information.

To examine older females' perceptions of innovative labeling devices, Rogers' (1995) theory of the diffusion of innovations was used, in particular his model of the innovation-decision process. Figure 3 illustrates concepts that were measured and the hypothesized relationships among them. Because this research focused on individuals and an innovation rather than an innovation's dissemination through a social system, it is appropriate to refer to the adoption of an innovation rather than its diffusion. Adoption is the acceptance and continued use of an innovation by an individual (Crane & Clarke, 1994).

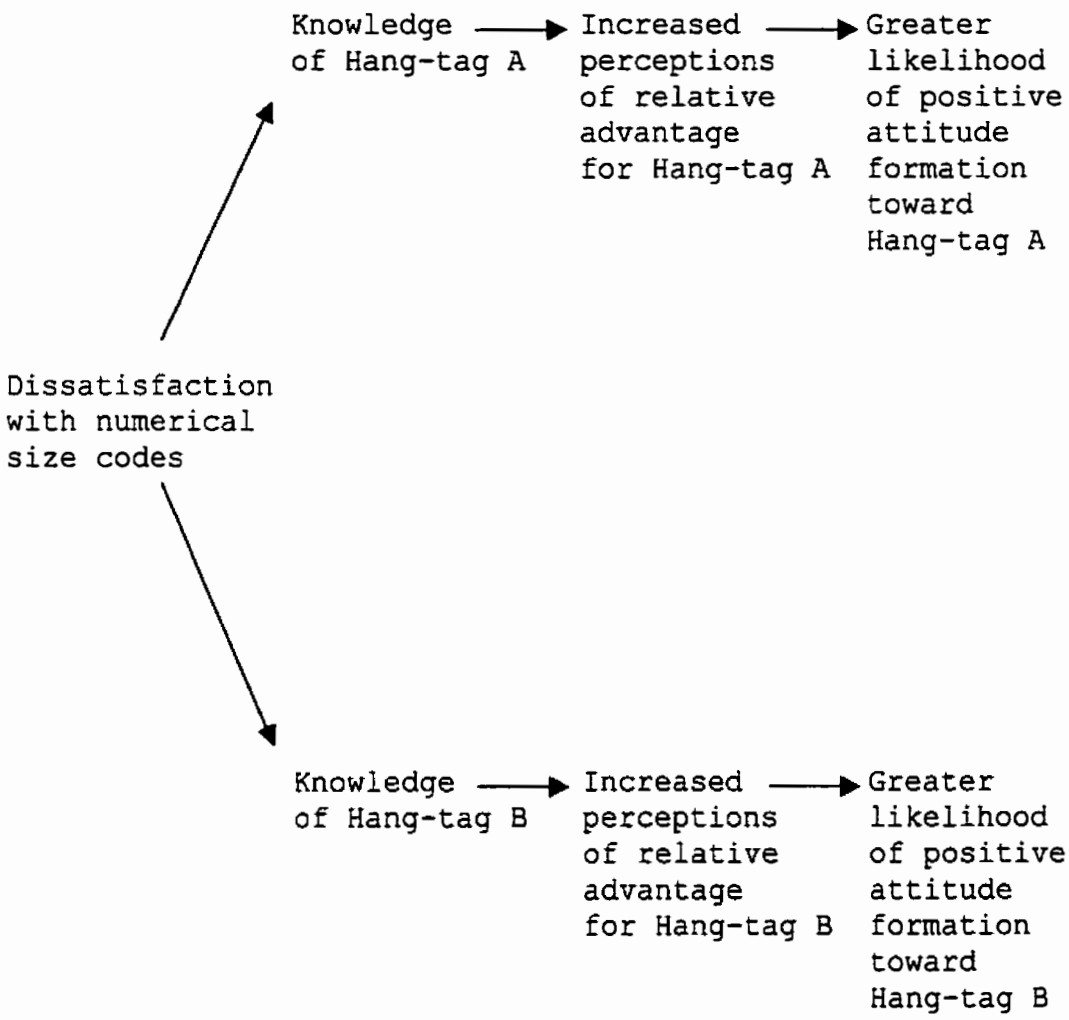


Figure 3. Illustration of relationships among measured variables.

With regard to Rogers' model of the innovation-decision process, the first stage, knowledge, is the stage at which a consumer first learns about an innovation. Certain conditions, called prior conditions, may exist prior to knowledge of the innovation. These could include previous practice and felt needs. Previous practice refers to how an individual or group accomplished whatever the innovation does prior to its availability, that is, previous behavior. Rogers (1995) defines "felt needs/problems" (p. 163) as "a state of dissatisfaction or frustration that occurs when one's desires outweigh one's actualities" (p. 164).

Persuasion is the next stage at which a consumer forms an attitude toward an innovation, based on his or her perceptions of the innovation's characteristics. One of these may be relative advantage, which is the degree to which a consumer perceives an innovation as being better than whatever preceded it. The likelihood of positive attitude formation increases with perceptions of relative advantage.

Knowledge

For the purposes of this thesis, knowledge was considered the information on two variations of a labeling device that contain CSS-specified attributes. These devices were intended to convey the range of body measurements that a garment was meant to accommodate. Empirical evidence suggests that university students prefer certain characteristics of size labels. Chun-Yoon and Jasper (1995) found that their sample of university students least preferred a size label that contained only a numerical code. The most preferred label contained several pieces of information including a pictogram, a list of key body dimensions, and a numerical code. Incidentally, these are characteristics of size labels specified by CSS.

Previous Practice and Felt Problems

Previous practice included how older females assessed the fit of clothing when they see it for the first time in a retail store. A labeling device that contains only a numerical code was used to represent the type of device

used by older females prior to seeing innovative labeling devices. The degree to which older females were dissatisfied with numerical size codes was considered a felt problem. This was also measured.

Relative Advantage

Relative advantage was considered the degree to which older females perceived that innovative labeling devices were better than labeling devices which contained only a numerical size code. In theory, persuasion would have occurred when a consumer formed a favorable or unfavorable predisposition toward a labeling device with CSS attributes when they saw such a label.

The concepts of previous practice, perceived relative advantage of labeling devices with CSS attributes, and attitudes toward these devices form the core of this thesis. The older consumer's degree of satisfaction with numerical size codes may affect the way she recognizes the benefits of the innovative labeling devices. If the older female consumer is dissatisfied with numerical size codes, her assessment of them may be negative. She may then

perceive greater relative advantage for both types of innovative labeling devices, which subsequently may result in the formation of a positive attitude toward them.

On the contrary, if an older female consumer is satisfied with numerical size codes, relative advantage may not be a perceived characteristic of the innovative labeling devices, and the likelihood of positive attitude formation may decrease.

Conceptual Definitions

This section describes conceptual and operational definitions of concepts. These definitions included:

1. Size labeling system - a way of conveying garment size to the consumer that was represented by a label attached to the garment.

2. Innovation - Rogers (1995) defined an innovation as an idea, practice, or object that is perceived as new by potential adopters. Operationally, there were two labeling devices that were considered innovative. An innovation was defined as either:

a. Hang-tag A, a labeling device for a pair of pants in Misses' Petite size 16 with measurements specified by CSS standard CAN/CGSB-49.201-92. Hang-tag A contained the following attributes: a list of measurements including a waist measurement of 84 centimeters (33 inches), a full hip measurement of 110 centimeters (43 inches), and a height of 158 centimeters (five feet, two inches); a pictogram illustrating waist and hip measurements, as well the vertical distance between waist and full hip (23 centimeters, or nine inches), and a numerical code, or

b. Hang-tag B, a labeling device for a pair of pants in Misses' Petite size 16 with measurements specified by ASTM D5586. Hang-tag B contained the following attributes: a list of measurements including a waist measurement of 84 centimeters (33 inches), a full hip measurement of 101 centimeters (40 inches), and a height of 158 centimeters (five feet, two inches); a pictogram illustrating waist and hip measurements as well as the vertical measurement between waist and hip (18 centimeters or seven inches), and a numerical code.

3. Previous practice - the methods by which older female consumers determined whether or not a garment would

accommodate her body measurements, prior to knowledge of innovative labeling devices.

4. Felt needs/problems - states of dissatisfaction or frustration that occurred when older females' desires regarding labeling devices outweighed their actualities, prior to knowledge of innovative labeling devices.

5. Persuasion - the formation of a favorable or unfavorable predisposition toward labeling devices with CSS attributes.

6. Relative Advantage - the degree to which the innovative labeling devices were perceived as being better than numerical labeling devices. The items measuring perceptions of relative advantage were adapted from Strutton et al. (1994).

7. Attitude - The predisposition to act favorably or unfavorably toward both types of innovative labeling devices.

Hypotheses

To find answers to the research questions, the following null and alternate hypotheses were formulated:

Null Hypothesis One

There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag A when it is compared to the numerical hang-tag.

Alternate Hypothesis One

Subjects who express low satisfaction with the numerical labeling device will perceive that hang-tag A has greater relative advantage compared to the numerical labeling device than subjects who express high satisfaction with the numerical labeling device.

Null Hypothesis Two

There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag B when it is compared to the numerical hang-tag.

Alternate Hypothesis Two

Subjects who express low satisfaction with the numerical labeling device will perceive that hang-tag B has greater relative advantage compared to the numerical labeling device than subjects who express high satisfaction with the numerical labeling device.

Null Hypothesis Three

Testing hypothesis three involved testing three sets of relationships, which have been formulated according to Rogers' (1995) theory, which states that felt needs influence perceptions of relative advantage, which in turn influence attitudes toward an innovation. In this research, the goal was to determine if satisfaction with the numerical hang-tag affected perceptions of relative advantage for hang-tag A, which subsequently would affect attitude toward it. One can speculate that, with regard to this research, subjects who expressed low satisfaction with the numerical tag would have more positive attitudes toward innovative hang-tags than subjects who expressed high

satisfaction.

The hypothesis was broken into a series of relationships as follows:

a) There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag A when it is compared to the numerical hang-tag.

b) There will be no relationship between subjects' perceptions of relative advantage for hang-tag A and the dimensions of attitudes for hang-tag A (both separate and combined.)

c) There will be no relationship between levels of satisfaction with the numerical hang-tag and the dimensions of attitudes for hang-tag A (both separate and combined.)

Alternate Hypothesis Three

For each of the three sub-null hypotheses, the alternate hypotheses are:

a) Subjects who express low satisfaction with the numerical labeling device will perceive that hang-tag A has greater relative advantage compared to the numerical

labeling device than subjects who express high satisfaction with the numerical hang-tag.

b) Subjects who perceive higher levels of relative advantage for hang-tag A will form more positive attitudes towards hang-tag A than subjects who perceived lower levels of relative advantage.

c) Subjects who express low satisfaction with the numerical hang-tag will form more positive attitudes towards hang-tag A than subjects who express high satisfaction with the numerical hang-tag.

Three dimensions of attitude toward the hang-tags were measured, the cognitive, affective, and conative dimensions. Because these three dimensions were conceptualized as comprising attitude as a whole, their values were summed to create a variable representing general attitude towards each hang-tag. Thus the variable attitude and its dimensions were used in hypothesis testing.

Null Hypothesis Four

As with hypothesis three, testing hypothesis four involved testing a series of relationships. The three dimensions of attitude were also summed to create a general attitude variable for hypothesis testing. The same rationale was used to formulate parts a, b, and c of this hypothesis, which are as follows:

a) There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag B when it is compared to the numerical hang-tag

b) There will be no relationship between subjects' perceptions of relative advantage for hang-tag B and the dimensions of attitude for hang-tag B and attitude toward hang-tag B.

c) There will be no relationship between levels of satisfaction with the numerical hang-tag and the dimensions of attitudes for hang-tag B and attitude toward hang-tag B.

Alternate Hypothesis Four

For each of the three sub-null hypotheses, the alternate hypotheses are:

a) Subjects who express low satisfaction with the numerical labeling device will perceive that hang-tag B has greater relative advantage compared to the numerical hang-tag than subjects who express high satisfaction with the numerical hang-tag.

b) Subjects who perceive higher levels of relative advantage for hang-tag B will form more positive attitudes towards hang-tag A than subjects who perceived lower levels of relative advantage.

c) Subjects who express low satisfaction with the numerical hang-tag will form more positive attitudes towards hang-tag B than subjects who express high satisfaction with the numerical hang-tag.

Hypothesis Five

Hang-tags A and B were developed using the body measurements of two different sizing standards, one which represented older women's physical characteristics (ASTM

D5586) and one which did not (CSS). At this time, the ASTM standard is not known to the public. Hence, the researcher did not have any empirical evidence to suggest the nature of the relationship between perceptions of relative advantage of one hang-tag compared to another. Therefore, the researcher investigated the relationship between perceptions of relative advantage of each tag compared to the other by formulating the null hypothesis that there will be no difference in perceptions of relative advantage for hang-tag A and hang-tag B, when hang-tag A is compared to hang-tag B, and when hang-tag B is compared to hang-tag A.

CHAPTER THREE

METHOD

In developing the procedure for seeking answers to research questions, the researcher developed three size labels and an interview schedule. The researcher then administered the interview schedule by interviewing 42 subjects individually to ascertain reactions to the hang-tags. This chapter describes the development of the hang-tags, interview schedule, sample recruitment, data collection, and analysis.

Development of Research Instrument

In this section, the researcher accounts for the process of developing and pre-testing the hang-tags and the interview schedule for this research.

Pre-Test Hang Tags

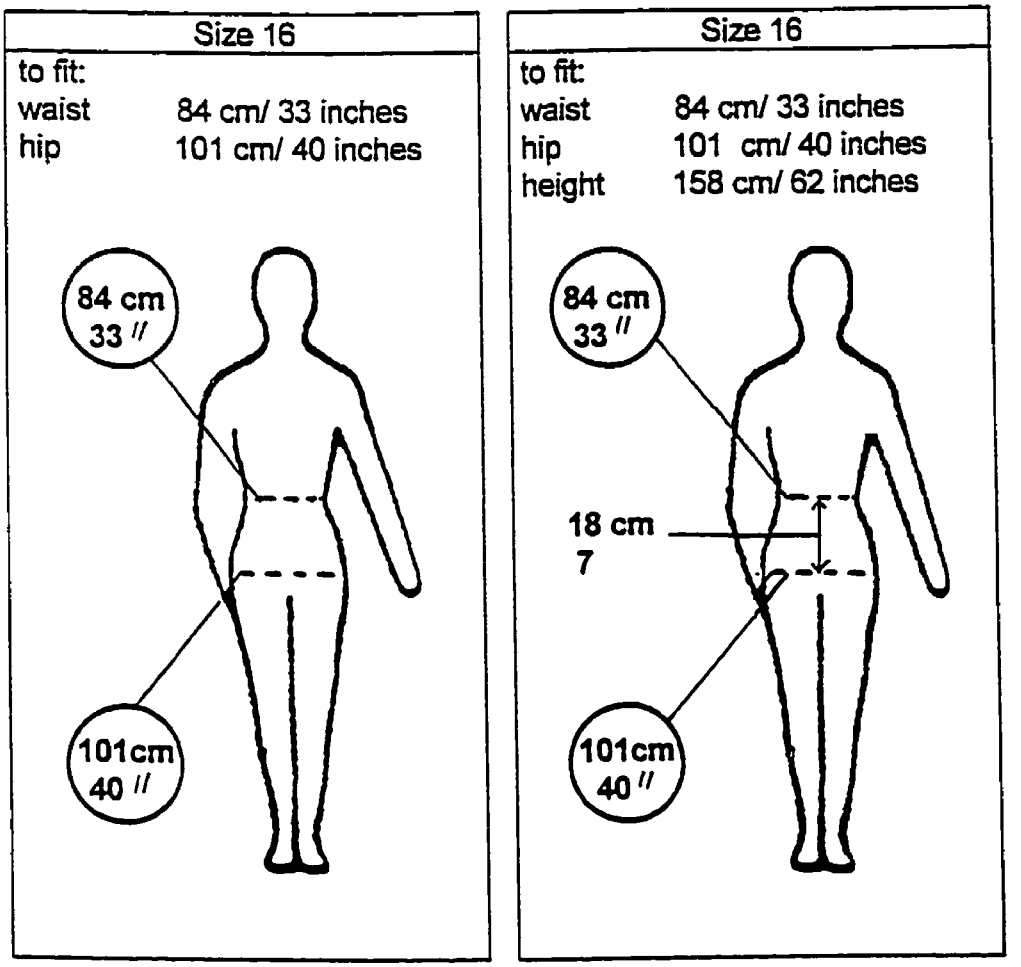
Three hang tags were developed. One was a numerical hang-tag identical to that previously seen in Figure 1,

which contained only a numerical code for a pair of pants for a Misses Petite Size 16. The other two pre-test stimuli may be seen in Figure 4. These were:

1. Hang-tag A, a labeling device for a pair of pants in Misses Petite Size 16 with the following attributes: a list of measurements specified by ASTM D5586, including a waist measurement of 84 centimeters (33 inches), a full hip measurement of 101 centimeters (40 inches), a pictogram illustrating these measurements, and a numerical code, or

2. Hang-tag B, a labeling device for a pair of pants in Misses Petite Size 16 with the following attributes: a list of measurements specified by ASTM D5586, including a waist measurement of 84 centimeters (33 inches), a full hip measurement of 101 centimeters (40 inches), and a height of 158 centimeters (62 inches), a pictogram illustrating these measurements except height, as well was the vertical distance between waist and full hip, located 18 centimeters (seven inches) below the waist, and a numerical code.

To avoid biases created by size labels, the petite stature was conveyed by indicating the height of the person the garment is intended to fit. Neither the word "Petite" nor the abbreviation "P" appeared on the hang-tags.



Hang-tag A

Hang-tag B

Figure 4. Pre-test hang-tags A and B.

Measurements were given in both inches and centimeters, to address any subject's unfamiliarity with their measurements in metric. The waist and hip measurements were shown because CSS specified that only these measurements need be included on hang-tags for garments fitting the lower body.

Hang-tags A and B were identical except that B included two additional pieces of information, height and vertical distance between waist and full hip. The researcher chose to use ASTM D5586 measurements for a Misses Petite size 16 on hang-tags A and B to allow for continuity between this research and other research that was ongoing at the University of Manitoba during the planning stages of this thesis. This other research investigated satisfaction with fit for garments designed according to ASTM D5586, with Misses Petite size 16 as the chosen size (Campbell & Horne, 2001).

Development of Interview Schedule

An interview schedule was developed to measure the concepts contained in Rogers' (1995) theory. The interview schedule recorded subjects' responses to the three hang-

tags. The first part of the interview schedule included questions about previous practice and the subjects' background information. The second part of the interview schedule collected demographic information in close-ended questions. The interview schedule may be seen in Appendix A.

The interval schedule consisted of close-ended and open-ended questions. For some close ended-questions, the response scale was a five-point scale in which the distances between the points on the scale were assumed to be equal, with "5" being the maximum value a response could have, and "1" being the minimum value. The pool of close-ended questions included:

1. Subjects' ownership of pants, operationalized as the item "Are pants a part of your wardrobe?" with a response scale of "Yes" or "No".

2. Subjects' frequency of wearing pants, operationalized as the item "How often would you say you wear pants?" with a five-point response scale ranging from "Never"(1) to "Always"(5).

3. Subjects' satisfaction with the numerical hang-tag. This concept was operationalized as the item, "How

satisfied are you with this [numerical] hang-tag in helping you find garments that fit you without trying them on?" The five-point response scale ranged from "very dissatisfied"(1) to "very satisfied"(5).

4. Persuasiveness of stimuli hang-tags. This concept was operationalized as the item, "What is your impression of this hang-tag?" The five-point response scale ranged from "very unfavorable"(1) to "very favorable"(5).

5. Perceptions of relative advantage of hang-tag A compared to the numerical size label. This concept was operationalized as the item, "This hang-tag [A] is superior to the numerical hang-tag." The five-point response scale ranged from "strongly disagree"(1) to "strongly agree"(5).

6. Perceptions of relative advantage of hang-tag B compared to the numerical size label. This concept was operationalized as the item, "This hang-tag [B] is superior to the numerical hang-tag." The five-point response scale ranged from "strongly disagree"(1) to "strongly agree"(5).

7. Perceptions of relative advantage of hang-tag A compared to hang-tag B. This concept was operationalized as the item, "Hang-tag A is superior to Hang-tag B." The

five-point response scale ranged from "strongly disagree"(1) to "strongly agree"(5).

8. Perceptions of relative advantage of hang-tag B compared to hang-tag A. This concept was operationalized as the item, "Hang-tag B is superior to Hang-tag A." The five-point response scale ranged from "strongly disagree"(1) to "strongly agree"(5).

9. Attitude toward hang-tag A and hang-tag B. Attitude toward both hang-tags was conceptualized as having three dimensions. These were operationalized as follows: "Hang-tag A/B contains the information that would help me find pants that fit me," (cognitive dimension); "I like Hang-tag A/B," (affective dimension), and "I would use Hang-tag A/B to help me find clothes that fit me" (conative dimension). The five-point response scale for each item ranged from "strongly disagree"(1) to "strongly agree"(5).

10. Perceptions of innovativeness of hang-tag A and hang-tag B. These concepts were operationalized as the items "Hang-tag A is like all other hang-tags I have seen before" and "Hang-tag B is like all other hang-tags I have seen before." The five-point response scale for each item ranged from "strongly disagree"(1) to "strongly agree"(5).

After responding to close-ended items that measured perceptions of relative advantage, subjects were asked to respond to open-ended questions that were intended to tap the meaning of relative advantages. The responses were audio taped for transcription later.

The researcher thought that responses to the interview schedule could be affected if the two hang-tags were presented to subjects in the same order. To control for the order effect, the researcher alternated the order in which hang-tags A and B were presented to the subjects. Before concluding the interview, subjects were asked to express freely other impressions they may have had about the hang-tags.

Administration of Pre-Test

The researcher conducted a pre-test during July and October of 1998 in order to evaluate the clarity of interview schedule items, the information contained in the hang-tags, and the operational definitions. In addition, the pre-test enabled the researcher to identify any flaws in the procedure. A group of seven participants was

recruited by word of mouth for the pre-test sample. Five interviews were conducted in Waterdown, Ontario, and two were conducted in Winnipeg during one of the researcher's visits there.

Changes to Interview Schedule

During the pre-test, the researcher noticed that some subjects' familiarity with sewing influenced their responses to the hang-tags. Specifically, the subject's experience with sewing could heighten her awareness of her own body measurements, which in turn could influence perceptions of relative advantage. Therefore, the researcher modified the interview schedule by adding two items. The first item measured subjects' experience with sewing their own clothing. This item was added to ascertain if experience with sewing influenced awareness of body measurements. It was operationalized as the item "Do you sew any of your own clothing?" with a five-point response scale ranging from "Never" (1) to "Always" (5). The second item measured subjects' awareness of their own body measurements, operationalized as the item "I am aware

of my body measurements" with a five-point response scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5).

The second question was further modified after interviewing the first nine subjects in the data collection phase. The researcher split this question into two questions inquiring about specific familiarity with waist and hip measurements for the remaining subjects. The researcher felt that this decision was justified because waist and hip measurements were information contained in the hang-tags and they were more specific than "body measurement", thereby adding clarity to the questions. Consequently, awareness of waist and hip measurements were operationalized as, respectively, "I know my waist measurement when I shop for pants," and "I know my hip measurement when I shop for pants." The five-point response scale for each item ranged from "Strongly Disagree" (1) to "Strongly Agree" (5).

The addition of these items in the interview schedule enabled the researcher to assess the contribution of two potentially confounding variables by analyzing the relationships between subjects' experience with sewing and

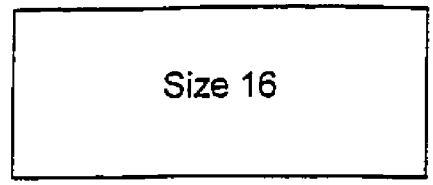
awareness of body measurement later in the data analysis stage.

Changes to Hang-Tags

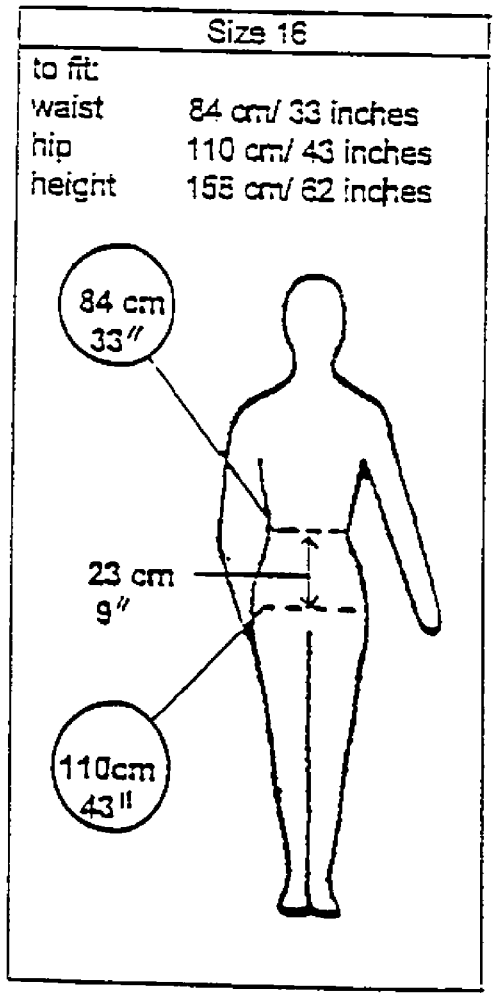
Both hang-tags were modified so that each contained the same type of measurements (hip, waist, height, and vertical distance between waist and full hip). The waist measurements (33 inches) of hang-tags A and B were identical. However, the waist measurement and the location of the fullest part of the hip differed. The waist measurement was 40 inches for hang-tag A (CSS measurements) and 43 inches for hang-tag B (ASTM D5586 measurements). Furthermore, for hang-tag B, the fullest part of the hip was located at seven inches below the waist, which was two inches higher than hang-tag A (CSS measurements). The difference in the location of the widest part of the hip between the two hang-tags were expressed in the vertical distance between the waist and full hip on the tags. The vertical distance between the waist and the full hip depicted in pictogram B was drawn to appear shorter than A's. Thus, what was reflected in the hang-tags was the

differences in body measurements that did not represent the physical characteristics of older women (CSS measurements on A), and those that did (ASTM D5586 measurements on B). The tags that were finally used in data collection are shown in Figure 5, along with the numerical tag to which they were compared.

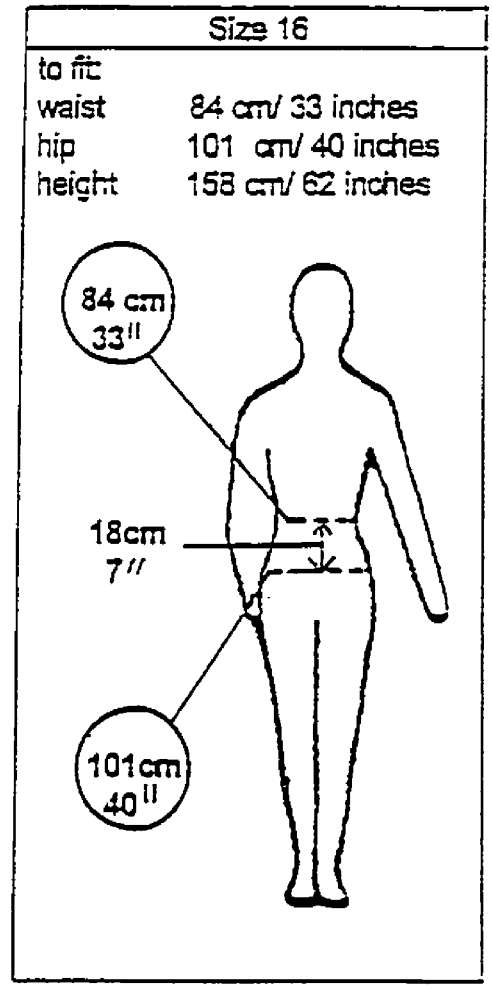
By making these changes to the tags, the researcher felt that subjects would respond to information regarding body measurements that were characteristics of the two sizing system rather than the number of pieces of information on each tag. Changes to hang-tags were made to ensure that if subjects perceived that either hang-tag had relative advantages over the other, it would be attributed to the differences in body measurements between the tags, and not simply because B contained more information than A.



Numerical size label



Hang-tag A



Hang-tag B

Figure 5. Final research stimuli used in data collection: Hang-tags A and B and numerical hang-tag.

Data Collection

This section describes the procedure for collecting data. This includes sample recruitment and the administration of the interview schedule.

Sample Recruitment

The sampling frame included all females aged 55 or older in the areas of Flamborough, Burlington, Oakville, and Hamilton areas. Time constraints did not allow the recruitment of a random sample; therefore, a convenience sample was used for this research. This type of sample was appropriate because no inferences were drawn to the entire population of older females. Before any subjects were recruited, approval was granted by the Human Ecology Ethics Review Committee to use human subjects in the research. A copy of the approval letter may be seen in Appendix B.

Flamborough included many small communities, including Waterdown, and was in close proximity to the other places mentioned. These locales were chosen because the researcher lived in Waterdown. However, some subjects were

recruited from Winnipeg, because the researcher visited there occasionally and it was convenient to do so. Ten subjects were recruited from Winnipeg, and 32 were from Flamborough and the surrounding areas.

Research subjects were recruited in several ways. Advertisements were twice placed in each of two local Flamborough newspapers (in June and November of 1999), and once in a Burlington newspaper (in January 2000). Recruitment notices listing the researcher's phone number were posted in various locales such as churches, supermarkets, banks, and a women's fitness center. An example of a recruitment notice may be found in Appendix C. The researcher also made a brief presentation at a meeting of women aged 50 or older at an Oakville women's center and collected names and telephone numbers of interested parties. Finally, the researcher also recruited subjects by word-of-mouth.

Advertisements and recruitment notices specified that subjects must be of the female gender and 55 years or older. Interested persons were encouraged to telephone the researcher, who then explained the purpose of the research to the caller. The information that was told to potential

subjects may be seen in Appendix D. The researcher scheduled interviews with those who were willing to participate.

Sixty-one women responded to all recruiting efforts. Forty-two of the initial 61 women, or 69%, were interviewed. The other 19 women did not participate due to a lack of interest in the research, scheduling difficulties, or did not meet the age criterion. The researcher arranged to meet with subjects at a location of the subject's choice to conduct an in-person interview. All but two interviews took place at the subject's home.

Forty-two usable interviews were conducted during the period May 1999 to April 2000. Thirty-two interviews were conducted in Waterdown, Ontario and those areas in close proximity to Waterdown mentioned previously. Ten interviews were conducted in Winnipeg during October 1999 and April 2000. These interviews coincided with two of the researcher's visits to Winnipeg.

Administration of the Interview Schedule

After arriving at the interview site, the researcher reiterated the purpose of the research to the subject. Subjects were then asked to sign a consent form, which may be seen in Appendix E. Subjects completed the following tasks:

1. Subjects viewed the numerical hang-tag. They then responded to the question that measured satisfaction with the numerical size label.

2. Subjects viewed the numerical hang-tag and hang-tag A at the same time. They then responded to questions that measured persuasiveness of hang-tag A, and also perceptions of relative advantage of hang-tag A over the numerical hang-tag.

3. Subjects viewed the numerical hang-tag and hang-tag B at the same time. They then responded to questions that measured persuasiveness of hang-tag B, and also perceptions of relative advantage for hang-tag B over the numerical hang-tag.

4. Subjects viewed hang-tag A and B at the same time. They then responded to questions that measured perceptions

of relative advantage for hang-tag A compared to hang-tag B. Afterward, they responded to questions that measured perceptions of relative advantage for hang-tag B compared to hang-tag A.

5. After this step, subjects completed a distracter event task, with the intention of avoiding short-term memory rehearsal of the stimuli. The task involved subjects' sorting 25 cards into five categories, based on their perceptions of the cards (Kogan, Connor, Gross & Fava, 1980).

6. Subjects viewed hang-tag A and then responded to questions that measured attitudes toward hang-tag A.

7. Subjects next viewed the hang-tag B and then responded to questions that measured attitudes toward hang-tag B.

As mentioned, the order in which the innovative hang-tags were presented to subjects was alternated. That is, subjects who were interviewed using the "A" schedule completed the tasks in this order: 1, 2, 3, 4, 5, 6; while subjects who were interviewed using the "B" schedule completed tasks in this order: 1, 3, 2, 4, 6, 5.

After interviews were completed, subjects were debriefed as to the purpose of the research. The debriefing information may be seen in Appendix F. The average length of an interview was approximately 35 minutes.

Data Analysis

Responses to close-ended questions for all 42 subjects were usable. Responses to five open-ended questions among three subjects' responses were not recorded due to mechanical failure of the tape recorder. In total, responses to open-ended questions from 39 subjects were used for analysis.

The researcher transcribed the responses to the open-ended questions on relative advantage. A coding scheme was developed from the transcriptions, which were individually coded by three coders, including the researcher, her advisor, and a third coder. The three coders then met to discuss their coding decisions, and, where there were disagreements, to reach a consensus as to how a particular response may have been coded.

Inter-coder reliability was calculated using the method discussed in Holsti (1969). A co-efficient of reliability was calculated as C.R.= 3m/N1+N2+N3, where m = number of agreements of coders; N1, N2, and N3 = number of coding decisions made by coders.

To test the hypotheses, the following statistical tests were performed using version 8.0 of the Statistical Package for the Social Sciences (SPSS). For Hypotheses 1 and 2, Pearson's correlation co-efficients were computed to determine the direction and strength of the relationship between satisfaction with the numerical hang-tag and perceptions of relative advantage of hang-tags A (Hypothesis 1) and B (Hypothesis 2).

Pearson's correlation co-efficients were also used to test the series of relationships that comprised Hypotheses 3 and 4, to determine if satisfaction with the numerical hang-tag was significantly related to the cognitive, affective, and conative dimensions of attitude toward hang-tags A (Hypothesis 3) and B (Hypothesis 4). Because these three dimensions were conceptualized as comprising attitude as a whole, their values were summed to create a variable representing general attitude toward each innovative hang-

tag. Subsequently, the researcher tested hypotheses three and four by correlating satisfaction with numerical tag with attitude, the cognitive, affective, and conative dimensions of attitude. For the variable attitude, the Cronbach's alpha was computed to ascertain internal consistency.

For hypothesis five, t-tests were used to test the differences in perceptions of relative advantage when hang-tag A was compared to hang-tag B, and when hang-tag B was compared to hang-tag A.

CHAPTER FOUR

RESULTS

This chapter describes the research results, including demographic characteristics of the sample, prior conditions, perceptions of relative advantage for and attitude toward hang-tags, responses to open-ended questions, and hypothesis testing.

Demographic Characteristics

Forty-two subjects participated in the research. As indicated in Table 1, the mean age of subjects was 67 years with a standard deviation of 9.62 years. The mean was calculated using the exact age reported by the subjects. The median age was also 67 years, and the modal age was 71 years. About 46% were between the ages of 55 and 65 years, and 39% between the ages of 66 and 75 years. As shown in Table 2, approximately 52% of respondents declined to report their income. Over one-half of those subjects who did (55%) reported that their income was

between $15,000 and $34,999. Also, 25% of subjects had a personal annual income of over $65,000.

Table 1

Age Distribution of Subjects

Age (N=41)[a]	Frequency	Valid Percent
55-60	12	29.2
61-65	7	17.0
66-70	11	26.8
71-75	5	12.2
76-80	2	4.9
81-85	2	4.9
86-90	1	2.4
91-95	1	2.4
Missing	1	2.4
M	67	
SD	9.62	

[a]One subject declined to answer the item regarding age.

Table 2

Income Distribution of Subjects

Income (N=20)[a]	Frequency	Valid Percent
Less than $15,000	1	5.0
$15,000-$24,999	5	25.0
$25,000-$34,999	6	30.0
$35,000-$44,999	3	15.0
$45,000-$54,999	0	0
$55,000-$64,999	0	0
Over $65,000	5	25.0

[a]Twenty-two subjects declined to report their income.

Marital status, levels of education, employment status, and perceived health of subjects are shown in Table 3. The majority of subjects (57.1%) were married, and 31% were widowed. Also, 64.2% of respondents had completed at least one year of post-secondary education. Thirty-three per cent of respondents reported having completed a university degree, technical school, or community college program. The majority of subjects were retired (73.8%).

Furthermore, the majority of subjects in this study reported that their perceived health either "never" (42.9%) or "rarely" (35.7%) prevented their activities.

Behaviors Pertaining to Ownership of Pants

Certain behaviors were measured prior to subjects' seeing hang-tags A and B for the first time. These behaviors include frequency of wearing pants, whether subjects sewed any of their own clothing, and subjects' awareness of their own waist and hip measurements. As indicated in Table 4, virtually all subjects (97.6%) owned pants as part of their wardrobes. Similarly, 85.7% of the sample reported that they "often" or "always" wore pants. No subjects reported that they "never" wore pants.

Table 3

Marital Status, Levels of Education, Employment and Perceived Health of Subjects (N=42)

Demographic characteristics	Frequency	Percent
Marital Status		
Single	2	4.8
Married	24	57.1
Divorced/Separated	3	7.1
Widowed	13	31.0
Level of Education		
Grade 6 or lower	0	0
Grade 7-9	3	7.1
Grade 10-13	12	28.6
1-3 years university	10	23.8
Completed university, technical or community college	14	33.3
Completed graduate degree	3	7.1
Employment		
Retired	31	73.8
Full time	2	4.8

Table 3-continued

Demographic characteristics	Frequency	Percent
Employment		
Part-time	7	16.7
Other	2	4.8
Perceived health		
Health never prevents activities	18	42.9
Health rarely prevents activities	15	35.7
Health often prevents activities	8	19.0
Health very often prevents activities	1	2.4
Health prevents most activities	0	0

Table 4

Pants as Part of Subjects' Wardrobe and Frequency of Wearing Pants (N=42)

Behaviors pertaining to pants	Frequency	Percent
Pants in wardrobe		
Yes	41	97.6

Table 4-continued

Behavior pertaining to pants	Frequency	Percent
Pants in Wardrobe		
No	1	2.4
Frequency of wearing pants		
Never	0	0
Seldom	1	2.4
Sometimes	5	11.9
Often	27	64.3
Always	9	21.4

As shown in Table 5, 59.5% of subjects never sewed their own clothing. The mean score for this variable was 1.17, with a standard deviation of .99. Furthermore, subjects also tended not to know their own waist or hip measurements (Tables 6 and 7). Almost 55% of subjects did not know their hip measurement, while 21.2% did know it. While 48.5% of subjects who responded to items about waist and hip measurements were not aware of their waist measurements, 30% were aware.

Table 5

Subjects' Frequency of Sewing Own Clothing (N=42)

	Frequency	Percent
Never	25	59.5
Seldom	7	16.7
Sometimes	7	16.7
Often	3	7.1
Always	0	0
M	1.17	
SD	.99	

Table 6

Subjects' Knowledge of Their Own Hip Measurement (N=33)

Knowledge of hip measurement	Frequency	Valid percent
"I know my hip measurement when I shop for pants."		
Strongly Disagree	2	6.1
Disagree	18	54.7
Neutral	3	9.1
Agree	7	21.2
Strongly Agree	3	9.1
Missing	9	21.4
M	2.73	
SD	1.15	

Note. Valid percent does not include responses missing due to changed interview schedule items.

Table 7

Subjects' Knowledge of Their Own Waist Measurement (N=33)

Knowledge of waist measurement	Frequency	Valid Percent
"I know my waist measurement when I shop for pants."		
Strongly Disagree	2	6.1
Disagree	16	48.5
Neutral	2	6.1
Agree	10	30.0
Strongly Agree	3	9.1
Missing	9	21.4
M	2.88	
SD	1.19	

Note. Valid percent does not include responses missing due to changed interview schedule items.

Experience With Sewing and Body Measurements

One-way ANOVA's were run to determine if subjects' frequency of sewing their own clothing was related to knowledge of body measurements. Recall that the first nine subjects answered questions about general knowledge of body measurements, while remaining subjects answered questions about their awareness of two specific body measurements, waist and hip. Therefore, ANOVA's were performed on two pools of data to test the relationship between experience with sewing and body measurements. Results of one-way ANOVA's indicated that no significant relationships existed between experience with sewing and knowledge of body measurements (F = 2.272, p = .175), experience with sewing and knowledge of waist measurement (F = 1.871, p = .157), or between experience with sewing and knowledge of hip measurement (F = 1.745, p = .180)

Responses to Close-Ended Questions

This section presents subjects' responses to close-ended questions about the numerical tag and hang-tags A and

B. Five point response scales were used for close-ended items except where indicated.

Behaviors Toward Numerical Hang-tag

According to Rogers' (1995) theory, previous practice refers to how a person accomplished what the innovation does prior to his or her knowledge of it. In this thesis, previous practice referred to how older females assessed the fit of clothing when they saw it for the first time in a retail store. The current practice of clothing manufacturers is to use a numerical size label to indicate fit. Thus, for the purposes of this thesis, the numerical hang-tag represented previous practice, a concept that was measured by the frequency with which subjects used a numerical label to assess fit when shopping for clothing in a retail store.

The interview schedule measured how frequently subjects used a hang-tag with a numerical code only (M = 4.31, SD = .84). The majority of subjects reported using such a tag. About 86% reported that they often (35.7%) or always (50.0%) used the numerical tag.

Table 8

Use of and Satisfaction with Numerical Hang-tag (N=42)

Behavior toward numerical hang-tag	Frequency	Percent
Use of numerical hang-tag		
Never	0	0
Sometimes	2	4.8
Seldom	4	9.5
Often	15	35.7
Always	21	50.0
M	4.31	
SD	.84	
Satisfaction with numerical hang-tag		
Very dissatisfied	2	4.8
Dissatisfied	15	35.7
Neutral	9	21.4
Satisfied	14	33.3
Very satisfied	2	4.8
M	2.98	
SD	1.05	

In Rogers' (1995) theory, a felt need was subjects' degree of satisfaction or dissatisfaction with the numerical hang-tag. As also indicated in Table 8, close to equal percentages of subjects responded that they were very dissatisfied or dissatisfied (40.5%), or very satisfied or satisfied (38.1%) with the numerical tag, with 21.4% indicating they had neutral feelings toward it. The mean was 2.98, with a standard deviation of 1.05.

Perceptions of Hang-tag A as Innovative and Impressions of Favorability of Hang-tag A

Rogers (1995) defined an innovation as an idea, practice, or object that is perceived as new by potential adopters. As shown in Table 9, 92% of subjects indicated that hang-tag A was not a label that they had seen before. The mean for this variable was 1.76, with a standard deviation of .73. These results suggest that subjects perceived hang-tag A to be innovative.

Operationally, persuasion was defined as the formation of a favorable or unfavorable predisposition toward hang-

tags A and B. The majority (69%) of subjects had either "favorable" or "very favorable" impressions of hang-tag A.

Table 9

Perceptions of Hang-tag A as Innovative and Impressions of Favorability of Hang-tag A (N=42)

Behavior toward hang-tag A	Frequency	Percent
Impression of hang-tag A		
Very unfavorable	0	0
Unfavorable	8	19.0
Neutral	5	11.9
Favorable	15	35.7
Very favorable	14	33.3
M	3.83	
SD	1.10	
"Hang-tag A is like all other size labels I have seen before."		
Strongly Disagree	15	35.7
Disagree	24	57.1

Table 9-continued

Behavior toward hang-tag A	Frequency	Percent
"Hang-tag A is like all other size labels I have seen before."		
Neutral	1	2.4
Agree	2	4.8
Strongly agree	0	0
M	1.76	
SD	.73	

Attitude Toward Hang-tag A

Operationally, attitudes were defined as the predispositions to act favorably or unfavorably toward hang-tags A and B. According to Crane and Clarke (1994), the concept of attitude comprises three dimensions, the cognitive (belief) dimension, the affective (emotional) dimension, and the conative (intention) dimension.

The researcher measured each of these dimensions and summed the scores for the three dimensions to create the variables "attitude."

As indicated in Table 10, for each of the three dimensions of attitude, subjects' responses were favorable. Collectively, 73.8% of subjects agreed (47.6%) or strongly agreed (26.2%) that they believed hang-tag A contained information that would help them find pants that fit them ($\underline{M}$ = 3.83, $\underline{SD}$ = 1.03.) Similarly, 71.4% collectively agreed (47.6%) or strongly agreed (23.8%) that they liked hang-tag A ($\underline{M}$ = 3.81, $\underline{SD}$ = .97). In terms of using hang-tag A to help find pants that fit, 66.7% either agreed (42.9%) or strongly agreed (23.8%) that they would do so ($\underline{M}$ = 3.69, $\underline{SD}$ = 1.09.)

Table 10

Dimensions of Attitude Toward Hang-tag A (N=42)

Dimension of attitude	Frequency	Percent
Cognitive[a]		
Strongly disagree	1	2.4
Disagree	5	11.9
Neutral	5	11.9
Agree	20	47.6
Strongly agree	11	26.2
M	3.83	
SD	1.03	
Affective[b]		
Strongly disagree	0	0
Disagree	6	14.3
Neutral	6	14.3
Agree	20	47.6
Strongly agree	10	23.8
M	3.81	
SD	.97	

Table 10-continued

Dimension of attitude	Frequency	Percent
Conative[c]		
Strongly disagree	1	2.4
Disagree	7	16.7
Neutral	6	14.3
Agree	18	42.9
Strongly agree	10	23.8
M	3.69	
SD	1.09	

[a]Response to the question "Hang-tag A contains the information that would help me find pants that fit me."

[b]Response to the question "I like hang-tag A".

[c]Response to the question "I would use hang-tag A to help me find pants that fit me".

For the concept of attitude, scores for the three dimensions were summed, therefore the numerical value for this variable ranged from 3 to 15. Attitude toward hang-tag A had a mean of 11.33 and a standard deviation of 2.89.

The Cronbach's alpha tests indicated that all three dimensions of attitude for hang-tag A were internally consistent. The reliability co-efficient for hang-tag A was $\alpha = .9231$.

Perceptions of Relative Advantage of Hang-tag A Compared to Numerical Hang-tag

Relative advantage was defined as the degree to which hang-tag A was perceived as being better than the numerical hang-tag. As shown in Table 11, the majority of subjects (76.2%) either agreed or strongly agreed that hang-tag A was superior to the numerical tag; 19.0% disagreed that hang-tag A was superior. The mean for perceived relative advantage of hang-tag A was 3.96, with a standard deviation of 1.10.

Perceptions of Hang-tag B as Innovative and Impressions of Favorability of Hang-tag B

As shown in Table 12, the majority of subjects (66.7%) had favorable (42.9%) or very favorable (23.8%) impressions

of hang-tag B. The mean rating for favorability was 3.74, with a standard deviation of 1.01. This table also shows that the vast majority of subjects (90.5%) either disagreed or strongly disagreed that hang-tag B was like any other hang-tag they had seen before. The mean for this variable was 1.81, with a standard deviation of .80. Pearson's correlation revealed that the two variables were negatively related, but not significantly (r = -.272, p = .081.)

As with hang-tag A, this negative relationship was not surprising as one might assume that if subjects did not perceive hang-tag B was like other size labels, their impressions of it would be more favorable.

Table 11

Perceptions of Relative Advantage of Hang-tag A Compared to Numerical Hang-tag (N=42)

Relative advantage	Frequency	Percent
"This hang-tag [A] is superior to the numerical hang-tag."		
Strongly Disagree	0	0
Disagree	8	19.0
Neutral	2	4.8
Agree	16	38.1
Strongly Agree	16	38.1
M	3.96	
SD	1.10	

Table 12

Perceptions of Hang-tag B as Innovative and Impressions of Favorability of Hang-tag B (N=42)

Attributes of hang-tag B	Frequency	Percent
Impression of hang-tag B		
Very unfavorable	0	0
Unfavorable	7	16.7
Neutral	7	16.7
Favorable	18	42.9
Very favorable	10	23.8
M	3.74	
SD	1.01	
"Hang-tag B is like all other size labels I have seen before."		
Strongly disagree	15	35.7
Disagree	23	54.8
Neutral	1	2.4
Agree	3	7.1

Table 12-continued

Attributes of hang-tag B	Frequency	Percent
"Hang-tag B is like all other size labels I have seen before."		
Strongly Agree	0	0
M	1.81	
SD	.80	

Attitude Toward Hang-tag B

The same dimensions of attitude were measured for hang-tag B as were measured for hang-tag A, using similar interview schedule items. The three dimensions were also summed to create the variable "attitude toward B." As shown in Table 13, in general, subjects formed positive attitudes toward hang-tag B. With respect to the cognitive dimension, while 54.8% of subjects either agreed (40.5%) or strongly agreed (14.3%) that hang-tag B contained the

information that would help them find pants that fit them, one should note that 31% of the sample disagreed with this statement ($\underline{M}$ = 3.23, $\underline{SD}$ = 1.2.) For the affective dimension, 45.3% of subjects agreed (28.6%) or strongly agreed (16.7%) that they liked hang-tag B, while 23.8% disagreed ($\underline{M}$ = 3.23, $\underline{SD}$ = 1.15.) For the conative dimension, 52% agreed or strongly agreed that they would use hang-tag B to find pants that fit them, while 28.6% disagreed that they would ($\underline{M}$ = 3.33, $\underline{SD}$ = 1.22.)

For attitude toward hang-tag B, the mean was 9.90 with a standard deviation of 3.21. The Cronbach's alpha indicated that the three dimensions of attitude for hang-tag B were internally consistent. The reliability coefficient for hang-tag B was α = .8793.

Table 13

Dimensions of Attitude Toward Hang-tag B (N=42)

Dimensions of attitude	Frequency	Percent
Cognitive[a]		
Strongly disagree	2	4.8
Disagree	13	31.0
Neutral	4	9.5
Agree	17	40.5
Strongly agree	6	14.3
M	3.29	
SD	1.20	
Affective[b]		
Strongly disagree	2	4.8
Disagree	10	23.8
Neutral	11	26.2
Agree	12	28.6
Strongly agree	7	16.7
M	3.29	
SD	1.15	

Table 13-continued

Dimensions of Attitude	Frequency	Percent
Conative[c]		
Strongly disagree	2	4.8
Disagree	12	28.6
Neutral	6	14.3
Agree	14	33.3
Strongly agree	8	19.0
M	3.33	
SD	1.22	

[a]Responses to the question "Hang-tag B contains the information that would help me find pants that fit me."

[b]Responses to the question "I like hang-tag B".

[c]Responses to the question "I would use hang-tag B to help me find pants that fit me".

Differences in Subjects' Attitude Toward Hang-tag A and Hang-tag B

T-tests were run to determine if means for attitude and its dimensions differed significantly between hang-tags A and B. Results showed that for all three dimensions of attitude, means were significantly higher for hang-tag A. With regard to attitude toward hang-tag A, the mean for hang-tag A was significantly higher than that for hang-tag B. Results are summarized in Table 14.

Perceptions of Relative Advantage of Hang-tag B Compared to Numerical Hang-tag

As shown in Table 15, the majority of subjects either agreed (35.7%) or strongly agreed (40.5%) that hang-tag B was superior to the numerical hang-tag, while 16.7% disagreed with this statement. The mean for this variable was 3.95, with a standard deviation of 1.17.

Table 14

Paired Samples Tests of Attitude Toward Hang-tags A and B (N =42)

Attitude measures	M	t	p
Cognitive Dimension of A	3.83	3.08	.004
Cognitive Dimension of B	3.29		
Affective Dimension of A	3.81	3.12	.003
Affective Dimension of B	3.29		
Conative Dimension of A	3.69	2.19	.034
Conative Dimension of B	3.33		
Attitude toward A	11.33	3.24	.002
Attitude toward B	9.90		

Table 15

Perceptions of Relative Advantage of Hang-tag B Compared to Numerical Hang-tag (N=42)

Relative advantage	Frequency	Percent
"This hang-tag [B] is superior to the numerical hang-tag."		
Strongly disagree	1	2.4
Disagree	7	16.7
Neutral	2	4.8
Agree	15	35.7
Strongly agree	17	40.5
M	3.95	
SD	1.17	

Perceptions of Relative Advantage of Hang-tags A and B When Compared to Each Other

As indicated in Table 16, subjects perceived hang-tag A as being superior to hang-tag B. Although 50% stated

that their impression of hang-tag A being superior to hang-tag B was neutral, 35.7% agreed or strongly agreed that A was superior (M = 3.31, SD = .84). For hang-tag B, 54.8% were neutral regarding it as being superior to hang-tag A, while 33.3% disagreed that it was. Only 7.1% of subjects agreed that hang-tag B was superior to hang-tag A (M = 2.64, SD = .69).

As expected, Pearson's correlation showed that the relationship between these two variables was negative and significant (r = -.308, p = .047).

Responses to Open-Ended Questions

The close-ended questions helped to determine the degree to which subjects perceived relative advantage. Their responses, however, did not reveal what these relative advantages were. Hence, after perceptions of relative advantage were measured, subjects articulated what they perceived as advantages or disadvantages of a hang-tag in open-ended questions. This section discusses responses to these open-ended questions. Inter-coder reliabilities for these questions ranged from 97% to 100%.

Table 16

Perceptions of Relative Advantage of Hang-tags A and B When Compared to Each Other (N=42)

Relative advantage	Frequency	Percent
Hang-tag A superior to hang-tag B		
Strongly disagree	0	0
Disagree	6	14.3
Neutral	21	50.0
Agree	11	26.2
Strongly agree	4	9.5
M	3.31	
SD	.84	
Hang-tag B superior to hang-tag A		
Strongly disagree	2	4.8
Disagree	14	33.3
Neutral	23	54.8
Agree	3	7.1
Strongly agree	0	0
M	2.64	
SD	.69	

Perceived Relative Advantages of Hang-tag A

As shown in Table 17, subjects' responses to open-ended questions when they perceived hang-tag A as superior to the numerical hang-tag. Five perceived relative advantages of hang-tag A were identified. These were: more information on hang-tag A, the specific body measurements on hang-tag A (waist, hip, height, and vertical distance between waist and hip), Imperial or metric measurements, and the pictogram. Also, subjects mentioned that hang-tag A would facilitate determination of fit, that is, it would make it easier to judge the fit of pants without trying them on.

Prior Conditions Associated with Relative Advantages of Hang-tag A

While coding subjects' perceived relative advantages and disadvantages of hang-tags A and B when compared to the numerical tag, the researcher recognized that the respondents mentioned certain conditions that existed prior to seeing the stimuli tags which were thought to have

influenced perceptions of relative advantages or disadvantages. These conditions were coded as prior condition that fit with the concept of prior conditions identified in Rogers'(1995) theory.

Table 17

Perceived Relative Advantages of Hang-tag A Compared to Numerical Hang-tag

Perceived relative advantages[a]	Frequency	Valid percent
More information	15	23.4
Specific body measurements	21	32.8
Imperial or metric measurements	8	12.5
Pictogram	3	4.7

Note. Valid Percent does not include percentage of sample that did not respond to item.

[a] $n = 30$.

As shown in Table 18, four prior conditions were mentioned: the arbitrariness of numerical/manufacturer codes, the method of fit assessment used prior to seeing

the innovative labels, a subject's specific fitting problem with pants, and her awareness of her body measurements. Of all responses to open-ended questions that mentioned a prior condition, one-third referred to the arbitrariness of the numerical or manufacturer code on current garment hang-tags.

Table 18

Prior Conditions Associated with Relative Advantages of Hang-tag A

Prior conditions[a]	Frequency	Valid percent
Arbitrariness of numerical/manufacturer codes	4	33.3
Method of fit assessment	3	23.1
Specific fitting problem	4	30.8
Awareness of body measurements	2	15.4

Note. Valid Percent does not include percentage of sample that did not respond to item.

[a] $n = 12$.

Perceived Disadvantages of Hang-tag A

As seen in Table 19, four perceived disadvantages of hang-tag A were identified: the information on the tag not being meaningful, the tag having too much information, the specific measurements not being useful/meaningful, and the tag being too time-consuming to read. Fifty percent of responses referred to the tag as having too much information.

Table 19

Perceived Disadvantages of Hang-tag A Compared to Numerical Hang-tag

Perceived Disadvantages[a]	Frequency	Valid percent
Information not meaningful	2	25.0
Too much information	4	50.0
Measurements not Useful/meaningful	1	12.5
Time consuming	1	12.5

[a] $n = 8$.

Prior Conditions Associated with Disadvantages of Hang-tag A

As shown in Table 20, two prior conditions that were mentioned were subjects' being unaware of their body measurements, and method of fit assessment used prior to seeing the tag. One half of responses that mentioned a prior condition referred to a method of fit assessment; that is, subjects used another method to assess fit of pants other than a hang-tag with a size code. Almost 25% of responses stated that a subject was unaware of her body measurements before she saw hang-tag A.

Table 20

Prior Conditions Associated with Disadvantages of Hang-tag A

Prior conditions[a]	Frequency	Valid percent
Unaware of body measurements	1	25.0
Method of fit assessment	3	75.0

[a] $n = 4$.

Perceived Relative Advantages of Hang-tag B

As shown in table 21, five perceived relative advantages of hang-tag B were mentioned: more information, specific body measurements, Imperial/metric measurements, the pictogram, and facilitates determination of fit. Almost 32% mentioned that the specific body measurements on the tag (waist, hip, height, and vertical distance between waist and hip) made it superior to the numerical tag. About 30% of responses mentioned that hang-tag B would facilitate determination of fit, while 28.6% referred to the greater amount of information on the tag as superior.

Table 21

Perceived Relative Advantages of Hang-tag B Compared to Numerical Hang-tag

Perceived relative advantages[a]	Frequency	Valid percent
More information	18	28.6
Specific body measurements	20	31.7
Imperial/Metric measurements	5	7.9

Table 21-continued

Perceived relative advantages[a]	Frequency	Valid percent
Pictogram	1	1.6
Facilitates determination of fit	19	30.2

[a] n = 63.

Prior Conditions Associated with Relative Advantages of Hang-tag B

Three prior conditions were mentioned with regard to hang-tag B when it was perceived as superior to the numerical tag: arbitrariness of numerical/manufacturer codes, specific fitting problem, and awareness of body measurements. As indicated in Table 22, the prior condition noted most often by subjects in responses to open-ended questions (when they perceived hang-tag B as superior to the numerical tag) was the arbitrariness of numerical or manufacturer size codes (60%). Before seeing hang-tag B, subjects had noted this quality when shopping for garments in the retail environment.

Table 22

Prior Conditions Associated with Relative Advantages of Hang-tag B

Prior conditions[a]	Frequency	Valid percent
Arbitrariness of numerical/manufacturer codes	3	60.0
Specific fitting problem	1	20.0
Awareness of body measurements	1	20.0

[a] $n = 5$.

Perceived Disadvantages of Hang-tag B

Four perceived disadvantages were identified, as shown in Table 23. About 56% of responses mentioned that hang-tag B had too much information. Also, 33.3% of responses stated that the measurements on the tag were not useful or meaningful.

Table 23

Perceived Disadvantages of Hang-tag B Compared to Numerical Hang-tag

Perceived disadvantages[a]	Frequency	Valid percent
Information not meaningful	1	11.1
Too much information	5	55.6
Measurements not useful/meaningful	3	33.3

[a] $n = 9$.

Prior Conditions Associated with Disadvantages of Hang-tag B

As shown in Table 24, two prior conditions were identified, subjects' being unaware of body measurements and method of fit assessment. One-half (50%)of responses which mentioned a prior condition referred to subjects' being unaware of their body measurements before seeing hang-tag B, while 50% referred to subjects assessing fit by means other than a hang-tag before seeing hang-tag B.

Table 24

Prior Conditions Associated with Disadvantages of Hang-tag B

Prior conditions[a]	Frequency	Valid percent
Unaware of body measurements	2	50.0
Method of fit assessment	2	50.0

[a] $n = 4$.

Comparing Perceived Relative Advantages and Disadvantages of Hang-tags A and B

As shown in Table 25, reasons why subjects perceived hang-tag A as superior or inferior to hang-tag B included the location of the hip measurement on hang-tag A (46.2% of responses). That is, subjects perceived the hip measurement on hang-tag A as being taken at a lower location on the body than what was depicted on hang-tag B. Also, about 38.4% of responses mentioned that subjects thought the longer vertical measurement between waist and full hip on hang-tag A was superior to that on hang-tag B. About 14%

mentioned that hang-tag A's bigger hip measurement was a relative advantage.

Table 25

Comparing Hang-tag A to Hang-tag B

Comparison	Frequency	Valid percent
Relative advantages[a]		
Location of hip measurement	6	46.2
Bigger hip measurement	2	15.4
Longer measurement between waist and full hip	5	38.4
Perceived disadvantages[b]		
Measurement between waist and full hip too long	1	25.0
Redundant information	1	25.0
Larger hip measurement	2	50.0

[a] n = 13.

[b] n = 4.

Few responses cited perceived disadvantages of hang-tag A compared to hang-tag B, but 50% of those that did mentioned hang-tag A's larger hip measurement. Subjects also mentioned that the vertical measurement between waist and full hip on hang-tag A was too long (25%), and that hang-tag A contained redundant information when compared to hang-tag B (25%).

As illustrated in Table 26, reasons why subjects perceived hang-tag B as being superior or inferior to hang-tag A were hang-tag B's smaller hip measurement, and hang-tag B's shorter vertical measurement between waist and full hip. However, few subjects perceived that hang-tag B was superior to hang-tag A.

Reasons why subjects perceived hang-tag B as inferior to hang-tag A included firstly the "higher location" of hang-tag B's hip measurement (46.7%). Subjects perceived that the location of hip measurement on hang-tag B was inaccurate and that the garment would have fit improperly. About one-third of responses mentioned shorter vertical measurement between waist and full hip as a perceived disadvantage. Other perceived disadvantages included a

smaller hip measurement, and information being redundant when compared to hang-tag A's.

Table 26

Comparing Hang-tag B to Hang-tag A

Comparison	Frequency	Valid percent
Relative advantages[a]		
Smaller hip measurement	1	50.0
Shorter vertical measurement between waist and full hip	1	50.0
Perceived disadvantages[b]		
Higher location of hip measurement	7	46.7
Smaller hip measurement	2	13.3
Shorter vertical measurement between waist and full hip	5	33.3
Redundant information	1	6.7

[a] $n = 2$.

[b] $n = 15$.

Order Effect

Since the stimuli were presented to subjects in two orders, the researcher determined if the order effect existed. To determine if means differed between order "A" responses and order "B" responses, t-tests for equality of means were performed on the variables that were included in hypothesis testing for each hang-tag. These variables were: impressions of favorability, perceptions of innovativeness, perceptions of relative advantage, attitude and attitudinal dimensions.

Order means differed significantly for the conative dimension of attitude for hang-tag A (t = 2.557, df =40), where p =.015. The mean for this variable for order A (M = 4.14) was significantly higher than for order B (M = 3.52.) For attitude toward hang-tag A, the mean for order A (M = 12.24) was significantly higher than that for order B (M = 10.43) (t = 2.117, df = 40.)

The significant order effect had to be taken into consideration when testing hypothesis three. Therefore, it was tested by including the responses for all subjects.

Then, the hypothesis was re-tested using order A responses only and order B responses only.

Hypothesis Testing

Hypotheses one, two, three, and four were tested using Pearson's product moment correlation. Hypothesis five was tested using a t-test. The level of significance for hypothesis testing was p =.05.

Hypothesis One

Null hypothesis one stated that there was no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag A when it was compared to the numerical hang-tag. Results showed no significant correlation between the variables ($r = -.022$, $p = .889$), (although the direction of the relationship was consistent with Rogers' theory.) Therefore, the null hypothesis was not rejected. Consequently, the alternate hypothesis, that there was a negative relationship between satisfaction with

the numerical tag and perceptions of relative advantage for hang-tag A, was not accepted.

Hypothesis Two

Null hypothesis two stated that there was no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag B when it was compared to the numerical hang-tag. Results showed that there was no significant correlation between these two variables (r = .099, p = .534), therefore the null hypothesis could not be rejected. The alternate hypothesis, which stated that there was a negative relationship between satisfaction with the numerical tag and perceptions of relative advantage for hang-tag B, could not be accepted.

Hypothesis Three

Testing for Hypothesis 3 involved testing three sets of relationships. Null Hypothesis 3 stated that:

a) There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag A when it is compared to the numerical hang-tag. It has already been established that no significant relationship existed between these variables.

b) There will be no relationship between subjects' perceptions of relative advantage for hang-tag A and attitude toward hang-tag A. The researcher tested this relationship between relative advantage and attitude, and with each of the three dimensions of attitude. Pearson's correlation revealed that a significant relationship did exist between perceived relative advantage for hang-tag A and attitude toward it (r = .779, p = .000).

Similarly, significant relationships were found between perceived relative advantage and each of the three dimensions of attitude. For the cognitive dimension, r = .741, p = .000; the affective dimension, r = .790, p = .000; and the conative dimension, r = .655, p = .000. Therefore, the hypothesis that no relationship existed was rejected. The alternate hypothesis, which stated that subjects who perceive higher levels of relative advantage

for hang-tag A will form more positive attitudes towards hang-tag A than subjects who perceived lower levels of relative advantage, was accepted.

c) There will be no relationship between levels of satisfaction with the numerical hang-tag and attitude for hang-tag A. The researcher tested this relationship between satisfaction with the numerical tag and attitude and with each of the three dimensions of attitude. Pearson's correlation revealed that a significant relationship did not exist between perceived satisfaction with the numerical tag and attitude toward it (r = .229, p = .145).

Pearson's correlation also showed that the only relationship that was significant was between numerical satisfaction and the conative dimension of attitude (r = .313, p = .044.) However, the direction of this relationship was positive, whereas a negative relationship had been hypothesized. Results for the cognitive dimension were r = .131, and p = .407, while results for the affective dimension were r = .188 and p =.234. Hence, the null hypothesis was not rejected. The alternative hypothesis, that subjects who express low satisfaction with the

numerical hang-tag will form more positive attitudes towards hang-tag A than subjects who express high satisfaction with the numerical hang-tag, could not be accepted.

To summarize, for the relationship between satisfaction with the numerical tag, perceptions of relative advantage for hang-tag A and attitude toward hang-tag A, no significant relationship existed between satisfaction with the numerical tag and perceptions of relative advantage. Significant relationships were found between perceptions of relative advantage and attitude and its dimensions, but no relationships were found between satisfaction with the numerical tag and attitude, with the exception of one significant relationship between satisfaction with the numerical tag and the conative dimension of attitude. Results for testing of hypothesis four are summarized in Table 27.

Table 27

Results of Testing Hypothesis Three

Relationships tested	r	p
Satisfaction with numerical tag and relative advantage for A	-.022	.889
Relative advantage for A and attitude toward A	.779	.000
Satisfaction with numerical tag and attitude toward A	.229	.145
Relative advantage for A and cognitive dimension	.741	.000
Relative advantage for A and affective dimension	.790	.000
Relative advantage for A and conative dimension	.655	.000
Satisfaction with numerical tag and cognitive dimension	.131	.407
Satisfaction with numerical tag and affective dimension	.188	.234

Table 27-continued

Relationships tested	r	p
Satisfaction with numerical tag and conative dimension	.313*	.044

Order Effect and Testing for Hypothesis 3

As stated, Hypothesis 3 was re-tested according to order. As with the first test, a series of relationships were tested. Results of this re-testing may be seen in Tables 28 and 29. Re-testing of the hypothesis yielded results similar to tests that used all subjects' responses. That is, for each order, no significant relationship existed between satisfaction with the numerical tag and perceptions of relative advantage, but significant relationships were found between perceptions of relative advantage and attitude and its dimensions. No relationships were found between satisfaction with the numerical tag and attitude; the significant relationship between satisfaction

with the numerical tag and the conative dimension of attitude was not evident when the hypothesis was re-tested.

Table 28

Results of Testing Hypothesis Three Using Order A Data

Relationships tested	r	P
Satisfaction with numerical tag and relative advantage for A	-.174	.452
Relative advantage for A and attitude toward A	.680	.001
Satisfaction with numerical tag and attitude toward A	.079	.733
Relative advantage for A and cognitive dimension	.802	.000
Relative advantage for A and affective dimension	.614	.003
Relative advantage for A and conative dimension	.510	.018
Satisfaction with numerical tag and cognitive dimension	-.044	.849

Table 28-continued

Relationships tested	r	p
Satisfaction with numerical tag and affective dimension	.137	.553
Satisfaction with numerical tag and conative dimension	.120	.605

Table 29

Results of Testing Hypothesis Three Using Order B Data

Relationships tested	r	p
Satisfaction with numerical tag and relative advantage for A	-.006	.979
Relative advantage for A and attitude toward A	.827	.000
Satisfaction with numerical tag and attitude toward A	.225	.327

Table 29-continued

Relationships tested	r	p
Relative advantage for A and cognitive dimension	.700	.000
Relative advantage for A and affective dimension	.895	.000
Relative advantage for A and conative dimension	.714	.000
Satisfaction with numerical tag and cognitive dimension	.127	.583
Satisfaction with numerical tag and affective dimension	.164	.478
Satisfaction with numerical tag and conative dimension	.325	.151

Hypothesis Four

Testing for hypothesis four involved testing three sets of relationships. Results for testing of this hypothesis are summarized in Table 30. Null hypothesis four stated that:

a) There will be no relationship between levels of satisfaction with the numerical hang-tag and subjects' perceptions of relative advantage of hang-tag B when it is compared to the numerical hang-tag. It has already been established that no significant relationship existed between these variables.

b) There will be no relationship between subjects' perceptions of relative advantage for hang-tag B and attitude toward for hang-tag B. Pearson's correlations revealed that a significant relationship did exist between perceived relative advantage for hang-tag B and attitude toward it (r = .533, p = .000). Similarly, significant relationships were found between perceived relative advantage and each of the three dimensions of attitude.

Table 30

Results of Testing Hypothesis Four

Relationships tested	r	p
Satisfaction with numerical tag and relative advantage for B	.099	.534
Relative advantage for B and attitude toward B	.533	.000
Numerical satisfaction and attitude toward B	.174	.272
Relative advantage for B and cognitive dimension	.394	.010
Relative advantage for B and affective dimension	.481	.001
Relative advantage for B and conative dimension	.558	.000
Satisfaction with numerical tag and cognitive dimension	.239	.127
Satisfaction with numerical tag and affective dimension	.046	.772

Table 30-continued

Relationship tested	r	p
Satisfaction with numerical tag and conative dimension	.178	.260

For the cognitive dimension, $r = .394$, $p = .010$; the affective dimension, $r = .481$, $p = .001$; and the conative dimension, $r = .558$, $p = .000$. Therefore, this part of null hypothesis four was rejected. The alternate hypothesis, which stated that subjects who perceive higher levels of relative advantage for hang-tag B will form more positive attitudes towards hang-tag B than subjects who perceived lower levels of relative advantage, was accepted.

c) There will be no relationship between levels of satisfaction with the numerical hang-tag and attitude toward hang-tag B. Pearson's correlation showed no significant relationships existed between numerical satisfaction and attitude toward it ($r = .174$, $p = .272$). Similarly, no significant correlations were found between

satisfaction with the numerical tag and dimensions of attitude. For the cognitive dimension, r = .239, p = .127; for the affective dimension, r = .046, p = .772; and for the conative dimension r = .178. p = .260.

Given these results, this part of null hypothesis four was not rejected. The alternate hypothesis, that subjects who express low satisfaction with the numerical hang-tag will form more positive attitudes towards hang-tag B than subjects who express high satisfaction with the numerical hang-tag, was not accepted.

To summarize, for the relationship between satisfaction with the numerical tag, perceptions of relative advantage for hang-tag B and attitude toward hang-tag B, no significant relationship existed between satisfaction with the numerical tag and perceptions of relative advantage. Significant relationships were found between perceptions of relative advantage and attitude and its dimensions, but no relationships were found between satisfaction with the numerical tag and attitude.

Hypothesis 5

Hypothesis five states that there will no difference in perceptions of relative advantage for hang-tag A and hang-tag B, when hang-tag A is compared to hang-tag B (M = 3.31), and when hang-tag B is compared to hang-tag A (M = 2.64.)

A t-test was performed to determine if the means for these two variables were significantly different. The t-value was 3.476 (df = 41), and indicated that the means were statistically different at a level of p = .001. Thus hypothesis five was rejected. That is, perceptions of relative advantage for hang-tags A and B were different when they were compared to each other.

CHAPTER 5

DISCUSSION

This chapter contains a discussion of the results of this research, and implications for further research.

Subjects' Behavior Toward Pants

Results indicated that virtually all subjects owned and wore pants. This is important to note because when subjects responded to the hang-tags as a means of assessing fit of pants, they were not responding to a hypothetical situation. Rather, their responses came from their own experiences. Thus, wearing and owning pants lent validity to other responses about perceived relative advantages of and attitudes toward innovative hang-tags.

Research Objectives

The research was developed to fulfill three research objectives. The first objective was to ascertain how satisfied older females were with numerical size labels;

the second, to ascertain if satisfaction with numerical size labels affected perceptions of relative advantage for two different hang-tags with CSS attributes; and the third, to ascertain if attitude toward each of the hang-tags with CSS attributes were affected by perceptions of relative advantage of each of the two hang-tags.

Objective One: Satisfaction With Numerical Size Labels

This objective was met, although results were not as expected. The results showed that the proportions of subjects who were satisfied and dissatisfied with the numerical tag were almost equal. However, 85% of subjects "often" or "always" used a numerical tag. It would seem that satisfaction with the numerical tag did not necessarily affect the frequency of its use, and conversely, the fact that is was used frequently did not mean subjects were satisfied with it. Whether subjects were satisfied with it or not, they still used the numerical tag. Perhaps this is because there is no real alternative to the numerical hang-tag in the retail

environment that can be used to assess garment fit, without trying the garment on.

Objective Two: Relationship Between Satisfaction with Numerical Size Labels and Perceptions of Relative Advantages for Hang-tags

In this research, subjects' felt needs were operationalized as satisfaction with the numerical hang-tag. Applying Rogers' theory to this research, one would expect that the proportion of subjects who were dissatisfied with the numerical tag might approximate the proportion of subjects who agreed that hang-tag A or hang-tag B was superior to the numerical tag. Conversely, if subjects were satisfied with the numerical tag, one would not expect a large proportion of the sample to perceive that hang-tag A and B had relative advantages. However, results of testing hypotheses one and two indicated that there were no significant correlations between satisfaction with the numerical tag and perceptions of relative advantage for hang-tags A and B.

The researcher examined these variables more closely by looking at cross-tabulations of satisfaction with the numerical tag and perceptions of relative advantage for hang-tags A and B, and observed that although about 40% of subjects reported that they were dissatisfied with the numerical tag, 76.2% perceived that hang-tag A was superior to the numerical tag. Similar results occurred for hang-tag B. Contrary to what Rogers' theory would predict, the subjects' responses suggested that it did not matter whether or not subjects were satisfied with the numerical tag, they still perceived that hang-tags A and B were superior to the numerical tag.

One can speculate why the data from this research did not support hypotheses one and two. Given that there was no discernible pattern in responses to indicate that subjects were clearly satisfied or dissatisfied with the numerical tag, this lack of significant correlations was not surprising. The researcher speculated that sewing experience might have influenced knowledge of body measurements, which subsequently may have affected perceptions of relative advantage. However, results of ANOVA's did not support this conjecture. The small sample

size may have failed to capture the variability in human behavior that might have been more evident in a larger sample.

The researcher did not think that the research instrument accounted for this lack of a relationship between satisfaction with the numerical tag and perceptions of relative advantage because of vague questions. The item measuring satisfaction with the numerical tag specifically referred to satisfaction in terms of helping a subject find clothing that fit without trying it on. Responses to open-ended questions regarding perceived relative advantage indicated the exact attributes were perceived as superior. Also, these attributes were consistent among subjects. These qualities of the interview schedule helped to establish internal validity of results of the research.

One may wonder then, what were the felt needs that influenced perceptions of relative advantage in this instance if not satisfaction with the numerical tag? Perhaps one could look to prior conditions indicated in responses to open-ended questions regarding relative advantage. These included arbitrariness of manufacturer size codes, subjects' method of fit assessment (other than

size labels), specific fitting problems for subjects, and subjects' awareness of their own body measurements. In future research, these conditions could be quantified to ascertain whether they influence perceptions of relative advantage, including those specific qualities of hang-tags A and B identified in open-ended responses as advantageous. Similarly, the prior conditions expressed by those subjects who did not perceive hang-tag A or hang-tag B to be superior to the numerical tag could be quantified to ascertain whether they are related to perceptions of disadvantages.

Order Effect for Hang-tag A

The significant difference in responses (according to order) for the conative dimension of hang-tag A suggested that subjects who saw hang-tag A first were more likely to agree that they would use hang-tag A than subjects who saw hang-tag B first. To attempt to explain the order effect, the researcher reviewed subjects' responses to both hang-tags. The means for attitude and its dimensions for hang-tag A were significantly higher than those toward hang-tag

B, indicating that attitude toward hang-tag A was more favorable than those toward hang-tag B regardless of the order in which subjects saw tags. This observation led the researcher to reason that perhaps it was not an order effect that was observed.

The finding that subjects had a more favorable impression of hang-tag A than hang-tag B might also explain the difference in means for the conative dimension of hang-tag A when hang-tag A was presented first. However, the means for subjects' impressions of hang-tag A ($\underline{M}$ = 3.83) and hang-tag B ($\underline{M}$ = 3.74) were not significantly different. Furthermore, the proportion of the sample that rated hang-tag A as "favorable" or "very favorable" (69%) was almost equal to the proportion who did so for hang-tag B (66.7%). These observations led the researcher to believe that impressions of the hang-tags may not have contributed to the order effect.

The researcher reasoned that the order effect for the conative dimension of hang-tag A could be attributable to the sequence of presenting hang-tags A and B to subjects. It is conceivable that if subjects saw hang-tag B first, they perceived that hang-tag A was not sufficiently

different from what they had just seen to merit higher ratings on the conative dimension. Also, it is known from responses to open-ended questions that subjects perceived the location of the hip measurement on hang-tag B as inaccurate. If subjects saw hang-tag B first and considered the location of the hip measurement as an error, this could have primed them to judge hang-tag B as less believable than hang-tag A. Hence, subjects were more likely to use hang-tag A when they saw hang-tag A before they saw hang-tag B, because A could have been judged more believable than hang-tag B.

Objective Three: Perceptions of Relative Advantage and Attitude Toward Hang-tags

According to Rogers' (1995) theory, felt needs can heighten a person's perceptions of relative advantage of an innovation. These heightened perceptions can in turn lead to the formation of more favorable attitudes toward the innovation. Thus it is logical to assume that a felt need could predict attitude toward an innovation. Hypotheses three and four were formulated to fulfill this objective:

thus, the relationship between satisfaction with the numerical tag and attitude is discussed here as well as the relationship between relative advantage and attitude.

The third objective was met. Results of testing hypotheses three and four indicated that attitude and its dimensions were significantly and positively correlated with perceptions of relative advantage of each tag, but not with satisfaction with the numerical tag. For hang-tag A, satisfaction with the numerical tag was not significantly correlated with attitude, with the exception of the conative dimension of hang-tag A, and the combined attitude dimensions for hang-tag A. In these instances significant relationships existed but were in the opposite direction to what had been hypothesized.

With regard to hypotheses three and four, attitude toward hang-tags A and B were not affected by satisfaction with the numerical tag. What variables could have been associated with attitude besides relative advantage? As with Objective 2, the prior conditions that were identified from responses to open-ended questions regarding relative advantage (such as specific fitting problems or knowledge of body measurements) could be quantified and tested to

determine if they are related to attitude and its dimensions. Also, one could examine which specific perceived relative advantages (such as more information) are related to any or all dimensions of attitude.

Perceived Relative Advantages of and Differences in Attitude Toward Hang-tags

For both hang-tags A and B, subjects responded favorably to the hang-tag with more information when compared to the numerical tag. This result was consistent with findings of Chun-Yoon and Jasper (1995) who found that university students most preferred a size label that contained a list of key body measurements, a pictogram, and a numerical code only, and least preferred a size label with a numerical code only.

The researcher made an interesting observation that the university students in Chun-Yoon and Jasper (1995) were aged predominantly between 19 and 23 years of age. In this research, the sample's modal age category was between 55 and 60 years of age. An implication may be that it is not just older females that may respond more favorably to size

labels with more information. Perhaps older and younger age groups would both respond favorably to such tags.

With regard to attitude toward hang-tags A and B, according to Rogers (1995), the greater the perceived relative advantage for an innovation, the more favorable the attitude. Given that the degree to which hang-tags A and B were considered superior to the numerical tag were not statistically different, one might expect that attitudes would not be either. Unexpectedly however, results of t-tests indicated that attitudes and its dimensions toward hang-tag A were significantly higher, or more positive, than those toward hang-tag B. Also, the r-values for the relationships between perceptions of relative advantage and attitude were considerably higher for hang-tag A, indicating that the relationships between these variables were stronger than they were for hang-tag B.

Why were attitudes toward hang-tags A and B different? Perhaps what was reflected in this difference in attitude was subjects' reactions to certain qualities of hang-tag B. When the hang-tags were compared to each other, responses to close-ended questions showed that 35.7% of subjects

agreed or strongly agreed that hang-tag A was superior to hang-tag B, while only 7.1% agreed that hang-tag B was superior to hang-tag A. Responses to open-ended questions gave some clues as to why these results occurred. Responses revealed that subjects did not interpret the difference in hip locations as representative of age-related physical changes. Rather, they perceived that hang-tag B's hip location was "too high", or taken "at the wrong place." Thus, the information in hang-tag B, which was intended to convey an advantage of improved fit to subjects, was actually perceived as a disadvantage.

Advantages of Applying Rogers' Theory

Rogers' theory of diffusion of innovations provided an appropriate context to examine the relationships between older females' satisfaction with numerical hang-tags, perceptions of relative advantage of and attitudes toward innovative hang-tags. The theory's model of the innovation-decision process allowed for the study of the inter-relationships between these variables. This was important because the rationale of the research was that

each variable mentioned above could influence the next as part of a process.

This theory allowed the researcher to identify that satisfaction with numerical hang-tags, operationalized in this research as a felt need, was not a felt need which influenced perceptions of relative advantage of and attitude toward hang-tags. However, prior conditions coded from responses to open-ended questions suggested that there were other felt needs that could be related to relative advantage and attitude. These could include the need to address a specific fitting problem, such as those in the waist and hip areas, or with height.

Representativeness of the Sample

When the researcher compared the demographic characteristics of the sample with Canadian national statistics, she noted that the demographic characteristics of the sample were comparable to national Canadian statistics in matters of age distribution, employment, and perceived health. However, the sample differed substantially from national data in other characteristics,

like income, marital status, and levels of education. This lack of representativeness compromised the external validity of the research, as it meant that the results of the research could not be applied to a wider population of older women. A larger, more representative sample from a varied geographical area would perhaps yield results that would strengthen the external validity of the study.

Advantages of Using Open-Ended and Close-Ended Questions

The use of a combination of close-ended and open-ended questions was beneficial for this exploratory research. The quantitative responses enabled the researcher to identify the degree to which subjects perceived relative advantage, while the qualitative responses clarified what the perceived relative advantages were. Also, the qualitative data gathered in the open-ended questions offered directions for future research.

Limitations

Before drawing any conclusions, it is important to recognize that the results of this research have several

limitations. These include the fact that the sample came from a relatively small geographical locale, and was not entirely representative of Canadian women aged 55 years or older. The applicability of the results may also be limited by the small sample size. Also, results can be applied to size labels that include lower body measurements only.

Conclusions and Implications

Several conclusions can be drawn from the results of this research. The older women who participated in this research were not clearly dissatisfied or satisfied with the numerical hang-tag. However, they still used such a tag whether they were satisfied with it or not. The results also showed that hang-tags A and B were perceived as innovative.

In contrast to Rogers' theory, satisfaction with the numerical hang-tag did not appear to be the felt need which would affect perceptions of relative advantage of or attitude toward either hang-tag. However, in the process of identifying relative advantages, prior conditions were

identified that could be investigated in future research. In agreement with Rogers' theory, perceptions of relative advantage and attitude were significantly and positively related, and were more strongly related for hang-tag A than for hang-tag B.

It is also evident from the results that subjects responded more favorably to a hang-tag that contained more information, rather than simply a numerical code. This finding could have implications for manufacturers of clothing, particularly if their target market is women aged 55 years or older. In terms of informing customers how well garments will accommodate their body measurements, manufacturers might have to consider using more information than a numerical code, considering that their target customers respond more favorably to a hang-tag with more information. A further implication for manufacturers would be that if they used a size labeling system that contained more information, they would have to be prepared to educate consumers as to the meaning of the information.

On the basis of subjects' responses to hang-tag B when compared to hang-tag A, they did not recognize hang-tag B's advantage of having measurements for women 55 years or

older. Rather, they perceived its hip measurement as being taken at the wrong place. An implication of this result is that subjects did not recognize that a sizing standard written specifically for their body measurements exists. Perhaps they were not even aware of sizing standards in general. This would seem plausible, as they perceived hang-tags A and B as highly innovative; they had encountered little else besides numerical tags in the retail environment. The subjects' responses imply that older women's awareness of apparel size information needs to be raised. This is especially relevant considering that ASTM D5586 can provide information specifically for them.

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Appendix A

Interview Schedule for

Measurement of Perceptions of Relative Advantage

and Attitudes Toward Innovative Labeling Devices for

Apparel

SUBJECT ID = _____

ORDER = A B

PART 1

First, I am going to ask you some questions about your warddrobe. Then, I will show you some hang-tags for clothing, and have you respond to some questions about them.

Q-1. Are pants a part of your wardrobe? Yes No

Q-2. How often would you say you wear pants?

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

Q-3. Do you sew any of your own clothing?

1	2	3	4	5
Never	Seldom	Sometimes	Often	Always

Q-4. I know my waist measurement when I shop for pants.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q-5. I know my hip measurement when I shop for pants.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(Show numerical hang-tag)

Q-6. How often do you use the kind of information on this hang-tag to help you decide whether a garment will fit you?

1	2	3	4	5

Never Seldom Sometimes Often Always

Q-7. How satisfied are you with this hang-tag in helping you find garments that fit you without trying them on?

1	2	3	4	5
Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied

(Show Hang-tag A and numerical together)

Q-8. What is your impression of this hang-tag?

1	2	3	4	5
Very Unfavorable	Unfavorable	Neutral	Favorable	Very Favorable

Q-9. This hang-tag is superior to the numerical hang-tag.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(if agree or strongly agree, go to Q-10; if not, proceed to Q-11)

Q-10. How is this hang-tag superior to the numerical hang-tag? **(open-ended)**

Q-11. How is this hang-tag not superior to the numerical hang-tag? **(open-ended)**

(show Hang-tag B and numerical together)

Q-12. What is your impression of this hang-tag?

1	2	3	4	5
Very Unfavorable	Unfavorable	Neutral	Favorable	Very Favorable

Q-13. This hang-tag is superior to the numerical hang-tag.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(if agree or strongly agree, proceed to Q-14; if not, proceed to Q-15)

Q-14. How is this hang-tag superior to the numerical hang-tag? **(open-ended)**

Q-15. How is this hang-tag not superior to the numerical hang-tag? **(open-ended)**

(Show Hang-tag A and Hang-tag B together)

Q-16. Hang-tag A is superior to Hang-tag B.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(if agree or strongly agree, go to Q-17; if not, proceed to Q-18)

Q-17. How is Hang-tag A superior to Hang-tag B?

(open-ended)

Q-18. How is Hang-tag A not superior to Hang-tag B?

(open-ended)

Q-19. Hang-tag B is superior to Hang-tag A.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(If agree or strongly agree, go to Q-20; if not, proceed to Q-21)

Q-20. How is Hang-tag B superior to Hang-tag A?

(open-ended)

Q-21. How is Hang-tag B not superior to Hang-tag A?

(open-ended)

*****DISTRACTOR EVENT*****

Next, I would like you to sort these cards into any five categories that you think are appropriate. The piles do not have to contain an equal number of cards.

(Show Hang-tag A)

Q-22. Hang-tag A contains the information that would help me find pants that fit me.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q-23. I like Hang-tag A.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q-24. I would use Hang-tag A to help me find pants that fit me.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(show Hang-tag B)

Q-25. Hang-tag B contains the information that would help me find pants that fit me.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q-26. I like Hang-tag B.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Q-27. I would use Hang-tag B to help me find pants that fit me.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(Show Hang-tag A)

Q-28. Hang-tag A is like all other size labels that I have seen before.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

(Show Hang-tag B)

Q-29. Hang-tag B is like all other size labels that I have seen before.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Next, I would like to know about some of your other impressions about the hang-tags I have shown you.

Q-30. What are some of your other impressions about this hang-tag that I have shown you? **(open-ended:show Hang-tag A)**

Q-31. What are some of your other impressions about this hang-tag that I have shown you? **(open-ended:show Hang-tag B)**

Q-32. Do you have any other comments that you would like to make about any of the hang-tags that you have seen today?

PART 2

Finally, I am going to ask you some questions which relate to your background. If there are any questions that you do not feel comfortable answering, you are not obligated to answer them. If at any time a question is not clear to you, feel free to ask me.

Q-33. In what year were you born? _____

Q-34. What is your marital status?

1. Single
2. Married
3. Divorced/Separated
4. Widowed

Q-35. What is the highest level of education that you have completed?

1. Grade 6 or less
2. Grade 7 to 9
3. Grade 10 to 13
4. 1 to 3 years university, including business schools, technical schools, or community college
5. completed university (degree program), technical school, or community college
6. Completed a graduate degree (Masters' or PhD)

Q-36. Are you currently employed?

1. I am retired
2. Yes, full time
3. Yes, part-time
4. Other _____

Q-37. What is your current job description, or what was your job description before retirement?

_____

Q-38. How would you describe your health:

1. My health never prevents my activities.
2. My health rarely prevents my activities.
3. My health occasionally prevents my activities.
4. My health very often prevents my activities.
5. My health prevents most activities.

Q-39. What is your annual income before taxes?

1. under $15,000
2. $15,000 - $24,999
3. $25,000 - $34,999
4. $35,000 - $44,999
5. $45,000 - $54,999
6. $55,000 - $64,999
7. over $65,000

Appendix B

Letter of Approval from Human Ecology Ethics Review Committee

THE UNIVERSITY OF MANITOBA

INTER-DEPARTMENTAL CORRESPONDENCE

Date: May 19, 1998

Ref: 9808

To: Ms. Carolyn Scholz, Clothing and Textiles

From: Dr. G.P. Savenhuysen, Chair, Ethics Review Committee

Subject: Ethics Review: "Applying Roger's Theory of Diffusion of Innovations to Examine Older Females' Perceptions of Size Labels for Apparel"

The Ethics Review Committee has reviewed the research procedures you submitted entitled: "Applying Roger's Theory of Diffusion of Innovations to Examine Older Females' Perceptions of Size Labels for Apparel". The procedures meet ethical guidelines for research with human subjects.

The Ethics Review Committee approves the proposed research procedures for implementation.

/ad

Appendix C

Example of Recruitment Notice

WOMEN 55 OR OLDER

A graduate student of clothing and textiles from the University of Manitoba is looking for women who are at least 55 years or older to participate in research pertaining to clothing. If you are interested, please call (905) 689-8350.

Appendix D

Script for Verbal Information for Pre-test

I am a graduate student from the University of Manitoba. I am studying how female consumers perceive react to hang-tags on clothing. I would like to have female consumers look at three of these devices because I am interested in their reactions to them.

I would meet with you for about 45 minutes to show you the hang-tags, and ask you some questions about your perceptions of them.

If you would like to participate in my research, I can arrange a time to meet with you now, or I can take your name and number and call you back to arrange a time at a later date.

Appendix E

Consent Form

Dear

Thank you for participating in this research project. The purpose of the project is to find out your reactions to three labeling devices for clothing.

I would like to assure you that your responses to questions will not be linked with your name. You will be identified only by a number, and your name will not be revealed to anyone. Some of your responses will be recorded on a tape recorder, which will be erased after the project is complete.

Your participation in this project is strictly voluntary. You are free to withdraw at anytime, and you are not obligated to answer any question with which you are not comfortable.

If you would like to proceed with the interview, please sign below.

_____ _____

Signature Date

Appendix F

Debriefing Information for Subjects

Thank you again for participating in this research. The purpose of this research is to find out your reactions to different types of hang-tags for clothing.

The researcher's interest in this topic stems from research which shows that ready-to-wear clothing for women does not adequately fit women age 55 or older. One reason for this lack of well-fitting clothing may be the sizing standard that specifies the measurements that a garment is designed to fit. The current sizing standard for women's apparel is based almost entirely on body measurements of younger women. Because the female body undergoes various physical changes during the aging process, clothing sized for a younger body type may not accommodate the body measurements of 55-plus women.

Recently, a sizing standard has been developed from a database of body measurements exclusively from women aged 55 or older. If manufacturers were to use this standard, they could develop well-fitting clothing for 55-plus women.

It is of interest then to investigate how to communicate to 55-plus female consumers that a garment is designed to fit their body measurements.

The two hang-tags that you have seen are designed according to the Canadian government standard which specifies that a hang-tag for trousers must show, in addition to a numerical size, the waist and hip measurements (in metric) that a garment is intended to fit, with a written list and/or a pictogram (picture). Both hang-tags "A" and "B" showed waist and hip measurements, as well as a height measurement and a vertical measurement between waist and full hip. However, "A" used measurements from the Canadian government standard for a Misses Petite Size 16, while "B" used measurements from the new 55-plus standard. According to the new standard, the vertical measurement between waist and full hip for 55-plus women is less than that specified by the older standard, and the hip measurement is smaller as well. Although both hang-tags are intended to convey to 55-plus women that a pair of trousers will fit their body measurements, "B" is thought to be more meaningful because it contains information that

applies specifically to the measurements of women 55 or older.

The researcher is trying to determine if 55-plus women react differently to each hang-tag. Because "B" contains different information, it is of interest to see if 55-plus women think this is the superior hang-tag, and why. If it is not perceived this way, it is also of interest to find out why, and how hang-tags could be improved to the benefit of 55-plus female consumers.