

SATISFACTION WITH A TROUSER DEVELOPED FROM THE  
CANADA STANDARD SIZING AND THE ASTM D5586 FOR  
WOMEN AGED 55 OR OLDER

By

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Submitted to the Faculty of Graduate Studies  
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Department of Clothing and Textiles  
University of Manitoba  
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**LORNA DEAN CAMPBELL**

**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University  
of Manitoba in partial fulfillment of the requirements of the degree  
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MASTER OF SCIENCE**

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## ABSTRACT

This research applied a theory of consumer satisfaction by Swan and Combs (1976) to examine older women's satisfaction with trousers developed from the ASTM D5586 MP16 and the Canada Standard Sizing M18. Twenty women, 56 to 89 years old, completed a wear test followed by face-to-face interviews. Content analysis was used to identify instrumental and expressive performance outcomes. The results revealed that participants' body measurements were closer to the ASTM MP16 measurements than the CSS M18. Participants indicated higher levels of satisfaction with the ASTM MP16 over the CSS M18 in the areas of waist, hip, seat, and crotch length. Participants tended to be more satisfied with the ASTM MP16 than the CSS M18 trouser. There was a significantly greater proportion of instrumental outcomes than expressive outcomes for both trousers and a greater proportion of instrumental outcomes for the ASTM MP16 over the CSS M18. All the hypotheses could not be rejected; however, descriptive analysis suggested that for the ASTM trouser, higher frequencies of instrumental outcomes could be associated with higher levels of satisfaction. For the CSS trouser, higher frequencies of expressive outcomes could be associated with higher levels of satisfaction. While the ASTM MP16 seems to have corrected some of the fit problems experienced by older women, further research using a larger sample could verify the findings of this research.

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## CHAPTER ONE

### INTRODUCTION

Canada, like other post industrial countries, has seen a shift in population dynamics. There has been increasing recognition of older Canadians as the fastest growing population segment, a trend which is predicted to continue into the twenty-first century (Gauthier, 1991). The number of older adults is expected to double by the year 2036, possibly due to factors including longer life expectancy, and aging of the baby boom generation (Statistics Canada, 1990; Kerr & Ram, 1994). However, unlike the younger generations, older females outnumber older males, increasingly so with advancing age (Statistics Canada, 1990; Gauthier, 1991; Kerr & Ram, 1994). The projected doubling of the older segment of the Canadian population into the next century (Desjardins, 1993) will necessitate change in the way goods and services are provided (McKie, 1993).

The segment of the population between 50 to 65 years of age in Canada is currently a small portion of the population (12%), but controls approximately one half of the discretionary income (Kidd, 1993). With the trend for this segment to increase in the twenty-first century, providers of goods and services need to recognize the potential of the mature market in keeping with the changing needs of the aging consumer.

As the human body ages, physical changes occur. Characteristically, in women, weight and girth increase, especially through the abdomen and bust

areas, the back becomes rounded, the chest narrows, and height decreases. These changes alter body dimensions, affecting the fit of clothing particularly for the older female (Patterson & Warden, 1983-84; Woodson & Horridge, 1990; Goldsberry, 1995). Dissatisfaction with fit of clothing available in the North American ready-to-wear market has been well documented (Bartley & Warden, 1962; Kernaleguen, 1978; Smathers & Horridge, 1978-79; Richards, 1981; The Canadian Aging Research Network, 1994; Goldsberry, 1995). Similar findings have been reported in Sweden (Karrholm, Dahlman & Rosenblad-Wallin, 1977). A Canadian study reported that 28% of the 1,406 older Manitobans, especially younger mature females, had difficulty in finding appropriate, comfortable and well fitting clothing (The Canadian Aging Research Network, 1994).

Sizing of apparel appears to be one of the areas where changes were needed (The Canadian Aging Research Network, 1994). According to Goldsberry (1995), the sizing standard used by the North American apparel industry "does not reflect the measurement differences associated with the older female" (p. 48). Although standardized North American sizing standards for apparel exist, the original data were collected during the 1940s. Older women (over 64 years) comprised less than two percent of the sample (Hobbs, 1970; Goldsberry, 1995). In January 1994, a new apparel sizing standard for women 55 years or over intended to reflect changes in the body dimensions of older women was released by the American Society for Testing and Materials

(Goldsberry, 1995). However the commercial applicability of the new sizing standard has yet to be tested.

### Purpose

The purposes of this research were to apply Swan and Combs (1976) theory of consumer satisfaction to examine the relationship between satisfaction and performance outcomes with trousers produced from two different sizing standards. The sizing standards used were Canada Standard Sizing for Women's Apparel - Trade Sizes (Canadian General Standards Board, 1987) and ASTM D5586 - 94, Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types) (American Society for Testing and Materials, 1994) (hereafter referred to as CSS & ASTM, respectively).

### Objectives

The objectives of the research were:

1. To identify instrumental performance outcomes and expressive performance outcomes for trousers developed from measurements provided in the CSS M18 and the ASTM D5586 MP16.
2. To determine the older female consumer's satisfaction with a trouser:
  - a) developed using measurements provided in the CSS M18;
  - b) developed using measurements provided in the ASTM D5586 MP16.

3. To examine, for each sizing standard, the relationship between satisfaction with trousers and:

- a) instrumental performance outcomes;
- b) expressive performance outcomes.

#### Justification

Current North American sizing standards have been based on body measurements of young women taken in the 1940s. Research dating back to the 1940s and as currently as 1995 has identified changes in body shape and measurements of the older female, thus promulgating the shortcomings of current sizing systems (Blair, 1953; Kernaleguen, 1978; Smathers & Horridge, 1978-79; Rosenblad-Wallin, 1985; Dillard & Feather, 1988; Woodson & Horridge, 1990; LaBat & DeLong, 1990; Goldsberry, 1995). The need for a new sizing system for older women is not a new phenomenon. Researchers in clothing have documented consistently that older females have been dissatisfied with the fit of ready-to-wear. However, the number of subjects in studies conducted in the past was not large enough to develop a representative sizing system.

The ASTM D5586 sizing standard for older women consists of body measurements from approximately 7,000 women over 55 years and a geographic distribution of 38 states (Goldsberry, 1995). As yet, this new sizing standard for women over 55 remains largely untested. In order to convince

apparel firms of the need to pay attention to apparel specifically sized for older women, further study of the new database is necessary.

### Definitions

The definitions that follow are conceptual definitions; operational definitions will be provided in Chapter 3.

1. Older female consumer: refers to well, ambulatory females 55 years or older with measurements (waist = 83.5 +/- 2.5 cm) which are compatible with the MP16 of the ASTM D5586 and CSS Misses 18 for lower body and height less than or equal to 162 cm (64 inches).
2. Instrumental performance outcomes: "...refers to the means to a set of ends..." (Swan & Combs, 1976, p.26) which corresponds to the attributes/performance of the physical properties of apparel.
3. Expressive performance outcomes: refers to the "psychological level of performance, that is the user's response to the item of clothing" (Swan & Combs, 1976, p.26).
4. Overall satisfaction: refers to satisfaction with each of the test trousers used in this research.
5. Relative Satisfaction: means with which of the ASTM or CSS trousers the participants were more satisfied.
6. Test Garments: refer to the trousers developed from the CSS and from the ASTM.

## Limitations

This research was limited to trousers made from the ASTM size MP16 and the CSS size M18. The geographic area was limited to the city of Winnipeg and the immediate surrounding area. In addition, the findings were limited by the small sample size and use of subjects of specified body type and body measurements, therefore cannot be generalized beyond this population.

## Hypotheses

Five hypotheses were formulated for this research.

### Hypothesis I

There is a relationship between the satisfaction with a trouser developed from ASTM D5586 MP16 and higher relative frequencies of expressive outcomes.

### Hypothesis II

There is a relationship between the dissatisfaction with a trouser developed from ASTM D5586 MP16 and higher relative frequencies of instrumental outcomes.



### Hypothesis III

There is a relationship between the satisfaction with a trouser developed from CSS M18 and higher relative frequencies of expressive outcomes.

### Hypothesis IV

There is a relationship between the dissatisfaction with a trouser developed from CSS M18 and higher relative frequencies of instrumental outcomes.

### Hypothesis V

There will be no difference in satisfaction between a trouser developed from the CSS M18 and a trouser developed from the ASTM D5586 MP16.

## CHAPTER TWO

### LITERATURE REVIEW

This chapter contains literature related to an overview of the Canadian aging society, the physical changes of aging, older women's dissatisfaction with apparel fit, apparel sizing systems, and the theory of consumer satisfaction and product performance by Swan and Combs (1976).

#### An Aging Society and the Implications for Clothing

As in many post-industrial countries, Canada has seen a dynamic shift in population distribution. The older adult segment of the population has been recognized as the fastest growing segment within the population (Gauthier, 1991; McKie, 1993; Kerr & Ram, 1994). Reasons for this trend include longer life expectancy, greater well-being and more active lifestyles, as well as aging of the baby boom generation (Schewe, 1988; McKie, 1993; Keith & Landry, 1992).

According to the 1991 census, of 27 million Canadians, 12% are older adults (65 years and over) (Desjardins, 1993). This is predicted to increase at least until the 2030s, when it is estimated about one quarter (23.8%) of the population will be 65 years and over, and another 14.2% of the population will be in the 55 to 64 year age group (Statistics Canada, 1990; Desjardins, 1993). This represents a doubling of the over 55 age group (Statistics Canada, 1990).

According to current Canadian statistics, women make up 55% of the population aged 65 to 74 years of age (Gauthier, 1991). Notably, the proportion of females to males increases with increasing age (Statistics Canada, 1990; Desjardins, 1993; Kerr & Ram, 1994). Currently in Manitoba, the population of older adults aged 65 and older comprises 13.4% of Manitobans. Over one half of this population is female (57.9%); about three fifths (60.7%) reside in Winnipeg (Manitoba Bureau of Statistics, 1994).

The emerging dominance of older adults in the Canadian population will affect "the nature of privately and publicly provided goods and services" (McKie, 1993, p.6). The older adult segment of the population is a heterogenous group based on variations of lifestyle, living situations, income, and health (Gauthier, 1991). Although researchers have noted the implications of a growing and viable mature market segment (Martin, 1975; Richards, 1981; Schewe, 1988), apparel firms have not met the clothing needs of older females (Richards, 1981; Chowdhary, 1989; Goldsberry, 1995).

Research in clothing has demonstrated that dissatisfaction with the fit of ready-to-wear has been one of the most common problems expressed by older women (Smathers & Horridge, 1978-79; Richards, 1981; Patterson & Warden, 1983-84; Chowdhary, 1989; The Canadian Aging Research Network, 1994; Goldsberry, 1995). Because the proportion of older women in the Canadian population is projected to increase, apparel firms need to recognize this segment as potential consumers of apparel designed for older women.

Apparel manufacturers and retailers have been slow to respond to the potential of older consumers, possibly due to the stereotypically negative image of older females as impoverished, reclusive, uncaring of appearance, and having little fashion interest (Richards, 1981; Workman & Johnson, 1989). In contrast, Jackson (1992) contended that the older consumer as a group is not homogeneous; therefore, the associated stereotypical images are not appropriate.

Kidd (1993) and others have noted that the older Canadian population controls over one half of the discretionary income and has increasing purchasing power (Tenhoor & Shalit, 1985; Dillard & Feather, 1988; Kidd, 1993). Studies have shown that high income groups are more likely to spend on apparel (Gauthier, 1991; Jackson, 1992; Cook & Settersten, 1995), and further, older Canadians have discretionary income which they are willing to spend on clothing (The Canadian Aging Research Network, 1994). Moreover, contrary to the assumption that older women are not interested in fashion, Martin (1975) and Kernaleguen (1978) found that fashion interest does not subside with increasing age. In fact, in Martin's (1975) sample of 356 subjects who were over 60 years of age, two thirds expressed an interest in fashion.

### Physical Changes Associated with Aging

Aging is a normal biological phenomenon of the human organism (Borkan, Hulst & Mayer, 1982). The aging process begins at the time of

conception when growth and development are characteristic. About the age of thirty, decline begins (Solomon, Shock, & Aughenbaugh, 1970); the rate of deterioration varies among individuals and is dependent on factors such as genetic predisposition and environmental circumstances (Solomon, Shock, & Aughenbaugh, 1970; Schewe, 1988).

Although every system within the body is affected by the aging process, the ones particularly relevant for clothing are changes in the body size and configuration. Body fat increases and is redistributed throughout the trunk, while on the limbs fat deposits tend to decrease (Solomon, Shock, & Aughenbaugh, 1970). In addition, the skin in the upper arms and neck loses elasticity, resulting in sagging (Solomon, Shock, & Aughenbaugh, 1970). In other words, an older woman's girth may increase even though her weight may remain the same. As the overall shape of the body changes the fit of clothing is affected.

Loss of height is another notable change occurring with age. The loss originates in the trunk as a result of bone loss in the vertebrae. This loss is more pronounced in women than in men (Borkan, Hulst & Mayer, 1982). Rosenblad-Wallin and Karlsson (1986), in a survey of clothing-related problems of the elderly in Sweden, found that height of older females decreased by one to two centimetres. Despite this change in height, the back lengthens as the head and neck tilt forward and the shoulders rotate forward, resulting in poor fit because the back length is too short, the front chest too roomy and the shoulder length too long (Rosenblad-Wallin & Karlsson, 1986). Many

researchers have documented the dissatisfaction expressed by older women in finding ready-to-wear which fits properly, due to the physical changes of aging (Kernaleguen, 1978; Richards, 1981; LaBat & DeLong, 1990; Woodson & Horridge, 1990; Goldsberry, 1995). Ready-to-wear apparel does not accommodate the physical changes of increased girth and decreased height of the older female (Smathers & Horridge, 1978-79) because the ready-to-wear industry uses sizing systems which do not accommodate the physical changes of aging (Woodson & Horridge, 1990; Institute for Standards Research, 1993; Goldsberry, 1995).

#### Apparel Fit

Problems with fit of apparel for older women has been known for some time. Blair (1953) discussed changes in body shape with increasing maturity and related it to difficulty in finding apparel with a satisfactory fit. Over time, researchers in clothing have reported similar findings of dissatisfaction of apparel fit and differences in body conformation.

Bartley and Warden (1962) observed that thickened waist and larger hips, rounded shoulders, prominent abdomen, and sagging bust were changes in physical conformation experienced by 47 older women in their research. Smathers and Horridge (1978-79), Richards (1981), Patterson and Warden (1983-84), Hogge and Baer (1986), and Woodson and Horridge (1990) have also reported findings of dissatisfactory fit of clothing for older women.

Smathers and Horridge (1978-79) found in a sample of 38 women aged 65 to 83, that 74% would choose proper fit over style but that ready-to-wear did not accommodate the increased girth or the decreased stature of older women.

Richards (1981) studied a sample of 83 women aged 55 to 84 and reported that 78% felt they were able to find proper fitting dresses; 92% indicated at least one body area where fitting was a problem. Problem areas noted by Richards (1981) were excessive length in shoulders, skirt, sleeve and bodice. In addition, problems with fit (especially, in shoulder and bodice length) increased with age. Sixty one percent of the sample indicated that if ready-to-wear for older women were available they would purchase it (Richards, 1981).

In an attempt to document changes in body dimensions, Patterson and Warden (1983-84) and Woodson and Horridge (1990) compared the body measurements of older women with those of the Voluntary Products Standard PS42-70: Body Measurements for the Sizing of Women's Patterns and Apparel (referred to hereafter as PS42-70). From the measurements of a group of 205 female volunteers in Florida aged 65 to 96, Patterson and Warden (1983-84) found increases in girth measurements at the waist, hip and abdomen. Twenty-five of the 33 measurements taken indicated deviations from the PS42-70 database. Based on these differences, recommendations for sizing systems applicable for older women were made. Similarly, Woodson and Horridge (1990) compared body measurements of 104 women aged 65 to 95 from residential homes in Texas with the PS42-70 database. Woodson and Horridge

(1990) reported that body dimensions and posture were noted to be significantly different than the PS42-70 database; they suggested that changes in length and width dimensions only would not solve problems of apparel fit for older women. Accommodation for changes in curvature would also be required. It appears that literature pertaining to apparel fit for older women consistently reported deviation between dimensions of older women and the PS42-70, body areas where differences occur, and older women's dissatisfaction with the fit of ready-to-wear apparel.

Shim and Bickle (1993) showed that while older women expressed dissatisfaction with the fit of ready to wear, petite women indicated the greatest overall dissatisfaction with many categories of ready-to-wear, particularly pants. Furthermore, LaBat and DeLong (1990) demonstrated that low levels of satisfaction were particularly associated with apparel fitting the lower body compared to other apparel categories. Interestingly, a 1996 review of the Canadian apparel retail market showed that "slacks/jeans/other pants" were the third largest apparel category purchased by women 65 years or over ("The Age Factor", 1997).

### Apparel Sizing

Standardized sizing systems for women's apparel in North America have been based on data collected in the 1940s and 1950s in which only two percent of women were over 65 years (Hobbs, 1970; Woodson & Horridge, 1990;



Goldsberry, 1995). In the U.S., the Department of Commerce, Voluntary Product Standard PS42-70: Body Measurements for the Sizing of Women's Patterns and Apparel has existed for 25 years (Woodson & Horridge, 1990). However, Woodson and Horridge (1990) point out that this is a voluntary standard and is poorly adhered to by the apparel industry. The PS42-70 was developed from a database of 58 body measurements taken from about 15,000 women across the U.S. collected by O'Brien and Shelton in 1941 (Woodson & Horridge, 1990).

In Canada, the Canada Standard System for Sizing Women's Apparel was based on American data collected in the 1940s (Canadian General Standards Board, 1992a). The impetus for the development of a Canadian sizing system came from the Consumers Association of Canada after consumers complained of difficulty in finding clothing that fit (One System Fits All, 1979). The objective was to design a sizing system which would encompass the majority of Canadian women regardless of age (Canadian General Standards Board, 1992b; Consumer and Corporate Affairs Canada, 1990). Currently, three standards comprise the sizing of women's apparel. These are (a) Canada Standard System for Sizing Women's Apparel (1992a), (b) Application of the Canada Standard System for the Sizing of Women's Wearing Apparel (1992b), and (c) Canada Standard Sizes for Women's Apparel (1987) (Consumer and Corporate Affairs Canada, 1990). According to Consumer and Corporate Affairs Canada (1990), Application of the Canada Standard System

for the Sizing of Women's Wearing Apparel (1992b) is a modification of the Canada Standard System for Sizing Women's Apparel (1992a), while Canada Standard Sizes for Women's Apparel (1987) is an abridged version for commercial purposes.

In one of the few studies evaluating the effectiveness of the CSS for older women, Marshall (1988) observed that although sizes within the standard would be adequate, fit for the older women would still be a problem, especially with fitted garments. Marshall (1988) based her findings on numerical analysis of body measurements. There was no attempt to examine fit on a three-dimensional figure, such as the human body.

In January 1994, a new sizing standard for older females was released by the American Society for Testing and Materials. The new standard, ASTM D5586, Standard Tables of Body Measurements for Women Aged 55 and Over (All Figure Types) resulted from a study in which 60 body measurements of approximately 7,000 American women over the age of 55 from 38 states were taken. The findings have demonstrated significant differences in up to 75% of body measurements of older women when compared to those of the PS42-70, and confirmed changes in body dimensions which affect the fit of apparel (Institute for Standards Research, 1993). Most prominent were larger measures of girth through the waist, abdomen, hip, upper arm, and upper back, while bust girth, especially in the Miss Petite and Misses figure types, were found to be significantly smaller. In general, shorter stature, thickened waist, protruding

abdomen, flattened buttocks, and a forward tilt of the head and shoulders characterize the figure shape of the older women (Goldsberry, Shim & Reich, 1996a). These observations are consistent with those of Rosenblad-Wallin and Karlsson (1986).

When ASTM D5586 body measurements were compared to existing sizing systems, the Miss Petite, Misses, and Half-Size figure types were found to have the most substantial differences (Goldsberry, 1995). Eighty percent of the ASTM D5586 measurements in Miss Petite were sizes 14 to 18; 69% of the Misses sizes were 12 to 18; and 77% of the Half-Size sizes were 14 to 20 (Institute for Standards Research, 1993). Goldsberry (1995) noted that Miss Petite sizes 14 to 18 ready-to-wear are not readily available in the marketplace.

ASTM D5586 body measurements are germane to developing well fitting clothing for older women. Because of its uniqueness, researchers, educators, and practitioners can begin to evaluate the effectiveness of this new body measurement system in the development of apparel for older women.

### Theoretical Framework

The theory of consumer satisfaction by Swan and Combs (1976) has been adopted as a framework for conceptualizing this research. Based on clothing literature, Swan and Combs (1976) developed a theory where consumer satisfaction is influenced by two dimensions of product performance: (a) instrumental performance outcomes, which are the physical attributes of a

product, and (b) expressive performance outcomes, which are the psychological response to the attributes of a product. Swan and Combs (1976) theorized that satisfaction was associated with the fulfilment of expectations. Dissatisfaction occurs when levels of expectations are not met on the instrumental dimension. However, instrumental outcomes alone will not produce satisfaction. In contrast, satisfaction results when both expressive performance and instrumental performance expectations are met. Clothing, according to Swan and Combs (1976), may be an unusual product in that it may be more susceptible to expressive outcomes than other products.

In a sample of 60 college students, Swan and Combs (1976) elicited information about the subjects' experience with a satisfactory and dissatisfactory clothing item. Outcomes were then classified according to operational definitions for expressive and instrumental outcomes. Swan and Combs (1976) found that "satisfactory items tended to be associated with a higher or equal proportion of expressive outcomes relative to instrumental outcomes...while for the dissatisfactory items the proportion of instrumental outcomes exceeded the expressive outcomes..."(p.29). In addition, when satisfactory and dissatisfactory items were compared, Swan and Combs (1976) observed that "...dissatisfactory items were most frequently associated with only instrumental outcomes...,while the satisfactory items involved a mix of the expressive and instrumental outcomes..." (p.30).

Maddox (1981), using the same operational definitions of instrumental performance outcomes and expressive performance outcomes as Swan and Combs (1976), examined satisfaction with clothing and other products. Data from 1300 respondents were analyzed and the results for clothing were similar to what Swan and Combs reported, that is, expressive outcomes were associated with satisfactory items (Maddox, 1981)

Francis and Dickey (1984) applied the theoretical framework proposed by Swan and Combs (1976) to evaluate satisfaction in relation to instrumental and expressive outcomes of dresses. In their results, Francis and Dickey (1984) found support for Swan and Combs (1976). They found that for respondents who had laundered their dress, the sources of dissatisfaction came from the instrumental performance outcomes. For those respondents who had not laundered their dresses, the sources of satisfaction originated from personal preferences, that is, expressive performance outcome (Francis & Dickey, 1984). Overall satisfaction was reported as higher for the group who had laundered their dresses than for those who had not. Francis and Dickey (1984) believe that this difference can be explained by "the point in time (relative to the consumption process) at which satisfaction was measured" (p. 165) and satisfaction may shift according to the consumers' use and experiences with a product. It is apparent that research by Swan and Combs (1976), Maddox (1981), and Francis and Dickey (1984) consistently found that satisfaction with clothing was associated with expressive performance outcomes, while

dissatisfaction with clothing was associated with instrumental performance outcomes.

To summarize, it has been well documented that older adults are the fastest growing population segment in Canada, of which the majority are women (Statistics Canada, 1990; Gauthier, 1991). As older women will represent a substantial proportion of the population it is important to recognize this heterogenous group as a growing and viable market segment.

Until now, apparel firms have not responded to the clothing needs of older women. Clothing research has documented older women's dissatisfaction with the fit of ready-to-wear because it does not accommodate changes in the body shape of older women associated with aging. The need for a sizing system specific for older women has been articulated by researchers in clothing and textiles.

Current North American sizing standards, developed in the 1940s, are based on the body measurements of young women, which do not reflect the physical changes of aging. The release of the ASTM D5586 - 94 "Standard Tables of Body Measurements for Women Aged 55 and Older (All Figure Types)" provides an invaluable body of data for product development. The ASTM D5586 was the impetus for this researcher to investigate older women's satisfaction with trousers developed from the ASTM D5586 MP16 and the Canada Standard Sizing M18 (for the lower body).

An important question was whether the ASTM D5586 provided corrections which would accommodate the changes in the body shape of older women. Clothing researchers have documented older women's dissatisfaction with the fit of apparel for the lower body, particularly petite women (LaBat & DeLong, 1990; Shim & Bickle, 1993; Goldsberry et al. 1996a). Moreover, "slacks/jeans/other pants" were the third largest apparel category purchased by older Canadian women ("The Age Factor", 1997). Trousers, therefore, were the apparel item chosen for this research. The theory of consumer satisfaction and product performance by Swan and Combs (1976) provided the framework for this research as the theory recognizes satisfaction with products in terms of their physical and psychological attributes.

This research was highly exploratory as the ASTM D5586 was new. Investigation of the ASTM D5586 was necessary to assess its usefulness as a tool in the development of apparel for older women.

## CHAPTER THREE

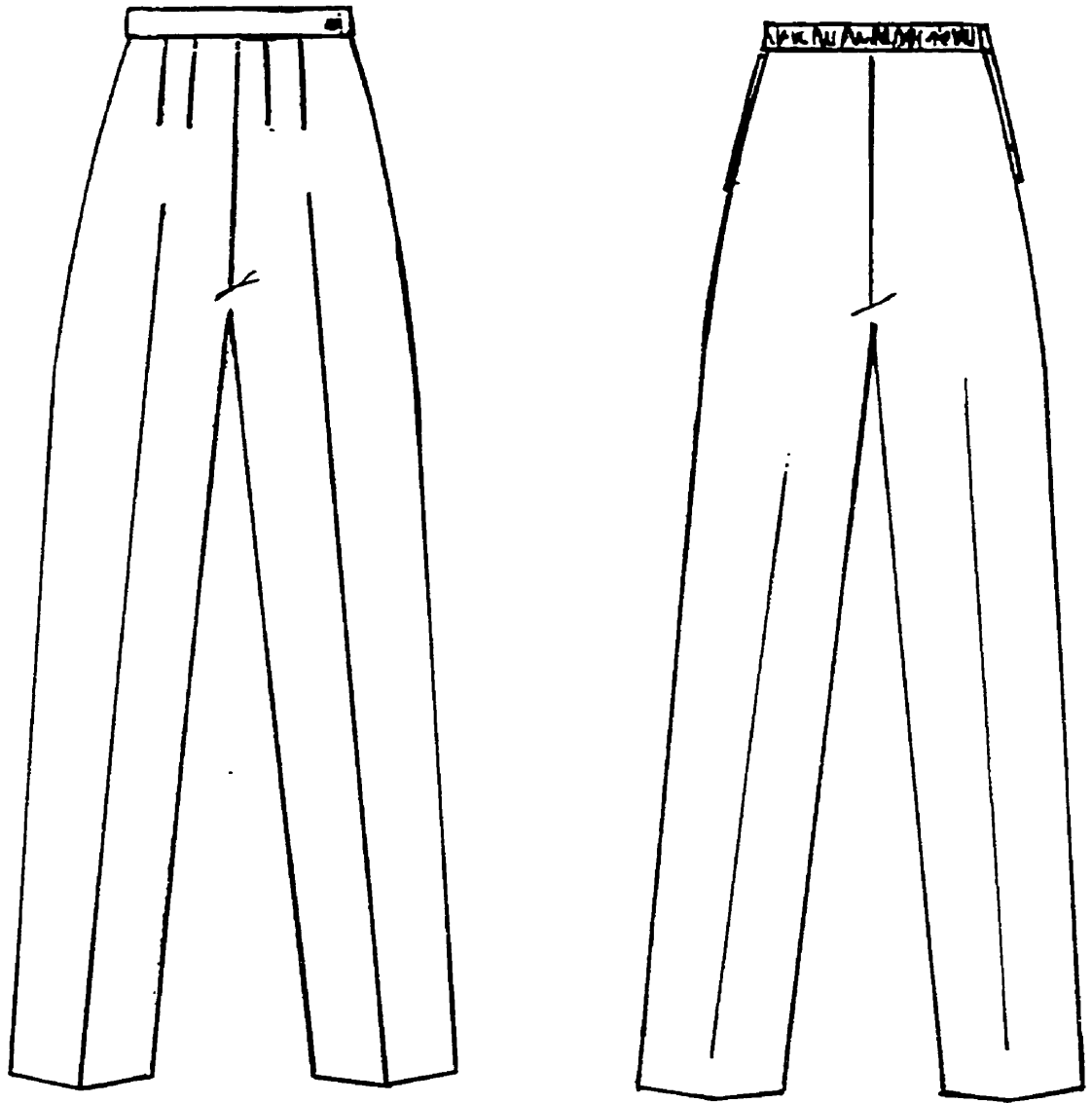
### METHOD

This chapter describes the procedure used to achieve the objectives stated in Chapter One. The procedure includes the development of two test trousers, recruitment of the sample, administration of the wear test, post wear test interviews, and data analysis.

#### Test Trousers

A trouser style (Armstrong, 1987) pant was developed. It has an elastic back waistband, two one-inch pleats on each side of centre front, and an opening incorporated into the left sideseam pocket (Figure 1). Trousers were chosen because LaBat and DeLong (1990) found dissatisfaction with apparel fitting the lower body, while Shim and Bickle (1993) found significant levels of dissatisfaction with the fit of trousers for the petite body type in terms of length, leg fullness, and crotch length. Goldsberry et al. (1996a) observed significant differences in the girth measurements of women 55 years or over of a thicker waist and hip, a protruding abdomen, and a flatter seat. Further, a review of the Canadian apparel retail market showed that, "slacks/jeans/other pants" were the third largest apparel category purchased by older women ("The Age Factor", 1997).





Front View

Back View

Figure 1. Technical sketches depicting the style features of the test trousers.

Two trousers were constructed, one in Miss Petite size code 16 from the ASTM D5586, another in the Misses 'X' range for lower body, short leg, size code 18 from the CSS. The decision to use the petite figure type was based on recent research findings of anthropometric measurements of older females. Goldsberry et al. (1996a) demonstrated that for women who were at least 55 years old, the Miss Petite body type was one in which differences in body measurements were greatest when compared to measurements for similar figure types from the PS42-70, in particular, the Miss Petite 14 to 18 size range (Institute for Standards Research, 1993). Incidentally, in a study of 1,406 older Manitobans, the most popular sizes for women's trousers were sizes 14 and 16 (22% and 20% respectively) (The Canadian Aging Research Network, 1994).

The researcher used measurements for the ASTM D5586 MP 16 and the CSS M18 for garments fitting the lower body to develop patterns for the test trousers (see Appendix A for pattern development method). Table 1 demonstrates that the ASTM MP16 and the CSS M18 measurements for garments fitting the lower body are similar in the critical measurements at the waist and crotch height, but the hip girth differs by approximately 10 cm (3.6 in.). The two trousers were identical in style, design features, and fabrication (washable 65% polyester and 35% rayon).

To minimize variation in final garment measurements within each sizing standard, to reduce inconsistencies in construction, and to replicate attributes

Table 1

Body measurements from CSS M18 and ASTM D5586 MP16.

Body Areas	CSS M18 cm (in.)	ASTM D5586 MP16 cm (in.)
Waist Girth*	83.0 (32.6)	83.7 (32.9)
Hip Girth*	110.0 (43.3)	100.9 (39.7)
Crotch Height*	70.0 (27.6)	71.2 (28.0)
Waist Arc	47.1 (18.5)	44.9 (17.7)
Abdominal Arc	55.7 (21.9)	52.6 (20.7)
Abdominal Extension	103.7 (40.8)	99.5 (39.2)
Hip Arc Back	54.6 (21.5)	50.4 (19.9)
Sitting Spread	110.2 (43.4)	106.5 (41.9)
Thigh Girth (Max)	63.6 (25.0)	58.3 (22.9)
Mid Thigh	55.5 (21.9)	50.9 (20.0)
Knee Girth	38.7 (14.9)	37.6 (14.1)
Calf Girth	37.2 (14.6)	35.1 (13.8)
Ankle Girth	24.8 (9.8)	23.7 (9.3)
Abdominal Height	89.8 (35.4)	91.2 (35.9)
Waist to Hip	23.4 (9.2)	18.0 (7.1)
Hip Height	78.1 (30.7)	82.4 (32.4)
Crotch Length (Ant.)	37.4 (14.7)	35.0 (13.7)
Crotch Length (Back)	39.0 (15.3)	38.0 (14.9)
Total Crotch Length	76.4 (30.0)	73.2 (28.8)
Waist Height	99.0 (38.9)	100.4 (39.5)
Knee Height	42.5 (16.7)	42.8 (16.9)
Ankle Height	7.5 (3.0)	6.6 (2.5)

\* these measurements are the "size indicator dimensions" for the CSS.

Note. The data for CSS M18 are from Canada Standard Sizes for Women's Apparel - Trade sizes (p. 66), by Canadian General Standards Board, 1987, Ottawa: Author (CAN/CGSB-49.203-M87).

Note. The data for ASTM D5586 MP16 are from ASTM D5586-94 Standard tables of body measurements for women aged 55 and older (All figure types), (p. 6), Philadelphia: American Society for Testing and Materials.

consumers expect in ready-to-wear, a local manufacturer was contracted to produce the test trousers. To minimize effects of consumers' perceptions of brand names, no manufacturer's labels were attached to the trousers. The ASTM trouser bore a blue label "A"; the CSS trouser bore a red label "B". Each pair of trousers was labelled with appropriate care and fibre content information. To minimize the influence of numerical size on the perceptions of fit, the numerical size designation was removed from the trousers.

One possible confounding effect was that of colour. Both sets of trousers were to have been navy blue, a colour preferred by 54% of Manitoba women surveyed (The Canadian Aging Research Network, 1994). However, due to a fabric shortage at the time of manufacture, the manufacturer substituted a burgundy colour for some of the CSS trousers, without consulting with the researcher.

Overall, 70 pairs of trousers developed from the ASTM MP16 and the CSS M18 measurements were ordered. Each participant received a set of two pairs of trousers: one ASTM trouser and one CSS trouser. However, as a result of the colour substitution, 21 sets consisted of one pair of navy (ASTM) trousers and one pair of burgundy (CSS) trousers and 14 sets of an ASTM navy/CSS navy combination. However, the waist measurement of the latter 14 sets of trousers was 5 cm (2.5 in.) smaller than the specification of 83.0 cm (32.6 in.), therefore, were not useable for the purposes of this research. Hence, all

participants in the wear test were provided with the navy/burgundy colour combination.

### Pilot Study

A pilot wear test was carried out subsequent to receiving approval from the Faculty of Human Ecology Ethics Review Committee (Appendix B). With cooperation from the University of Manitoba, Centre on Aging, the researcher compiled an initial list of 20 women fitting the research criteria. A letter of introduction and an information package explaining the research were sent to potential participants (Appendix C).

In May 1997, potential participants were contacted by telephone to obtain verbal consent to visit them in their homes. Four subjects agreed to participate in the pilot. Upon completion of the pilot wear tests, minor editorial changes and changes to the order of the questions were made. Additionally, it was decided that photographs of the front, back and side view of each pair of test trousers would be taken to obtain visual records of the fit of the test trousers.

### The Sample

The final sample consisted of 20 women, who were at least 55 years old, healthy, without physical disabilities, and were residents of the city of Winnipeg or the immediate surrounding communities. The minimum age of 55 years was

chosen for this research as it is the lower end of the age range for the ASTM D5586 sizing standard.

The sample was recruited by twice placing advertisements (Appendix D) in seniors' publications, inserting announcements in newsletters for community groups, posting notices on notice boards in seniors' organizations, and inserting a notice in a local retailer's mailout. Interested persons were asked to call the researcher (Appendix E). Those who were eligible received a letter of introduction detailing the purpose and procedure of the research (Appendix F). One week after the letter of introduction was sent, respondents were called to obtain verbal consent to meet with them in their home. At the initial meeting, body measurements were verified, the respondents participation was confirmed, and the consent form was signed (Appendix G).

The various avenues utilized to recruit participants resulted in 57 respondents who were screened over the telephone to determine eligibility. Twenty-eight (49%) of the respondents were ineligible as their body measurements did not fit the criteria. After the first interview with each of the 29 who were eligible, eight (14%) were excluded from the wear test because either the criteria were not met or the trousers were not comfortable for them to wear. Hence, 21 women were interviewed; however, the final sample consisted of 20 women. One participant was not able to continue due to family circumstances.

## Data Collection

The following section will describe the procedures for collecting data, including the wear test, followed by the post wear test interviews, and the interview schedule. Data collection took place over the months of August 1997 through April 1998.

### Wear Test

At the initial interview, each respondent was measured by the researcher at key body locations (Appendix I). With the respondent in a standing position, the natural waist level was determined using a narrow elastic tied at the waist, and the waist circumference was measured with a dressmaker's measuring tape. Similarly, the hip circumference was measured at the most prominent girth below the waist, parallel to the floor (Canadian General Standards Board, 1987; American Society for Testing and Materials, 1994). Height was measured with a metal tape measure from the floor to the top of the head with the respondent standing with her back toward the researcher.

Respondents whose measurements fit the criteria were asked to try on each of the two trousers in the pre-determined order—the ASTM trouser, then the CSS trouser. The leg length of the trousers was adjusted according to individual height and preference. Once hemmed, the trousers were returned to the participants within a day or two.

The wear test participants were asked to wear each test trouser at least twice during the two week wear test. Participants were encouraged to treat the

trousers as part of their wardrobe and to launder them as needed. In order to give participants sufficient time to wear the test trousers at least twice, two weeks was chosen as the wear test period. Participants were asked to record in a diary (Appendix H) when each garment was worn, the occasion or activity for which the trouser was worn, the length of time for each occasion, and any comments about the garments. The diary was a mechanism to assist the participants during the post wear test interviews to recall experiences during the times they wore the trousers. The researcher maintained contact with each participant during the wear test period to respond to questions and to check on compliance.

#### Post Wear Test Interviews

As soon as the wear test terminated, a face-to-face interview with the participant was conducted in her home (Appendix J). The purpose of the interview was to collect information about instrumental performance outcomes, expressive performance outcomes, and satisfaction with the two trousers. The post wear test interviews were conducted in the home as it was thought participants would feel more comfortable in familiar surroundings discussing their experiences with the test trousers. At the beginning of the session, the participant was asked to change into "PANT A" while questions about "PANT A" were asked. Then photographs of front, sides, and back were taken. Similarly,



this procedure was followed for "PANT B". All interviews were audio tape recorded.

### The Interview Schedule

To determine overall satisfaction with the trousers, participants were asked how satisfied they were with the ASTM trouser and the CSS trouser, respectively, and with which of the two trousers they were more satisfied. Closed-ended questions were posed in order to force participants to choose descriptors which best described their opinions. As the list was mutually exclusive, it was a method of categorizing responses to make comparisons among participants.

After participants indicated their satisfaction or dissatisfaction with each of the trousers, they were asked an open-ended question to discuss what it was about the trousers they found to be either satisfactory or dissatisfactory. The open-ended question elicited qualitative responses which were later coded to identify instrumental and expressive performance outcomes. Additionally, for each trouser, participants were asked to specify their level of satisfaction with the waist, the hips, the tummy, the seat, the crotch length, and the width of upper and lower trouser leg. The interview concluded with asking participants to provide demographic information such as chronological age, education, marital status, employment status, and occupation.

## Data Analysis

The research produced qualitative and numerical data. The qualitative data originated from responses to open-ended questions in the post wear test interviews. The responses were subjected to content analysis. The numerical data were computed using the SAS and JMPIN statistical packages.

### Content Analysis

The responses to open-ended questions were coded twice by three persons, one of whom was unaware of the hypotheses. Coders were asked to classify responses according to the definitions of instrumental and expressive performance outcomes. Instrumental performance outcomes are "...outcomes with reference to the physical product per se..."(Swan & Combs, 1976, p. 28) while expressive performance outcomes are "...outcomes that refer to performance dimensions other than the physical product per se..." (Swan & Combs, 1976, p. 28). Coders individually coded responses and then met to discuss their coding decisions. Where there were disagreements, the outcomes were discussed, and where possible, a consensus was reached; that is, a decision was reached as to whether the outcome was instrumental or expressive. The researcher made a numerical notation of coding agreements and disagreements among the three coders. Inter-coder reliability was then calculated. A week later, ten transcripts were selected at random to be re-coded and inter-coder reliability was again calculated.

Inter-coder reliability was calculated by using the method discussed in Swan and Combs (1976). A coefficient of reliability was calculated as  $C.R. = \frac{3m}{N1+N2+N3}$  where  $m$  = number of agreements of coders;  $N1$ ,  $N2$ , and  $N3$  = number of coding decisions made by coders (Holsti, 1969; Swan & Combs, 1976). Instrumental and expressive outcomes were quantified by counting the number of instrumental performance outcomes and expressive performance outcomes.

Swan and Combs (1976) examined the attribute of comfort as both an instrumental and as an expressive outcome. Swan and Combs (1976) analyzed their data twice, once treating comfort as an instrumental performance outcome and once as an expressive performance outcome. However, for this research, in only three cases was comfort coded as both an instrumental and an expressive performance outcome. The researcher decided to code comfort in those three cases as instrumental, because in all 14 cases where comfort was coded, 12 were coded as instrumental and only two were coded as expressive. Therefore, by treating comfort as an instrumental performance outcome, it would not be necessary to analyze the data twice, which would be meaningless due to the small data set.

To determine satisfaction with the two test trousers, the means of the responses to questions about satisfaction were tabulated. Descriptive statistics were used to describe the demographic and the anthropometric characteristics of the sample. The frequency of instrumental and expressive performance

outcomes for each participant was determined by calculating two ratios—the ratio of instrumental performance outcomes to total outcomes, and the ratio of expressive performance outcomes to total outcomes. A mean of all the ratios for each trouser subset was then calculated.

### Preparation of the Data for Hypothesis Testing

The data were subjected to nonparametric methods of data analysis as the sample population was small and had an unknown distribution. The relatively small amount of numerical data had to be reorganized for analysis. The five levels of satisfaction were reduced to three. "Very satisfied" and "satisfied" were collapsed into a category labelled "satisfied"; "dissatisfied" and "very dissatisfied" were collapsed into a category labelled "dissatisfied"; "neither satisfied nor dissatisfied" formed the third level "neutral".

To perform statistical analysis for a small sample, the researcher determined frequencies of instrumental and expressive performance outcomes for each participant. The derivation was as follows: (a) the data were divided into two subsets, the ASTM trouser and the CSS trouser; (b) within each subset, a ratio of instrumental outcomes to total outcomes was calculated for each participant; and (c) for each subset, the sum of the ratios was divided by the sample size (20) to derive an aggregate mean of instrumental outcomes. Similarly, expressive performance outcomes to total outcomes were calculated.

## CHAPTER FOUR

### RESULTS

This chapter contains the research results which include demographic and anthropometric characteristics of the sample, satisfaction with the test trousers at critical fit areas, instrumental and expressive performance outcomes, inter-coder reliability, hypothesis testing, and descriptive analysis of the data. The level of significance used for all statistical tests was  $\alpha \leq 0.05$ .

#### Demographic Characteristics of the Sample

The participants' ages ranged between 56 to 89 years with a mean age of 68 years (SD = 9.76). As observed in Table 2, over one-half of the sample was between 55 to 65 years of age; approximately one-third was between 65 and 80 years of age; two participants (approximately 11%) were over 80 years of age. Sixty seven percent of the 18 women who indicated their marital status were married while 27.7% were widowed, divorced or separated; 6.7% were single.

Approximately three quarters of the participants were retired; 25% were currently working either full-time or part-time. Two thirds of the participants had pursued careers in clerical or sales and business occupations while 25% had held positions in teaching or helping occupations. Ten percent of the participants had worked in labour positions.

Table 2

Demographic Characteristics of the Sample (N = 20)

Characteristic	<u>n</u> *	%
<b>Age</b>		
55-60	5	27.8
61-65	5	27.8
66-80	6	33.5
80-89	2	11.2
<b>Marital Status</b>		
Single	1	6.7
Married	12	66.6
Divorced/Separated	2	11.1
Widowed	3	16.6
<b>Education Completed</b>		
Grade School	1	5.3
Secondary	10	52.6
Post Secondary	8	42.1
<b>Employment Status</b>		
Full-time	2	10.0
Part-time	3	15.0
Retired	14	70.0
Other	1	5.0
<b>Occupations</b>		
Business	4	20.0
Clerical/Sales	9	45.0
Labour	2	10.0
Teaching/Helping	5	25.0

\*Note. The number reported may be less than 20 due to missing data.  
Percentages are proportions of n within each demographic characteristic.

In terms of educational achievement, 53% had completed high school or equivalent while 5% had completed grade school. Additionally, 42% had attended a post secondary education institution and had completed certificate, diploma or degree programs.

### Wear Test Diaries

During the wear test participants were asked to wear each of the test trousers at least twice and to record their experiences in a diary. The diaries showed that participants wore the ASTM trouser between 1 to 6 times during the wear test period with a mean of 3.8 times. The CSS trouser was worn between 1 to 10 times with a mean of 3.6 times indicating that each participant tended to wear each of the two trousers equally during the wear test period. In total the mean length of time each of the trousers was worn during the wear test period was approximately 16 to 17 hours.

The researcher noted that participants tended to wear the trousers most often during the first week of the wear test. The diaries indicated that the test trousers were worn 92 times during the first week as compared to 55 times during the second week. Social occasions, shopping, and at home activities were some of the events for which the test trousers were worn.

### Anthropometric Characteristics of the Sample

Anthropometric eligibility criteria for the sample included measurements of waist, hip and height. The tolerance accepted for the waist girth measurement was +/- 2.5 cm (1 in.) with an additional accommodation for personal preference and comfort. Therefore, the range of waist measurements which would be acceptable was 80 cm (31.5 in.) to 86.5 cm (34 in.). For the sample, the waist measurement ranged from 79.0 cm (31.1 in.) to 91.5 cm (36.0 in.) with a mean waist measurement of 83.2 cm (32.7 in.) ( $SD = 3.38$ ) (Table 3). Four participants (20%) whose waist measurements were smaller or larger than the eligibility criteria were included as they felt the trousers were comfortable to wear. As demonstrated in Table 3, 15% of the sample had a waist measurement between 79.0 cm (31.1 in.) to 79.9 cm (31.5 in.), 70% had a waist measurement of between 80 cm (31.5 in.) to 86 cm (33.8 in.), while the remaining 15% had a waist measurement between 86.5 cm (34 in.) to 91.5 cm (36.0 in.).

Following the same tolerances as the waist measurements of 2.5 cm (1 in.), the eligibility criteria guideline for the hip girth was between 96.6 cm (38 in.) and 104.3 cm (41 in.). However, in the ASTM MP16 and the CSS M18 standards, the hip measurements ranged between 100.9 cm (39.7 in.) and 110 cm (43.3 in.) respectively (Table 3); the range of hip measurements accepted was liberal based on the participants' personal preferences and whether the participants felt the trousers to be comfortable.



Table 3

Comparison of the ASTM MP16 and CSS M18, Range of Eligibility Measurements and the Participants' Body

Measurements (in centimetres)

Body Area	ASTM MP16	CSS M18	Eligibility Range	Participants' Measurements	Sample Mean (SD)	Sample %	n*
Waist	83.7	83.0		79.0 - 79.9		15	3
			80.0 - 86.5	80.0 - 86.0	83.2 (3.38)	70	14
				86.5 - 91.5		15	3
Hip	100.9	110.0		97.8 - 104.3		70	14
			96.6 - 104.3	104.5 - 105.4	103.2 (2.89)	15	3
				107.0 - 109.0		15	3
Height	157.5	--		149.9 - 156.0		45	9
			150.0 - 162.5	156.5 - 160.5	156.7 (4.39)	45	9
				161.0 - 162.5		10	2

\*Note. The number reported may be less than 20 due to missing data.

As seen in Table 3, the hip measurements of the sample ranged between 97.8 cm (38.5 in.) and 109 cm (42.8 in.) with the mean hip measurement of 103.2 cm (40.6 in.) ( $SD = 2.89$ ). Seventy percent of the sample had a hip measurement between 97.8 cm (38.5 in.) and 104.3 cm (41 in.). Fifteen percent of the sample had a hip measurement between 104.5 cm (41 in.) to 105.4 cm (41.5 in.) while the remaining 15% had a hip measurement between 107 cm (42 in.) to 109 cm (42.8 in.) (Table 3).

Represented in Table 3, the height measurements for the sample ranged between 149.9 cm (59.0 in.) to 162.5 cm (64 in.). The mean height was 156.7 cm (61.6 in.) ( $SD = 4.39$ ). Forty-five percent of the sample was between 149.9 cm (59.0 in.) and 156.0 cm (61.3 in.), while an additional 45% were between 156.5 cm (61.7 in.) and 160.5 cm (63.1 in.). The remaining 10% of the subjects were between 161.0 (63.3 in.) and 162.5 cm (64 in.) in height.

#### Satisfaction with Trousers at Critical Fit Areas

This section describes the participants' satisfaction with six areas of fit – waist girth, hip girth, across the abdomen, across the seat, crotch length, and upper leg circumference.

Table 4 portrays a higher mean level of satisfaction for the ASTM trouser than for the CSS trouser in four of six fit areas. Most notably, there was a higher mean level of satisfaction for the ASTM trouser around the waist (3.85), around the hips (3.9), across the seat (3.8), and the crotch length (3.3).

Table 4

Participants' Satisfaction with the ASTM and CSS Trouser at Critical Fit Areas  
(N =20)

Critical fit areas	ASTM		CSS	
	Mean	<u>SD</u>	Mean	SD
Waist	3.85	1.04	3.68	1.20
Hip	3.90	0.97	3.42	1.21
Seat	3.80	1.05	3.68	1.20
Crotch	3.30	1.38	3.00	1.28
Abdomen	3.30	1.34	3.42	1.21
Upper Leg	3.25	1.37	3.42	1.26

Note. 5 = very satisfied, 4 = satisfied, 3 = neither satisfied nor dissatisfied, 2 = dissatisfied, 1= very dissatisfied.

Comparatively, there was higher mean level of satisfaction for the CSS trouser across the abdomen (3.42), and around the upper leg (3.42).

The results of paired t-test for each of the critical fitting areas suggest that the hip and crotch fitting areas have a larger mean difference than the waist, seat, abdomen, and upper leg. In addition, the results suggest a larger mean difference for the overall levels of satisfaction for the ASTM trouser over the CSS trouser. However, the results of the paired t-test were not statistically significant as can be seen in Table 5.

Table 5

Results of Paired t-test for Participants' Levels of Satisfaction for the ASTM  
and the CSS Trousers

Variable	t-ratio	df	Mean Difference	Probability
Waist	0.43	18	0.10	0.66
Hip	1.71	18	0.42	0.10
Seat	0.52	18	0.10	0.60
Crotch	1.37	18	0.33	0.18
Abdomen	- 0.32	18	- 0.05	0.74
Upper Leg	- 0.69	18	- 0.10	0.49
Satisfaction	1.92	19	0.35	0.06

There are distinguishing features between ASTM trouser and the CSS trouser regarding the levels of satisfaction. Participants responded with higher levels of satisfaction with the ASTM trouser at four of six critical fit areas. As seen in Table 6, there was a similar distribution of responses for both the ASTM trouser and the CSS trouser. Eighty percent of the participants were either satisfied or very satisfied with the ASTM trouser around the waist, around

Table 6

Percentages of Participants' Levels of Satisfaction at Critical Fit Areas between the ASTM and CSS Trousers

(N\*=20)

Critical Fit Areas	ASTM			CSS		
	Satisfied% (n)	Neutral% (n)	Dissatisfied% (n)	Satisfied% (n)	Neutral% (n)	Dissatisfied% (n)
Waist	80.0 (16)	0 (0)	20.0 (4)	63.2 (12)	10.5 (2)	26.3 (5)
Hips	80.0 (16)	5.0 (1)	15.0 (3)	68.4 (13)	0 (0)	31.6 (6)
Seat	80.0 (16)	5.0 (1)	15.0 (3)	68.4 (13)	10.5 (2)	21.1 (4)
Crotch	60.0 (12)	0 (0)	40.0 (8)	38.9 (7)	11.1 (2)	50.0 (9)
Abdomen	50.0 (10)	10.0 (2)	40.0 (8)	52.7 (10)	21.1 (4)	26.4 (5)
Upper Leg	55.0 (11)	5.0 (1)	40.0 (8)	63.2 (12)	10.5 (2)	26.3 (5)

Note. Responses have been aggregated as "Satisfied" = very satisfied and satisfied, "Dissatisfied" = dissatisfied and very dissatisfied, "Neutral" = neither satisfied or dissatisfied.

\*Due to missing data the reported number of participants may be less than 20.

the hips, and across the seat. There is a notable difference in the levels of satisfaction for the crotch length. Sixty percent of the participants were either satisfied or very satisfied with the ASTM trouser crotch length; however, only 38.9% of the participants indicated they were either satisfied or very satisfied with the CSS trouser through the crotch length.

For both the ASTM and CSS trousers, there were similar levels of satisfaction for the trousers across the abdomen and around the upper leg. Overall there were more participants who were undecided for the CSS trouser where, for example, 21% of the participants responded as neither satisfied nor dissatisfied with CSS trouser across the abdomen. However, it is notable that for the CSS trouser there are more than twice as many participants who were uncommitted in five of the six fitting areas.

#### Overall and Relative Satisfaction with the ASTM MP16 and the CSS M18 Trousers

The means of the levels of satisfaction for the ASTM and the CSS trouser were 3.85 and 3.40 respectively. However, relatively almost 58% of the participants indicated they were more satisfied with the ASTM trouser than the CSS trouser, but only one third of the participants (31.6%) acknowledged they were more satisfied with the CSS trouser than the ASTM trouser (Table 7). The remaining 10.5 % indicated they were not satisfied with either trouser.

Table 7

The Trouser with which Participants Were More Satisfied: A Comparison  
between the ASTM and the CSS Trousers (N=20)

Trouser	Percent	n*
ASTM	57.9%	11
CSS	31.6%	6
Neither	10.5%	2

\* Due to missing data the reported number of participants may be less than 20.

#### Instrumental and Expressive Performance Outcomes

Content analysis was used to determine instrumental and expressive performance outcomes according to the operational definitions by Swan and Combs (1976). Participants' responses pertaining to the physical characteristics of the test trousers were coded as instrumental performance outcomes; attributes pertaining to psychological characteristics were coded as expressive performance outcomes. Attributes were assigned to each of the two dimensions according to the operational definitions, however context was taken into consideration during the coding process.

Instrumental performance outcomes included attributes of the fabric such as the feel, texture, breathability, cleaned well, coolness, and crease resistance. Other common attributes coded as instrumental performance outcomes were

features of the trousers such as the pocket size, fit, length of the crotch, width of the fabric across the abdomen, comfort, and drape of the trouser. Examples of expressive performance outcomes were the look of the trousers, the silhouette, the style, compliments/comments from others, and the colour (a complete list can be found in Appendix K).

#### Inter-coder Reliability

From the 20 useable interviews, 134 attributes or responses were coded as expressive or instrumental performance outcomes. Of these 134 coding decisions, there were 116 coding agreements amongst the three coders. Hence, the coefficient of reliability (C.R.) was 87.6%.

When coding was performed a second time on 10 randomly selected interview transcripts, 69 coding decisions were made, and 58 coding agreements were established among the coders resulting in a coefficient of reliability of 85.0%. Note both coefficients of reliability were consistently high, implying that coders were able to identify and make coding decisions with a high degree of agreement and consistency.

#### Performance Outcomes

In total, 97 instrumental performance outcomes and 37 expressive performance outcomes were coded. For the ASTM trouser, 57 instrumental performance outcomes and 24 expressive performance outcomes were



identified. For the CSS trouser, 40 instrumental performance outcomes and 13 expressive performance outcomes were identified.

The aggregate mean of the ratios of instrumental performance outcomes to total performance outcomes for the ASTM trouser was 0.74, while for the CSS trouser, the aggregate mean ratio was 0.71. The aggregate mean of the ratios of expressive performance outcomes to total performance outcomes was 0.36 for the ASTM trouser and 0.35 for the CSS trouser. It seems that regardless of the sizing standard used, there is a greater probability of higher frequencies of instrumental performance outcomes than expressive performance outcomes.

As the distribution of the sample population was unknown, a two-tailed t-test was used to show the distribution of the sample means for the instrumental performance outcomes. For the ASTM trouser, a positive and significant t-value ( $t = 3.59$ ,  $p = .0019$ ) was observed. Similarly, for the CSS trouser, a positive and significant t-value ( $t = 2.47$ ,  $p = .02$ ) was observed. The t-value for the ASTM trouser was greater than that of the CSS trouser, signifying a greater probability of more instrumental performance outcomes than expressive performance outcomes associated with the ASTM trouser.

## Hypothesis Testing

### Hypothesis I

Hypothesis I stated that there is a relationship between the level of satisfaction and higher relative frequencies of expressive outcomes for the ASTM trouser. The Spearman Rho nonparametric measure of association showed no statistical evidence to support the hypothesis ( $r_s = -0.0854$ ,  $p = 0.7281$ ).

### Hypothesis II

Hypothesis II stated that there is a relationship between the level of satisfaction and higher relative frequencies of instrumental outcomes for the ASTM trouser. The Spearman Rho nonparametric measure of association showed no evidence to support the hypothesis ( $r_s = 0.0579$ ,  $p = 0.8085$ ).

### Hypothesis III

Hypothesis III stated that there is a relationship between the level of satisfaction and higher relative frequencies of expressive outcomes for the CSS trouser. The Spearman Rho nonparametric measure of association showed no statistical evidence to support the hypothesis. ( $r_s = 0.2016$ ,  $p = 0.4079$ ).

#### Hypothesis IV

Hypothesis IV stated that there is a relationship between the level of satisfaction and higher relative frequencies of instrumental outcomes for the CSS trouser. The Spearman Rho nonparametric measure of association showed no statistical evidence to support the hypothesis ( $r_s = -0.1787$ ,  $p = 0.4642$ ).

#### Hypothesis V

Hypothesis V stated there will be no difference in satisfaction between the ASTM trouser and the CSS trouser. Chi-square was used to test this hypothesis. There was no statistical evidence to reject the hypothesis [Chi-square (1,  $N = 17$ ) = 1.4926,  $p = 0.2218$ ].

#### Descriptive Analysis of the Data

As the sample size was small and the results of the hypothesis testing did not manifest statistically significant relationships, the researcher re-examined the data to determine if meaningful observations could be made. The data indicated outcomes and trends which might facilitate an understanding between the relationship of the instrumental and expressive performance outcomes and the participants' levels of satisfaction for the ASTM D5586 and the CSS trousers.

### Levels of Satisfaction with the Test Trousers

The means of the levels of satisfaction for the ASTM and the CSS trouser were 3.85 and 3.40 respectively. As seen in Table 8, approximately the same proportion of participants indicated at least satisfied with either the ASTM or the CSS trousers. Although the levels of satisfaction were very similar for both trousers, it is noteworthy that 15% of the participants were dissatisfied with the CSS trouser, whereas none of the participants were dissatisfied or very dissatisfied with the ASTM trouser.

In terms of relative satisfaction, for the participants who expressed an opinion, 64.7% indicated they were more satisfied with the ASTM trouser compared with 35.2% of participants who indicated they were more satisfied with the CSS trouser.

Table 8

Levels of Satisfaction with the ASTM and the CSS Trouser

Level of Satisfaction	ASTM % (n)		CSS% (n*)	
5	20	(4)	10	(2)
4	45	(9)	50	(10)
3	35	(7)	25	(5)
2	0	(0)	15	(3)
1	0	(0)	0	(0)

Note. 5 = very satisfied, 4 = satisfied, 3 = neither satisfied nor dissatisfied, 2 = dissatisfied, 1 = very dissatisfied.

\*Due to missing data the reported number of participants may be less than 20.

Performance Outcomes and Levels of Satisfaction

Although the relationship between the instrumental performance outcomes and levels of satisfaction did not show statistical significance, the Spearman Rho of 0.0578 suggests that the levels of satisfaction for the ASTM trouser and frequencies of instrumental performance outcomes are moving in a positive direction. Alternatively, for the CSS trouser, the negative Spearman Rho (-0.0854) suggests that instrumental performance outcomes and levels of satisfaction are moving in opposite directions.

For the ASTM trouser, expressive performance outcomes and levels of satisfaction are moving in opposite directions as indicated by the negative

Spearman Rho value ( -0.1787). On the other hand, for the CSS trouser, the positive Spearman Rho suggests that an association between higher levels of satisfaction and higher frequencies of expressive performance outcomes could exist.

To summarize, the body measurements of participants showed average measurements which were closer to the ASTM MP16 than to the CSS M18 standards. Participants indicated higher levels of satisfaction with the ASTM trouser than the CSS trouser in four of the six critical areas of fit. More participants indicated they were more satisfied with the ASTM trouser over the CSS trouser. There was a significantly greater proportion of instrumental performance outcomes than expressive performance outcomes for both the ASTM and the CSS trouser. However, as the sample size was small and all the hypotheses could not be rejected, the data were re-examined descriptively. There appears to be trends that higher frequencies of instrumental performance outcomes may be associated with higher levels of satisfaction for the ASTM trouser. The converse was observed for the CSS trouser, where higher frequencies of expressive performance outcomes may be associated with higher levels of satisfaction.

## CHAPTER FIVE

### DISCUSSION

Clothing research has repeatedly described older women's dissatisfaction with the fit of ready-to-wear. Sizing standards used in the apparel industry are outdated as they are based on data which have under-represented older women and did not reflect the body measurements of older female consumers (Goldsberry et al., 1996a).

In 1994, based on the research of Goldsberry and Reich, the ASTM published a table of body measurements for women 55 years or older which captured changes in the body proportions of older women relative to the changes of aging. Goldsberry et al. (1996a) urged interested parties to wear test garments developed from the new ASTM sizing standard so improvements could be made and well-fitting clothing for mature women could be made available. In this thesis, the researcher focused on comparing trousers developed from the ASTM D5586 MP16 and the CSS M18 (lower body). A trouser was selected because Goldsberry et al. (1996a) observed significant differences in the girth measurements of a thicker waist and hip, a protruding abdomen, and a flatter seat for women 55 years or over. These differences contributed to the difficulty older women had in finding well-fitting apparel (Goldsberry, Shim & Reich, 1996b).

The task ahead was to discover if the new sizing standard could be used to develop clothing which might correct fit problems experienced by older women. Recognising that consumers' response to clothing is affected by its functional and aesthetic qualities, the researcher applied a theory of consumer satisfaction by Swan and Combs (1976) to examine older women's satisfaction with two trousers developed from the ASTM D5586 MP16 and the CSS M18.

#### Compatibility between the ASTM Trouser and the Anthropometric Characteristics of the Sample

In this research, key body measurements were taken of the waist, hip and height. Overall, the mean body measurements of the sample were closer to the ASTM MP16 measurements than the CSS M18 measurements.

#### Waist, Hip and Crotch Length

As the waist measurement for the ASTM MP16 and the CSS M18 are almost identical, the sample mean waist measurement was very close to both measurements. Surprisingly, although the ASTM MP16 and CSS M18 waist measurements were almost identical, participants expressed a greater level of satisfaction for the ASTM MP16 trouser than the CSS M18 trouser at the waist level. Even though both trousers were identical in terms of style and fabrication, participants were able to identify subtle differences in garment proportions based on the sum of the attributes. Participants' perception of fit was not only



based on the waist girth of the trousers; their perception of fit was based on the inter-relationship of the horizontal with vertical measurements as the waist girth, hip girth, waist-to-hip height and crotch length.

Further evidence of the perceived horizontal/vertical relationship can be seen in the findings of the hip girth. Participants expressed a higher level of satisfaction for the ASTM MP16 trouser around the hip than for the CSS M18 trouser. Not only was the sample mean hip measurement closer to the ASTM MP16 body measurement than the CSS M18, but 85% of the sample hip measurements were within 2.5 cm (1 in.) of the ASTM MP16 hip measurement. On the other hand, only 15% of the sample hip measurements were within 3 cm (1.2 in.) of the CSS M18 hip measurement. Furthermore, the waist-to-hip measurement of the ASTM MP16 is approximately 5 cm (2 in.) shorter than the CSS M18, a difference which can be visually detected in the patterns of the two trousers. The ASTM MP16 has the widest circumference of the hip at a higher location than the CSS M18, allowing the widest circumference of the trouser to rest at a higher location on the body. Understandably, bringing the hipline of the trouser to the hip level of the wearer would provide for better fit through the hip area. Collectively, the ASTM MP16 seems to have provided the corrections at the hip girth and the waist-to-hip length which are critical to good fit.

In addition to a better fit for the hip provided by the ASTM MP16, results of satisfaction with other critical fit areas seem to suggest better fit from the ASTM MP16. For example, Shim and Bickle (1993) found the crotch length in

pants an area where older petite women have expressed dissatisfaction. In this research, there was a marked difference in the levels of satisfaction between the ASTM MP16 trouser and the CSS M18 trouser for the crotch length. Nearly one and one-half times more participants were satisfied with the ASTM MP16 trouser than the CSS M18 trouser in the crotch length (see Table 6). It is also noteworthy that this difference in crotch length can be readily observed in the patterns of the two trousers.

#### Abdomen and Upper Leg

For both the ASTM and the CSS trousers, many participants responded similarly to the attributes at the abdominal and thigh areas. Neither of the trousers provided the same high levels of satisfaction as found in the waist, hip, seat and crotch length critical fit areas. Participants responded with moderately high levels of ambivalence. In fact, more participants indicated they were dissatisfied with the ASTM trouser over the CSS trouser at the abdomen and upper leg areas. Therefore, no definitive conclusions can be drawn at this point; however, these are specific areas of fit that demand further examination.

The large number of neutral responses observed for the CSS trouser compared to the ASTM trouser seemed to reveal that the participants responded to the sum of the attributes of the ASTM trouser more readily than to those of the CSS trouser. This may indicate that participants were more certain of their perceptions of the ASTM trouser compared to their perceptions of the

CSS trouser, further supporting the validity of the ASTM MP16 sizing standard. One notable exception was the participants' perception of the attributes of the CSS trouser at the hip area. All participants responded that they were either satisfied or dissatisfied. No neutral responses were recorded. This may be one critical area of fit where participants perceived and responded with certainty to the attributes of the CSS trouser.

#### Overall and Relative Satisfaction with the ASTM and the CSS Trousers

Although the means of the levels of satisfaction for each of the ASTM and CSS showed no statistical difference, relatively over one half of the participants indicated they were more satisfied with the ASTM trouser than the CSS trouser. This is consistent with the participants' higher levels of satisfaction at four of six critical fit areas of the waist girth, hip girth, across the seat, and crotch length providing further support for the efficacy of the ASTM MP16 as a guide for developing patterns which would accommodate the changing shape of mature women.

#### Theoretical Framework

According to Swan and Combs (1976), instrumental and expressive performance are two qualitative dimensions which consumers use to evaluate product performance; satisfaction with the product was associated with expressive performance and dissatisfaction was associated with instrumental

performance. Definitions for the instrumental performance outcomes and the expressive performance outcomes were operationalized and used in this research as follows: (a) instrumental performance outcomes "...refer to the means to a set of ends..." (Swan & Combs, 1976, p.26) which corresponds to the attributes or performance of the physical properties of an apparel product, and (b) expressive performance outcomes refer to the "psychological level of performance, that is the user's response to the item of clothing" (Swan & Combs, 1976, p.26).

#### Performance Outcomes

For both the ASTM and the CSS in total, there were more instrumental performance outcomes than expressive performance outcomes. Notably, for the ASTM trouser there were more than twice as many instrumental performance outcomes as expressive performance outcomes. Similarly, for the CSS trouser, there were more than twice as many instrumental performance outcomes than expressive performance outcomes. When the proportions of outcomes were compared between the two test trousers, there was almost one and one-half times as many instrumental performance outcomes and twice as many expressive performance outcomes for the ASTM trouser than for the CSS trouser. Therefore, the participants responded to the physical characteristics more readily than to the psychological aspects of the trousers.

### The Attribute of Comfort

Swan and Combs (1976) discovered that the attribute of comfort could be related to the physical (instrumental) or the psychological (expressive) dimensions of clothing items. In this research, the participants' responses to the attribute of comfort also revealed it could be an instrumental performance outcome or an expressive performance outcome depending upon the context in which it occurred.

#### Relationships between Satisfaction and Performance Outcomes

Statistically, the data did not support the theory by Swan and Combs (1976) that higher levels of satisfaction would be associated with higher frequencies of instrumental performance outcomes. However, on a practical level, the descriptive analysis suggested a trend whereby higher levels of satisfaction could be associated with higher frequencies of instrumental performance outcomes because higher frequencies of instrumental performance outcomes and higher levels of satisfaction associated with the ASTM trouser were observed by the researcher. These observations suggested a trend which might concur with the findings of Swan and Combs (1976). On the other hand, for the CSS trouser, the researcher observed a trend that higher levels of satisfaction may be associated with higher frequencies of expressive performance outcomes; this trend did not concur with the findings of Swan and Combs (1976).

For this research, it was further hypothesised that there would be no difference in satisfaction between the ASTM trouser and the CSS trouser. Although the data set was small and the results were not statistically significant, there are relationships worthy of discussion. The researcher observed that more participants were satisfied with the ASTM trouser than with the CSS trouser. If, indeed, the trousers developed from the ASTM D5586 MP16 standard for this research were more satisfactory for the participants, it demonstrates that the ASTM MP16 standard provides corrections and improvements which this group of participants found to be satisfactory at four of six critical fitting areas. As the ASTM D5586 sizing standard has remained largely untested as to the efficacy of its use to develop clothing for mature women, it is, therefore, a step toward realising better fitting clothing for the mature woman.

## CHAPTER SIX

### CONCLUSIONS, IMPLICATIONS AND SUMMARY

This chapter includes conclusions, implications for future research and a summary of the research.

#### Satisfaction with the Test Trousers

The numerical tables in the ASTM D5586 sizing standard is a two-dimensional representation of the figure of mature women. A wear test would identify if garments developed from the new standard would provide good fit and comfort for a three-dimensional human body. Therefore, the researcher developed trousers from the ASTM D5586 MP16 and the CSS M18 which were subjected to a wear test.

The results indicate that the ASTM D5586 sizing standard has corrected for some of the problems older women have experienced in finding well-fitting clothing, particularly in four of six fit areas examined in this research. When the two test trousers were compared, participants indicated higher levels of satisfaction with the ASTM trouser than the CSS trouser, specifically at the waist girth, hip girth, across the seat and through the crotch length. While the waist measurement was constant between the two test trousers, it is interesting to note that participants expressed higher levels of satisfaction for the ASTM trouser at the waist. The researcher concluded that while the participants were

unable to verbalize exactly what they were feeling, they were able to recognize differences in the fit between the two trousers generated from the way the parts of the garment work together to achieve overall fit. Moreover, the majority of participants indicated they were more satisfied with the ASTM trouser than with the CSS trouser. The ASTM sizing standard appears to have corrected fit areas found to be lacking such as those suggested by Shim and Bickle (1993) for the petite mature woman, providing further evidence for the validity of the ASTM MP16.

From these findings the researcher concluded that the ASTM D5586 (MP16) sizing standard provided corrections which participants were able to identify particularly at the waist girth, hip girth, the waist-to-hip length, across the seat and through the crotch length; all these are problem fitting areas which older women have identified. The vertical/horizontal relationship of the ASTM MP16 body measurements may have provided a trouser pattern which accommodated the shape of the mature woman's figure. The ASTM D5586 sizing standard, in particular the ASTM MP16, seems to have captured the body measurements of this sample of older women.

#### Theory of Consumer Satisfaction by Swan and Combs (1976)

While there was a greater proportion of instrumental performance outcomes than expressive performance outcomes for both the ASTM MP16 trouser and the CSS M18 trouser, the researcher concluded that the



participants responded more readily to the physical attributes of the trousers than the psychological qualities. The findings of this research did not fully support the theory of consumer satisfaction by Swan and Combs (1976) because the hypothesized relationships were not statistically significant. However, a descriptive analysis of the data suggested a trend whereby higher frequencies of instrumental performance outcomes could be associated with higher levels of satisfaction with the ASTM trouser; a trend which might concur with the findings of Swan and Combs (1976). A contrary trend was observed for the CSS M18 trouser, whereby higher frequencies of expressive performance outcomes could be associated with higher levels of satisfaction.

One possible confounding effect needs to be acknowledged. The trousers were not the same colour which could have affected the results. But as the sample was small, it would be difficult to assess the colour effect on the results.

#### Implications for Future Research

The results of this research have prompted several suggestions and recommendations for further research in assessing the efficacy of the ASTM D5586 sizing standard for developing clothing which could improve the fit of ready-to-wear for mature women. There are methodological and conceptual issues upon which the researcher will comment.

Methodologically, the neutral category in the Likert scale generated a dilemma in data analysis as 35% of the participants' responses for the ASTM trouser and 25% of the participants' responses for the CSS trouser were in the neutral category. In future research, a categorical response scale of "satisfied" and "not satisfied" could be considered.

Two benefits of the wear test diaries were revealed in the review of the information provided by participants. While the wear test diaries were a useful tool for participants to refer to during the post wear test interviews, they were also beneficial to the researcher as a reference for probing issues not mentioned by participants during the post wear test interviews. The information provided in the wear test diaries indicated that participants most often wore the test trousers during the first week of the two week wear test period. A shorter wear test period, such as one week, would be considered in future research, particularly in terms of logistics when a larger sample was used.

This research was limited by the size of the sample and the findings cannot be generalized to other populations. As the sample size was small and the results were not statistically significant, the research should be repeated with a larger sample from a larger geographic distribution. A minimum sample of 150 could provide increased statistical power. The resources required to conduct a relatively large scale wear test implies that to further test the efficacy of the ASTM D5586 sizing standard, collaboration of apparel manufacturers and educational institutions would be essential to garner the necessary resources.

There were several limitations imposed upon this research. The research focused on a single clothing item for the Misses Petite figure type, and used only the ASTM MP16 and CSS M18 set of body measurements for the development of the test trousers. Garments developed in all seven figure types described by Goldsberry et al. (1996a) need to be wear-tested so any idiosyncracies can be detected and refinements made. One further step in the evaluation of the ASTM D5586 sizing standard would be the inclusion of other clothing items such as blouses, jackets or skirts.

While garments in all figure types need to be assessed, evaluation of graded patterns to be used in the apparel industry also needs to be studied. While grading is the proportional increase or decrease of a pattern from a base size, it is not yet known how patterns graded from the ASTM D5586 would reflect the proportional increase or decrease compared to the variations for different sizes and figure types in the ASTM sizing standard. Students in apparel design programs could be encouraged to experiment with the ASTM D5586, particularly where computer-aided-design facilities are available.

Recommendations to the apparel industry are an important outcome of this research. Results of this research show that there are specific body areas which apparel manufacturers need to consider during the pattern engineering phase of the product development process, particularly when developing trousers for mature women. The waist, hip, seat, and crotch length of the ASTM MP16 seemed to be four areas where fit was satisfactory for the participants in

this research. Therefore, the ASTM sizing standard may be an important resource for product development teams to explore when producing clothing for mature women.

### Summary

The purpose of this research was to investigate the relationship between satisfaction and performance outcomes of test trousers developed from the ASTM D5586 MP16 and the CSS M18 sizing standards. Applying a theory of consumer satisfaction by Swan and Combs (1976), the researcher identified instrumental performance outcomes and expressive performance outcomes which were associated with levels of satisfaction with the ASTM trouser and the CSS trouser.

In the fall of 1997, the test trousers were wear-tested by a group of 21 women 55 years or older. Participants were interviewed at the conclusion of the wear test. The final sample consisted of 20 women between the ages of 56 to 89 years; participants' mean waist measurement was 83.2 cm (32.7 in.); participants' mean hip measurement was 103.2 cm (40.6 in.) and the mean height was 156.7 cm (61.7 in.). Overall, the body measurements of the participants were closer to the ASTM MP16 body measurements than the CSS M18. When the test trousers were compared, the participants indicated higher levels of satisfaction with the ASTM trouser at four of six fitting areas, the waist girth, hip girth, across the seat and the length through the crotch. Participants

indicated they were more satisfied with the ASTM trouser relative to the CSS trouser when asked with which trouser they were more satisfied.

Content analysis of the interview transcripts revealed significantly greater ratios of instrumental performance outcomes than expressive performance outcomes for both the ASTM trouser and the CSS trouser. Moreover, there were more instrumental performance outcomes for the ASTM trouser than for the CSS trouser.

As the sample size was small and the results of the hypotheses testing were not statistically significant, the findings of this research did not seem to be consistent with the findings of Swan and Combs (1976). A descriptive analysis suggested trends that higher frequencies of instrumental performance outcomes could be associated with higher levels of satisfaction for the ASTM trouser. However, the opposite trend for the CSS trouser, where higher levels of expressive performance outcomes could be associated with higher levels of satisfaction was observed.

The researcher gained valuable insights into the efficacy of the ASTM D5586 sizing standard for developing patterns for ready-to-wear for mature women, but further research with a larger sample could determine the validity of the findings of this research.

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APPENDIX A  
Pattern Development Method

## Pattern Development Method

The blocks for the test pants produced for this research were developed from the "pattern cutting" method described by Aldrich (1991) for women's wear. Important to development of the blocks is recognition that there are four basic pants types (foundations) according to Armstrong (1987) which can be differentiated by the hang of the fabric above the crotchline; the culotte, trouser, slack, and jean. Further, Armstrong (1987) indicated that a basic pant has two parts: (a) the foundation, the area from the waist to the crotch, and (b) the legline, the area below the crotch, the shape of which determines the style. Fundamental to the fit of a pant is the length of the crotch extension. "The length of this extension is determined by the foundation desired, a percentage of the hip measurement, and the upper thigh measurement" (Armstrong, 1987, p. 532).

For this research, the prototype garment is a trouser, a variation of the basic pant as defined by Armstrong (1995) which hangs straight from the abdomen and the buttocks. Older females have repeatedly expressed concerns about a well-fitting garment. A well-fitting pant "should hang...without wrinkles, sagging or pulling. Inseams and side seams should hang perpendicular to the floor and the pants should feel comfortable when walking, sitting, standing or bending." (Fabulous fitting pants, 1997, p. 63).

Characteristically, the lower body shape of the older woman has a thick waist, a protruding abdomen, and a flat seat (Goldsberry, 1995). Proportions

within the pattern should reflect these dimensional body changes. Ideally, the wearer of a pant with a protruding abdomen would require more fabric for the abdominal area in both length and width for the pant to hang from the waist and hip. The extra fabric would help to circumvent diagonal wrinkles, pulling at the side seams, and an upward curve of the hipline. In addition, adequate depth in the crotch area would prevent pull of fabric from the back (Liechty, Pottberg, & Rasband, 1993).

For fitting flat buttocks, the fabric would need to contour more neatly against the body. To achieve this fit, less length and width would be required through the upper back and buttocks area, and less depth in the crotch curve (see figure 1). According to Liechty et al. (1993), this would prevent excess bagginess, drooping, and a downward curve of the hipline in the pant seat area and back leg.

### The Draft

As the style was a trouser, the block used as the foundation for the test pant was the Basic Trouser Block (Aldrich, 1991). The body measurements provided in the ASTM D5586 and the CSS standards were easily accommodated in the Aldrich (1991) pattern development method. Few calculations were required and few additional measurements were needed which would require a human body or model form. In discussions with an experienced pattern maker and apparel design instructor, application of the

Aldrich method of pattern development has shown to be satisfactory for trouser development. The Basic Trouser Block has demonstrated satisfactory fit in terms of the circumference allowances at the waist and hip, and front and back crotch length for a large variety of body types. The depth of the crotch curve has not been excessive for body types with flat buttocks nor deficient for those with a more prominent abdomen (J. Bones, personal communications, Feb. 1996).

For development of the Basic Trouser Block the following measurements were necessary: waist girth, hip girth, waist-to-hip, body rise (crotch depth), waist to floor, and the desired leg width. As seen in Table 1, while the waist girth remains constant, there are differences in other critical body measurements. The girth measurements in the CSS M18, except the waist, are larger than those in the ASTM MP16 while several of the length measurements are shorter. For example, the hip girth reflects a 10 cm (3.9 in.) difference between the ASTM MP16 and the CSS M18, with the CSS being larger, while the waist height and leg length in the CSS M18 are shorter than the ASTM MP16. Important to note is the waist-to-hip measurement; the CSS M18 measurement is 23.4 cm (9.2 in.) while the ASTM MP16 measurement is 18.0 cm (7.1 in.), a difference of 5.4 cm (2.1 in.). These differences should be reflected in the pattern shapes and ultimately in the overall fit of the trouser.

Using pencil and paper method the front and back Basic Trouser Blocks were developed according to the instructions given by Aldrich (1991). The Basic

Trouser Block allowed for a wearing ease of 1 cm (.375 in.) at the waistline, while 5 cm (2 in.) of wearing ease was incorporated at the hipline (Aldrich, 1991). In the block, the waist shaping was provided by two darts in the front and four darts in the back. The leg shaping falls straight from the hipline.

The blocks developed by the Aldrich method were based on proportions of the waist and hip girth measurements. For example, the crotch extension of the trouser front is  $\frac{1}{16}$  of the hip girth measurement. Understandably, as the hip girth measurements stated in the two standards differ, therefore, the length of the crotch extension in each of the two pairs of trousers will also differ. But, as it is a proportion of the given body measurements, the trouser style of the pant will not be altered.

#### Final Pattern Development

The design features of the trouser, as described previously, consisted of two trouser pleats on each side of centre front, two side seam pockets, left side opening, and elastic back waistline. Once the basic blocks were developed and measurements of the block were compared to those of the standards, a final pattern was constructed in consultation with a professional patternmaker. With minor fine tuning of the shaping of the block, the following style changes were incorporated. The two 2 cm (.75 in.) fitting darts in the front were converted to 5 cm (2 in.) pleats; additional fullness was incorporated resulting in four pleats across the front. In the back, the fullness needed for the elasticized back



waistband was incorporated by releasing the four existing 2 cm (.75 in.) darts plus 2 cm (.75 in.) additional fullness. The length of the 5 cm (2 in.) wide elastic used in the back waistband would be approximately 5 cm (2 in.) shorter than the original waist measurement in order to gather the back waistline. Side seam pocket and waistband patterns were developed. The width of the lower pant leg was straightened and made narrower at the hemline by approximately 2 cm (.75 in.) to be more in keeping with the manufacturer's own trouser style.

The next step entailed the production of a muslin test copy of each of the two test pants to check for workability of the patterns and for fit. Two women, suitable to the criteria, volunteered to try on the muslin test copies so that factors of fit, comfort and appearance could be evaluated. The uptilt of the centre front waistline, a problem noted during the muslin fittings, was reshaped for a smoother seamline. Minor reshaping of the side seams was done to produce a smoother transition from the pant foundation to the leg. No other changes were felt to be necessary. The patterns were ready for final production.

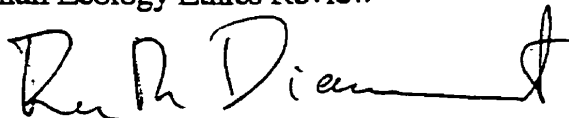
APPENDIX B

Letter of Approval—Human Ecology Ethics Review Committee

UNIVERSITY OF MANITOBA  
INTERDEPARTMENTAL CORRESPONDENCE

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TO: Dr. L. Horne, Department of Clothing and Textiles  
FROM: R. M. F. Diamant, Acting Chair, Human Ecology Ethics Review  
Committee  
DATE: 7 May 1996  
SUBJECT: Revisions to: Satisfaction with Pant Sizing for Women 55 Years or Older



All of the concerns outlined in the memo of 25 March 1996 from G. P. Sevenhuysen have been appropriately addressed. The Committee hereby provides you and L. Campbell approval for the research procedures.

*c.c. G. P. Sevenhuysen*

*Received  
May 8, 1996*

APPENDIX C

Letter of Introduction—Pilot Study



THE UNIVERSITY OF MANITOBA

FACULTY OF HUMAN ECOLOGY  
DEPARTMENT OF CLOTHING AND TEXTILES

303 Human Ecology Building  
Winnipeg, Manitoba  
Canada R3T 2N2

Phone: (204) 474-9292  
Fax: (204) 474-7592

Insert Date

Dear

Approximately two years ago, you participated in a research project conducted by the Centre on Aging, University of Manitoba. Over 950 people throughout Manitoba were involved. The project focused on people's health and their concerns about day-to-day living. One of the issues identified was the difficulties many older women had finding clothing that fit and was comfortable.

Several months ago you were asked to participate in a new study about mature women's satisfaction with trousers developed from different sizing systems. The research is being conducted by Lorna Campbell and supervised by Dr. L. Horne of the Department of Clothing and Textiles at the University of Manitoba. Due to delays in production the trousers have not been ready until now. We are writing to ask if you would still be interested in participating in the research project?

As you may remember the study involves a pilot wear test which is like a trial run to help to evaluate and to improve the methods we will be using for the study. Therefore, your participation will be very important to the success of the research project.

Your participation would involve a two week wear test followed by a 1 to 1½ hour interview. We have included an information package which will provide you with the details involved in your participation. Your participation is strictly voluntary. You may withdraw from the study at any time. We would like to assure you that all of the information that you

provide will be kept confidential and under no circumstances will your name be released to anyone. You have the right to refuse to answer any questions you may wish. Also your participation in this research will in no way affect any services that you might be receiving now or in the future.

We would like to thank you for your time and consideration of our request. Lorna will be calling you in a week to seek your response to our request. Please do not hesitate to call 474-9292 and leave a message for Lorna if you have any questions.

Sincerely,

Lorna Campbell, B.H.Ecol.  
Graduate Student  
Clothing and Textiles

Lena Horne, Ph.D  
Assistant Professor  
Clothing and Textiles

APPENDIX D

Advertisement Notice



THE UNIVERSITY OF MANITOBA

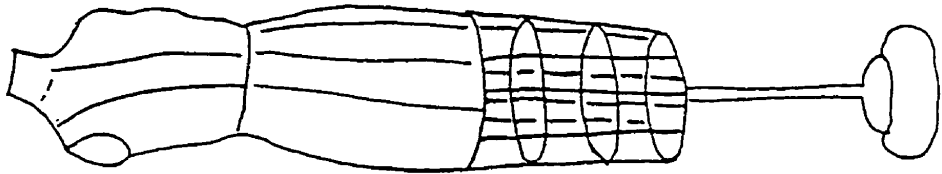


### **CLOTHING DEVELOPMENT FOR THE MATURE WOMAN**

Researchers from the University of Manitoba's Centre On Aging are seeking volunteers to participate in a wear-test for trousers developed for the mature woman's shape. Women who have the following characteristics are invited to participate in the study.

- \* are 55 years of age or older
- \* have a waist measurement of 29 to 34 inches.
- \* have a hip measurement of 37 to 40 inches.
- \* are between 5 feet to 5 feet 4 inches in height.
- \* are in good health.

If you are interested and would like more information please call **474-9914**





APPENDIX E

Telephone Script for Recruitment of Participants

## TELEPHONE SCREENING FORM

### COMMENTS

call rec'd: date \_\_\_\_\_ time \_\_\_\_\_ |  
 1<sup>st</sup> call back: date \_\_\_\_\_ time \_\_\_\_\_ |  
 2<sup>nd</sup> call back: date \_\_\_\_\_ time \_\_\_\_\_ |  
 3<sup>rd</sup> call back: date \_\_\_\_\_ time \_\_\_\_\_ |

NAME: \_\_\_\_\_ |

PHONE: \_\_\_\_\_ |

ADDRESS: \_\_\_\_\_ |

Hello, my name is Lorna Campbell. I'm calling from the University of Manitoba. You had called to respond to our ad about the project on Clothing for Mature Women.

Is now a good time to call or would you prefer I call another time?

As we indicated in the ad we are seeking women who have specific characteristics.

Would you be willing to answer some questions so that we can see if you would be eligible to participate in the study? no\_\_\_\_ yes\_\_\_\_

If **no**: Thank you for your time today. Goodbye.

If **yes**: Thank you, the first question I have is

Are you between 5 ft and 5 ft 4 inches tall? no yes

Are you 55 years or older? no yes

Could you tell me approximately your waist measurement?

29in - 31in. (project)                      32in - 34in. (thesis)

← -31.5+ →

Could you tell me approximately your hip measurement?

36in - 38in. (project)                      38in - 41in. (thesis)

Thank you for answering these questions. You would (not) be eligible to participate in the study.

**If yes:** If you are still interested, I would like to send you an information package in the mail. **(get mailing address at this time)** I will call you back to set up an appointment to come to your home to measure you and begin the wear test. Do you have any questions at this time? Thank-you for your time today and we will be in touch soon.

**If not:** We would like to thank-you for your interest in the project and for taking the time to talk with me today.

**letter & info package sent** \_\_\_\_\_

**DATE OF MEETING** \_\_\_\_\_

APPENDIX F

Letter of Introduction and Information Package—Main study

THE UNIVERSITY OF MANITOBA

FACULTY OF HUMAN ECOLOGY

303 Human Ecology Building  
Winnipeg, Manitoba  
Canada R3T 2N2

DEPARTMENT OF CLOTHING AND TEXTILES

Phone: (204) 474-9292

Fax: (204) 474-7592

Date

Dear

My name is Lorna Campbell. I am a graduate student in the Department of Clothing and Textiles at the University of Manitoba. For my Master's thesis I am investigating older women's satisfaction with pants developed from two different sizing systems. I am seeking women over 55 years of age who would be willing to participate in a wear test. Your participation will be very important to the success of my thesis.

I am looking for women who have these characteristics:

(a) are in good health; (b) are over 55 years of age; (c) have a waist measurement between 32 and 34 inches; d) have a hip measurement of between 38 and 41 inches and (e) are between 5 feet and 5 feet 4 inches in height. If you have these characteristics, I would like to meet with you in your home. During the first visit I will take measurements of your height, waist and hips to determine your eligibility to participate. I expect this meeting to take about an hour. There is a possibility that you may not fit the criteria to participate in the wear test.

If you satisfy the criteria and agree to participate, you would take part in a wear test for a period of two weeks. You would be given two pairs of pants and asked to wear each pair at least twice during the wear test period. You will receive a diary in which you will keep a record of your experiences when you wear the pants.

At the end of the wear test I would like to interview you in your home and discuss your experiences with the two pair of pants. The interview should

take about an hour and a half. You do not have to answer any questions you do not feel comfortable in answering. You can withdraw from the research at any time.

With your permission, the interview would be tape-recorded. This will allow me to listen and respond to your answers. Your identity will not be revealed under any circumstances. The tape-recordings will be destroyed at the completion of the project.

I would like to take photographs of you wearing each pair of trousers. I would be taking photographs of the front, side and back views for each pair. Your identity would not be revealed by the photographs as your face will not be photographed. As the photographs will only be identified by a numerical code neither your identity nor your name will be revealed. If you do not want photographs taken this will not affect your participation in the wear test.

I would like to thank you for your time and consideration. I will be calling you in a week to seek your response to my request. Please do not hesitate to call me at 474-9292 or my advisor, Dr. Lena Horne, at 474-9914 if you have any questions.

Sincerely,

Lorna Campbell, B.H.Ecol.  
Graduate Student  
Clothing and Textiles

Lena Horne, Ph.D  
Assistant Professor  
Clothing and Textiles

//enclosure

# SATISFACTION WITH A PANT DEVELOPED FROM THE CANADA STANDARD SIZING AND ASTM D5586 FOR WOMEN 55 YEARS OR OLDER

## INFORMATION PACKAGE

We are seeking women 55 years or older, who have the following characteristics, to participate in a wear test:

- (a) are 55 years of age or over;
- (b) has a waist measurement between 32 to 34 inches;
- (c) has a hip measurement between 38 to 41 inches;
- (d) and is between 5 feet to 5 feet 4 inches in height.

If you have these characteristics, we would like to meet with you in your home. During the first visit Lorna will take measurements of your height, waist and hips to determine your eligibility to participate. This meeting will take about an hour. There is a possibility that you may not fit the criteria to participate in the wear test.

If you satisfy the criteria and agree to participate, you will take part in a wear test for a period of two weeks. You would be given two pairs of pants and asked to wear each pair at least twice during the wear test period. You will receive a diary in which you will keep a record of your experiences when you wear the pants.

You can withdraw from the wear test at any time. At the end of the wear test we would like to interview you in your home and discuss your experiences with

the two pair of pants. The interview should take about an hour. You do not have to answer any questions you do not feel comfortable in answering.

With your permission, the interview would be tape-recorded. This will allow Lorna to listen and respond to your answers. Your identity will not be revealed under any circumstances. The tape-recordings will be destroyed at the completion of the research.

Also, with your permission, I would like to take photographs of you wearing each pair of trousers. Photographs of the front, side and back views for each pair will be taken; your face will not be photographed; your identity or name will not be revealed as your photographs will only be identified by a numerical code. If you do not want photographs taken this will not affect your participation in the wear test.

If you have any questions, please feel free to contact us at 474-9292 and leave a message for Lorna.



APPENDIX G  
Consent Form

## CONSENT FORM

Satisfaction with a pant developed from the Canada Standard Sizing and ASTM D5586  
for Women 55 years or older.

Thank you for agreeing to meet with me. My name is Lorna Campbell and I am a graduate student with the Department of Clothing and Textiles at the University of Manitoba. My master's thesis is on clothing for older women.

As was discussed in the letter sent to you informing you of my research, two (2) test pants will be given to you to be worn at least twice during the two-week wear test. The pants have been made of a polyester and rayon blend and are washable.

I will be supplying you with a diary in which you will record your experiences with the test pants. After the wear test I would like to interview you in your home to discuss your experiences with the wear test pants. During the interview I will take photographs of you wearing each pair of trousers. Photographs will be taken from the front, side and back; your face will not be photographed; your identity will not be revealed as your photographs will only be identified by a numerical code.

Your participation is strictly voluntary; you can withdraw at any time; and you do not have to answer any questions with which you do not feel comfortable. Your name will not be used in any reports of this research. My advisor, my assistants and I will be the only persons who have access to the information you give. Your responses will be pooled with those of other participants when I report the results of this research in technical and non-technical papers. Photographs taken may be shown during presentations of the results or be included in publications.

I agree to participate in the above mentioned study. I have read the information letter sent to me \_\_\_\_\_day \_\_\_\_\_month 1997/8 and I have been informed of the terms and conditions.

\_\_\_\_\_  
Participant Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Lorna Campbell, B.H.Ecol.

\_\_\_\_\_  
Lena Horne, Ph.D

APPENDIX H  
Wear Test Diary—Sample Day



FACULTY OF HUMAN ECOLOGY  
THE UNIVERSITY OF MANITOBA  
Research for Master's Thesis by Lorna Campbell

DIARY FOR:

Satisfaction with a trouser developed from the Canada Standard Sizing  
and the ASTM D5586 for women aged 55 or over.

PARTICIPANT # \_\_\_\_\_  
START DATE: \_\_\_\_\_ 1997

Thank-you for agreeing to participate in my research project. The following pages contain a diary for recording your experiences during the two week wear test. The pages have been coded to match the labels in the trousers. For example, the pages designated for PANT A correspond to with the labels in PANT A; for PANT B the pages and labels are coded in the same way.

SAMPLE DAY

---

DATE:

---

HOW LONG WORN:

---

OCCASION/ACTIVITY:

---

LAUNDRY:

---

COMMENTS:

THANK-YOU FOR TAKING THE TIME TO FILL OUT THIS DIARY.  
YOUR PARTICIPATION HAS BEEN INVALUABLE IN COMPLETING MY  
RESEARCH PROJECT.

MANY THANKS,

LORNA CAMPBELL, B.H.Ecol.  
GRADUATE STUDENT  
DEPARTMENT OF CLOTHING & TEXTILES  
THE UNIVERSITY OF MANITOBA

Please fill in the section **HOW LONG WORN** with the information about when you wore each trouser, how long you wore them for, and the **OCCASION/ACTIVITY** you wore the trouser for. In the section called **LAUNDRY**, please note if you washed or drycleaned the trouser during the wear test period. In the **COMMENTS** section please feel free to record your reactions and any remarks you have about the trouser.

If you have any questions, do not hesitate to contact me at one of the following phone numbers: 474-9292 or 474-8137 (message).

APPENDIX I

Eligibility Measurement Data Form



**FIRST VISIT ELIGIBILITY FORM & CHECK LISTS**

PARTICIPANT # \_\_\_\_\_

DATE VISITED \_\_\_\_\_

**MEASUREMENTS**

HEIGHT \_\_\_\_\_ (ft &amp; in) \_\_\_\_\_ cms

WAIST \_\_\_\_\_ (inches) \_\_\_\_\_ cms

HIP \_\_\_\_\_ (inches) \_\_\_\_\_ cms

---

**COMMENTS/OTHER**

---

**FIRST VISIT CHECKLIST**

---

TAPE MEASURE

ELASTIC

PENCIL/PEN

FORMS

DIARY

LETTER AND INFO PACKAGE

CONSENT FORM

PANTS(2)

---

**SECOND VISIT CHECKLIST**

---

TAPE RECORDER &amp; TAPES

**INTERVIEW**

FORMS

INTERVIEW SCHEDULE

SHOW CARD

SUMMARY yes \ no

**POST-WEAR TEST**

DATE:

APPENDIX J  
Interview Schedule

PARTICIPANT # \_\_\_\_\_

## INTERVIEW SCHEDULE

## PART ONE

Instructions: During the interview, I would like to ask if you would try on each of the two pairs of pants? Then in the next few minutes I would like to ask you to think about your experiences with **EACH OF THE TWO PAIRS** of pants you wore during the two-week wear test. I would then like to ask you some questions about your experiences.

Remember, you do not have to answer any questions with which you do not feel comfortable. I will be taping our interview so I can listen to your answers. Do you mind if I tape our interview?

**(TURN ON TAPE) if ok**

I will be happy to answer any questions you may have about the research project at the end of the interview.

Before we begin, I would like to ask if you would try on Pant A one more time.

**FOR SOME OF THE NEXT QUESTIONS I WILL BE ASKING YOU TO SELECT YOUR ANSWER USING THIS SCALE. I WILL ALWAYS LET YOU KNOW WHEN WE WILL NEED TO USE THE SCALE (SHOW SCALE)**

THE FIRST QUESTION I WOULD LIKE TO ASK YOU IS ...

- 1) How satisfied were you with PANT A? **(SHOW SCALE)**
  - 1) very dissatisfied
  - 2) dissatisfied
  - 3) neither satisfied or dissatisfied
  - 4) satisfied
  - 5) very satisfied
  
- 2) You said that you were satisfied/dissatisfied with PANT A, what was it about PANT A that you found satisfactory/dissatisfactory?
  
- 3) Can you recall any particular event that made you respond favourably or unfavourably to PANT A?

- 4) Now, I would like you to think about some of the features of PANT A. Using this scale, (**SHOW SCALE**) can you tell me how satisfied you were with each of the following areas in Pant A. Please select your answer from the scale.

- 1) you were very dissatisfied
- 2) you were dissatisfied
- 3) you were neither satisfied or dissatisfied
- 4) you were satisfied
- 5) you were very satisfied

- A) around the waist  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- B) around the hips  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- C) across the tummy  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- D) across the seat  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- E) the length through the crotch  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- F) the width through the upper pant leg  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_
- G) the width around the lower pant leg  
1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

Are there any other comments you would like to make about PANT A?

Before we continue to PANT B this would be a good time to take the photographs of you wearing this pant.

**NOW LET'S TURN OUR ATTENTION TO PANT B.**  
Now would be a good time to try on PANT B.

- 5) How satisfied were you with PANT B?  
 \_\_\_ 1) very dissatisfied  
 \_\_\_ 2) dissatisfied  
 \_\_\_ 3) neither satisfied or dissatisfied  
 \_\_\_ 4) satisfied  
 \_\_\_ 5) very satisfied
- 6) You said that you were satisfied/dissatisfied with PANT B, what was it about PANT B that you found satisfactory/dissatisfactory?

7) Can you recall any particular event that made you respond favourably or unfavourably to PANT B?

8) Now, I would like you to think about some of the features of PANT B. For this question we will again use this scale (**SHOW SCALE**). Can you tell me how satisfied you were with each of the following areas in Pant B. Please select your answer from the scale.

- 1) you were very dissatisfied
- 2) you were dissatisfied
- 3) you were neither satisfied or dissatisfied
- 4) you were satisfied
- 5) you were very satisfied

A) around the waist

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

B) around the hips

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

C) across the tummy

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

D) across the seat

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

E) the length through the crotch

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

F) the width through the upper pant leg

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

G) the width around the lower pant leg

1)\_\_\_ 2)\_\_\_ 3)\_\_\_ 4)\_\_\_ 5)\_\_\_

Before we continue to PANT B this would be a good time to take the photographs of you wearing this pant.

9) Which of the two pairs of pants would you say you were more satisfied with.

\_\_\_\_\_PANT A      \_\_\_\_\_PANT B

10) Are there any other comments you would like to make about either of the two pairs of pants you wore?

## PART TWO

Please circle only ONE answer for each of the following questions unless otherwise indicated.

1. In what year were you born? \_\_\_\_\_
2. What is your marital status?
  - 1 Single (never married)
  - 2 Married
  - 3 Divorced/Separated
  - 4 Widowed
  - 5 Other
3. What is the highest level of education you have completed?
  - 1 Elementary school
  - 2 Secondary school
  - 3 Post-secondary school
4. Are you employed at the present time?
  - 1 Yes, full time (**go to #5**)
  - 2 Yes part time (**go to #5**)
  - 3 NO, I am Retired. (**go to #6**)
  - 4 Other. (specify) \_\_\_\_\_
5. (If currently working) What is your occupation?  
\_\_\_\_\_
6. (If not currently working) What type of work did you do?  
\_\_\_\_\_

**That completes the questions I have for you today.** I would like to thank-you very much for volunteering your time and assistance in helping me with my master's thesis.

Do you have any questions?

**(Ask if they would like to keep the trouser)**

**1) VERY DISSATISFIED**

**2) DISSATISFIED**

**3) NEITHER SATISFIED OR DISSATISFIED**

**4) SATISFIED**

**5) VERY SATISFIED**

SHOW CARD

APPENDIX K

Coded Attributes: Instrumental and Expressive Performance Outcomes



Attributes Coded as Instrumental and Expressive Performance Outcomes

Instrumental Outcomes		Expressive Outcomes	
ASTM	CSS	ASTM	CSS
fastening	fastening	colour	colour
button size	easy on/off	colour	colour
fit well at	button size	others comments	design
fabric	bigger size	wear with it	appearance
fitting at	fabric	compliments	extra fullness
comfort	looseness	handsome	colour
wearable	comfort	tasteful	colour
fitted well	extra fullness	style	felt bigger
crotch length	fabric body	looked ok	look bigger
fabric weight	quality fabric	feel right	feels better
fabric breathable	fit	flattering on	colour
fabric texture	felt loose	looked good	comments
pulling in back	bunching in front	looked ok	colour
comfort	pulling at thigh	style	(13)
deep pockets	comfort	looked well	
feel tight at	creased	silhouette	
fabric	fit at	falls nicely	
fabric	binding at	felt good on	
comfort	fabric	felt good on	
sponged well	well made	looks nice on	
comfort	too binding at	beautifully made	
waist rolled	too wide at	look fresh	
elastic width	too long at crotch	style	
pulling at thigh	fit well at	feels good on	
too long at	comfort	(24)	
fit well at	fit well at		
fabric	waist width		
deep pockets	fit at		
pulling at thigh	too much drape		
fabric give	bigger size		
comfort	bulkier		
hang straight	hang straight		
fit	fit		
fit better	comfort		
bunched up at	fit at		
comfort	fabric texture		
fit	broader		
comfort	longer		
fit well at	too wide at		
comfort	too long at crotch		
fit at	comfort		
drape well	(40)		
too long at			
too wide at			
fabric cool			
wrinkle free			
pocket gapes			

Attributes Coded as Instrumental and Expressive Performance Outcomes  
(continued)

Instrumental Outcomes		Expressive Outcomes	
ASTM	CSS	ASTM	CSS
			too long
in crotch			
comfort			
wrinkles			
light weight fabric			
fabric texture			
wrinkle-free			
comfort			
fabric			
comfort			
(57)			