



The Influence of Visual and Tactile Inputs on Denim Jeans Evaluation

Osmud Rahman

School of Fashion, Ryerson University, Toronto, Canada

This study investigated how visual and tactile inputs might influence consumers' evaluative processes when they shop for a pair of denim jeans. Qualitative method was adopted to examine both sensory and cognitive responses towards sample denim jeans in respect of product-specific cues such as colour and fabric. The participants were 42 Canadian females aged from 18 to 27 years old. According to the results of this study, dark coloured jeans are often associated with higher prices. Additionally, many participants used fabric hand (the feeling of fabric between fingers) to evaluate the thermo-physiological/sensorial comfort qualities and durability of the jeans, as well as fabric stretch to assess shape retention, physical mobility and psychological comfort (self-/body-image). These findings suggest that consumers do not merely use specific product cues to judge a product's inherent functional/concrete qualities such as weight, thermal properties, but also link various cues to higher or abstract values such as social, psychological and sensorial benefits/pleasure. Clearly, affective and cognitive processing occurred and coexisted throughout the evaluative process.

Keywords – Canada, Haptic, Tactile Input, Visual Input, Product Cues, Denim Jeans.

Relevance to Design Practice – According to the present study, it is evident that both visual and tactile pleasures play a significant role in product impression, evaluation and acceptance. The study's findings should provide valuable information and implications to fashion practitioners for future product design and development.

Citation: Rahman, O. (2012). The influence of visual and tactile inputs on denim jeans evaluation. *International Journal of Design*, 6(1), 11-25.

Introduction

Many prior studies show that generally consumers have expectations of a product they want to purchase (Jensen, 2001; Santos & Boote, 2003). However, buying motives can be diverse and complicated. Modern consumers do not purchase clothing solely to fulfill physical needs; they also seek additional benefits such as sensory pleasure, symbolic meaning, psychological and experiential values (Rahman, Yan, & Liu, 2010; Rahman, Liu, Lam, & Chan, 2011). According to Fiore and Kimle (2010), products' aesthetics may stimulate positive and pleasant sensory response, arouse emotional feelings/expression and create symbolic meaning. For example, a dress display in a department store window may not only draw a pedestrian's attention, but could also arouse various aesthetic responses. However, if the viewer dislikes the appearance of a dress, she may not wish to examine the product further, such as by feeling the fabric or trying the garment on. In other words, first impressions may evoke consumer's positive (interest, pleasure) or negative (disappointment, revulsion) response.

To understand how consumers may think (cognition), feel (emotion) and act (behaviour) toward any specific physical aspect of a product, this study focuses on intrinsic cues (e.g., style and colour) rather than extrinsic cues (e.g., price and brand name). These aspects seem to be particularly important to young consumers when assessing apparel products, especially when determining their ultimate choice (De Long, LaBat, Nelson, Koh, & Kim, 2002; Rahman, Zhu, & Liu, 2008; Rahman, Yan, & Liu 2009; Swinker & Hines, 2006). However, several prior research

studies have been unable to reveal the motives underlying consumer preferences and choices. For example, Rahman et al. (2008, 2009) employed the Likert-scale instrument to measure and identify the significance of product cues in two apparel studies (pyjamas and sleepwear), but the reasons underlying their respondents' preferences were not fully illuminated, or explained.

Additionally, there are few research studies examining the sensory aspects of clothing (i.e., visual and tactile), particularly compared to other categories of design. As De Klerk and Lubbe (2008) state in their apparel research study, "No specific research, directed to the role of aesthetics in assessing quality of apparel during this process [decision-making], could be traced" (p. 37). This is not the case in respect of industrial design and other consumer products, where there is a considerable literature examining the sensory modalities of products. These have encompassed touch perception regarding a material's physical properties (cardboard, flexible materials and laminate boards) (Chen et al., 2009); sensory modalities (e.g., electronics, electric appliances, furniture, sports equipment) (Fenko et al., 2009);

Received Jan. 18, 2011; **Accepted** Jan. 21, 2012; **Published** Apr. 30, 2012.

Copyright: © 2012 Rahman. Copyright for this article is retained by the authors, with first publication rights granted to the *International Journal of Design*. All journal content, except where otherwise noted, is licensed under a *Creative Commons Attribution-NonCommercial-NoDerivs 2.5 License*. By virtue of their appearance in this open-access journal, articles are free to use, with proper attribution, in educational and other non-commercial settings.

***Corresponding Author:** orahman@ryerson.ca

aesthetic package design (Reimann, Zaichkowsky, Neuhaus, Bender, & Weber, 2010); aesthetic responses to new product design (e.g., refrigerator, telephone, lamp, clock) (Veryzer & Hutchinson, 1998) and aesthetic interaction of intelligent lamps (Ross & Wensveen, 2010).

Significance of Sensory Stimulation

Consumers often use sensory stimulation to infer product quality and value. Kahn and Deng (2010) argue, "Consumers often shop with 'their eyes' and ignore package label information" (p. 260). Other researchers (e.g., Schifferstein & Cleiren, 2005) have also asserted that, "Vision and touch provide the most detailed information about a product. ... Therefore, vision and touch are likely to dominate product perception and experience in real-life situations" (p. 312). In the evaluation of clothing, it is evident that sight and touch often play a significant role in consumer's sensory perception (De Klerk & Lubbe, 2008).

Sensory elements have been recognized as salient evaluative determinant for many young consumers, a demographic that often looks for novelty and sensory gratification to satisfy their aspirations (Park, Jaworski, & MacInnis, 1986). Indeed, they often use clothing as signifier or visual communicator to construct identity and to express or extend their individual self (Belk, 1988; Eicher, 1995; Workman & Caldwell, 2007). As such, it is important to gain a better understanding of how visual and tactile inputs may influence young adult consumers in the evaluation of apparel products.

Visual Input – Appearance and Aesthetic Responses

Aesthetic response can be defined as an experience (i.e., visual, emotional) that occurs in reaction to a specific stimulus (Berlyne, 1974; Veryzer, 1993). This sensory stimulation can encourage viewers to imagine how a product looks or feels when in use. Visual attributes such as colour, style and shape can arouse consumer emotion, communicate values and convey meaning to both users and viewers. If consumers perceive positive aesthetic experience from a product, they are more likely to further examine and potentially purchase that product (Eckman, Damhorst, & Kadolph, 1990; Morganosky, 1984).

According to several prior studies (Dumaine, 1991; Kwang, Holland, Shackleton, Hwang, & Melewar, 2008; Schmitt

Osmud Rahman's research interests lie in the areas of fashion consumption, design and culture. Over the last few years, he has undertaken and published on a number of research projects including: consumers' aspirations and perceptions of denim jeans, young consumers' shopping attitudes toward pyjamas; tripartite relationships between designer, consumer and product; and fashion design in the digital age. His works have appeared in various journals such as *The Design Journal*, *Journal of Fashion Marketing and Management* and *International Journal of Fashion Design, Technology and Education*. Apart from the study of fashion design and consumption, he is also interested in fashion subculture. His recent research on Lolita and Cosplay has led him to publish "Lolita – Imaginative Self and Elusive Consumption" and "Cosplay – Imaginative Self and Performing Identity" in *Fashion Theory*. Currently, he is working on several cross-cultural collaborative projects on consumer perceptions and attitudes toward high-involvement and low-involvement apparel products.

& Simonson, 1997), consumers are increasingly using aesthetic appeal and visual distinctiveness to differentiate between products and to influence their purchasing decisions. Vision is the most important sensory system that individuals use to identify, recognize, categorize and evaluate a product (Schifferstein, 2006; Schifferstein & Cleiren, 2005). It is the only sensory modality that can convey colour information (Schifferstein, 2006). A quick glance and broad overview of an object may provide useful information and lead to further investigation and processing (Klatzky et al., 1993). In many cases, visual input seems to be sufficient for consumers to encode and evaluate a product's properties, especially familiar products and fashion staples; consumer's affective responses may occur immediately without the retrieval of previous information (Fitzsimons et al., 2002; Frijda, 2006). In other words, visual cues can provide quick information, unlike many non-visual cues such as product performance, which must be learned from experience and other information sources. For example, when buying a pair of socks, consumers may solely base their buying decisions on style (e.g., mid-calf or ankle length) or colour (e.g., grey or white) rather than on an enormous amount of information, or a systematic process of rational reasoning. This analogy is similar to Apeageyi's (2008) study conducted in the United Kingdom where about 56% of the young female respondents stated that they were capable of judging how well a garment would fit just by looking at it.

Tactile Input – Tactile Stimulation and Haptic Responses

The sense of touch is often called the proximal (near) sense in contrast to vision, smell and hearing, which can operate at a distance and through the air. Steven and Green (1996, p. 1) define touch as sensations aroused through the stimulation of receptors in the skin. Touch can be subdivided into two senses, cutaneous and kinesthetic (Klatzky, 2010). The cutaneous system refers to stimulation of the skin. The kinesthetic system refers to signaling from muscles, tendons and joints. In general, the sense of touch can only perceive one input at a time, whereas some other senses such as vision can simultaneously perceive a wide array of information (Peck, 2010).

In relation to apparel purchases, a products' tactile feeling often acts in concert with the aesthetic response to influence consumer decisions. According to Peck and Childers (2003), touching a product can increase consumers' confidence on product evaluation and the tactile input is often used to judge a product's substance (i.e., stiffness, roughness, softness and smoothness) rather than its macro-spatial aspects (i.e., shape and size, unless the visual judgment is unavailable) (Klatzky, Lederman, & Reed, 1987; Lederman, Thorne, & Jones, 1986). According to a study conducted by Holbrook (1983), tactile cues were more influential than visual cues in consumers' evaluations and perceptions of sweaters. However, the salient effect of tactile cues can vary from one product type to another (McCabe & Nowlis,

2003). For instance, consumers rely more often on tactile inputs when evaluating a jacket with diverse material properties (e.g., temperature, weight and texture) than when assessing a rewritable compact disk with limited textual properties. Therefore, sense of touch is often considered as important criterion for the evaluation of products that varied in their textual properties (Grohmann, Spangenberg, & Sprott, 2007). Given this perspective, it is reasonable to suggest that conscious or unconscious tactile feelings play a prominent role in consumers' perceptions of clothing.

In addition, it is interesting to note that many studies (Citrin, Stem, Spangenberg, & Clark, 2003; Lester, Forman, & Loyd, 2005) on Internet-based retailing demonstrate that the main shortcoming of Internet buying is the inability of the consumer to touch the products, making a holistic evaluation impossible to accomplish through this method of shopping. Consumers may feel frustrated or disappointed if they do not have the opportunity to touch and examine the products (Citrin, Stem, Spangenberg, & Clark, 2003; Peck & Childers, 2003); this is particularly true for those consumers where the need for touch (NFT) is higher.

Research Questions and Objectives

The research findings on how a product's physical characteristics may affect consumer evaluations remain inconclusive. In regards to clothing, research studies using actual stimuli for the examination of sensory responses are relatively rare (Compeau,

Grewal, & Monroe, 1998). Morganosky's (1984) study employed actual apparel items, including sweaters, shoes, aprons, gloves and hats, but her focus was primarily on the consumers' willingness to spend rather than on the tactile inputs. Table 1 shows that many prior apparel researchers have employed quantitative method with various ranking/rating scale instruments and illustration/line drawing in their investigations. However, there are few apparel studies employing a qualitative approach (in-depth interview) and actual stimulus when researching visual and tactile evaluations. McCracken (1988) states in *The long interview: Qualitative research methods* that, "The long interview is one of the most powerful methods in the qualitative armory. ... The method can take us into the mental world of the individual, to glimpse the categories and logic by which he or she sees the world" (p. 9).

According to several prior studies (DeLong 1987; Eckman, 1997; Morganosky, 1984), actual stimulus could play an important role in data collection because its visual and tactual properties would be presented more effectively in a Gestalt-like manner. Through the observation and interaction of actual apparel products, participants are able to visualize and experience how aesthetic and design features might contribute to the whole object and interact with one another. To fill this void and offer a more realistic examination, the study reported in the article adopted a qualitative method and employed actual products to examine both cognitive and sensory responses to those intrinsic product cues that may deeply influence consumer judgment and purchasing decisions.

Table 1. Prior apparel studies of product attributes and aesthetic.

Author(s)	Year	Product	Sample	Research Method	Instrument	Stimuli
Morganosky	1984	Sweater, shoes, aprons, gloves & hats	Consumers (n=102)	Qualitative: Survey	Interview questions	Actual clothing items
Holbrook	1986	Men's clothing	MBA students: 42 males and 22 females (n=64)	Experiment	Adjective-pair scale	Black-and-white drawings
Francis and Evans	1987	Women's blouses	Female students (n=301)	Experiment	Semantic differential (adjective scale)	Colour photographs
Francis and Evans	1988	Women's blouses	138 recruiters: 71% males and 28% females	Experiment	Likert scale (adjective scale)	Colour photographs
Thurston et al.	1990	Suits or dresses	117 businessmen & 90 businesswomen (n=207)	Experiment	Likert scale (unipolar adjectives)	Black-and-white photographs
DeLong et al.	1993	Jacket	Undergraduate female students (n=172)	Survey	Likert scale	Black-and-white line drawings
Fiore	1993	Fabric and fragrances	Female students (n=89)	Experiment	Likert scale	Fabric swatches and scent stripes
Feather et al.	1996	Basketball team uniforms	503 female basketball players	Survey	Likert scale and rating scale	Black-and-white line drawings
Eckman	1997	Men's clothing	91 females & 77 males (n=168)	Survey	Likert scale	Colour line drawings
Yoo	2003	Women's business jacket	265 working females	Survey	Likert scale	Black-and-white CAD drawings
Wang et al.	2006	Women's overcoat	36 males and 34 females (n=70)	Survey	Semantic differential scale	Photographs (PowerPoint slide)
Rahman et al.	2010	Women's denim jeans	Female students: Chinese (n=247)	Survey	Likert scale	Black-and-white photographs
Canadian (n=380)						

To gain a better understanding of what constitutes consumers' choice when they shop for a pair of denim jeans, the following research questions were raised to guide and direct this study.

- What kind of intrinsic product cues are frequently used for visual and tactile judgments?
- How do visual and tactile stimulations foster and influence consumer perceptions towards the price and quality of denim jeans?
- Do the senses of vision and touch generate similar or different information about denim jeans?

To summarize, the objectives of the present research are three-fold: (1) to identify the salient impact of visual and tactile inputs when evaluating the price and quality of denim jeans, (2) to understand the relationships between sensory (visual and tactile) responses and physical characteristics of denim jeans and (3) to offer practical insights and implications to the clothing industry in general and denim jeans practitioners in particular.

Research Method

Subject

The selection criteria for participants were education, gender and age. According to Campbell et al. (1976), young college consumers generally rely on their sensory and emotional responses when evaluating a product and women are more involved in fashion

than men (Auty & Elliott, 1998). Researchers such as Citrin et al. (2003) found that women exhibited a higher need for tactile input than men. As such, the study recruited female students, 18 years or older, from different universities and colleges in Ontario, Canada.

Respondents were informed that participation was voluntary and they were assured their anonymity would be preserved. To increase the participation rate and to show appreciation to each participant, a five-dollar gift certificate was offered. Interviews were recorded on audiotape with the informants' permission. The sample assessment and in-depth interview with each individual ranged from 45 minutes to one and a half hours in length. According to Grunert and Bech-Larsen (2005), a sample size between 20 and 100 is acceptable; the sample size of this study was 42, deemed to be sufficient for a qualitative study such as this. Interviews were conducted until a point of saturation was reached (McCracken, 1988).

Research Design

The scope of this type of consumer research is vast, ranging from broad-view exploration to in-depth analysis, with the majority of prior apparel studies based on quantitative research. In some cases, the underlying motivations for consumer shopping behaviour may not be fully understood or explored thoroughly through quantitative study. With this in mind, an in-depth interview and sample stimuli were used to examine consumer behaviour at a deeper level.



Figure 1. Seven denim jeans samples.

Table 2. Information of denim jeans samples.

Denim Jeans	Category	Price (Canadian)	Model / Fit	Size	Country of Origin	Fibre Content
G	Ultra Premium	\$350	Boot cut	28 or 8	USA	98% cotton / 2% Lycra
L	High Price	\$168	Skinny leg	28 or 8	USA	60% cotton / 40% polyester
P	High Price	\$109	Boot cut	28 or 8	China	98% cotton / 2% spandex
K	Moderate	\$79.50	Boot cut	26 or 6	USA	99% cotton / 1% spandex
Q	Moderate	\$59.50	Straight leg	28 or 8	China	100% cotton
M	Low Price	\$32.98	Skinny leg	26 or 6	Bangladesh	99% cotton / 1% Lycra
Z	Low Price	\$23.98	Skinny leg	26 or 6	China	97% cotton / 3% spandex

To offer a more realistic examination on the impact of intrinsic cues on consumers' perceptions toward denim jeans, participants were able to view and examine the actual product. The procedure involved visual and tactile comparison of seven pairs of dark coloured jeans, which were chosen from different brands and price points (see Table 2). To avoid a possible bias of perceived product quality resulting from price or brand name, the price tags and labels were removed from the jeans and all the insignia logos, rivets and buttons were covered with masking tape to provide the most opportune condition for an objective assessment of the intrinsic qualities of a product. The denim jeans samples were labeled randomly to reduce order effects ('G', 'K', 'L', 'M', 'P', 'Q' and 'Z' as shown in Figure 1). They were presented simultaneously to the participant for comparison and evaluation.

The experiments/interviews were structured in three stages. In both stage one and two, testing stimuli (seven pairs of jeans) were used for experimental comparison. In the first stage, subjects were asked to judge the quality and value of denim jeans based on its visual appearance without tactile interaction. The seven stimuli were displayed on a table and participants visually assessed the jeans according to their personal practice, viewing them individually, simultaneously, atomistically and holistically. As soon as each participant finished her visual judgment, an interviewer posed a number of questions, including "Which stimulus do you think is the most expensive one? Why?" and "Which stimulus do you think is the highest quality? Why?" Stage two focused on the assessment and examination of the products' tactile properties (touch and interaction). Through extensive in-depth interviews, stage three evaluated the product quality and price based on prior experience and knowledge.

Data Analysis

Data were then sorted into categories for analysis and comparison according to the words and phrases used in context. In some cases, participants' responses contained multiple beliefs and viewpoints, so the number of codes assigned to each word or phrase could be varied (Carey et al., 1996). To avoid distortion of the data by multiple responses, if a participant mentioned several words/phrases (e.g., beautiful, flattering and attractive) that belonged to the same category, they were considered as one response. The process of emergent coding described by Stemler (2001) was followed after data sorting. A team of three reviewers

independently examined the transcripts to identify the content categories, with each reviewer devising their own classification scheme. All three then intensively discussed the commonalities and differences of their separate schemes and reconciled the differences. On mutual agreement between the reviewers, the researchers identified methods by which to classify categories and assigned codes to each individual's responses until all data had been analyzed. For example, different codes were assigned to tactile judgment response: (1) hand feel encompassing handle (TH: e.g., soft, hard), weight (TW: thick, thin), thermal (TT: warm, cold), and (2) stretch (TS: e.g., too much or too little). As a result, a tally was placed beside the corresponding code; the counting of the total number of tallies per specific code then identified the significant visual and tactile responses.

Findings and Discussion

In total, 42 female subjects participated in the study, ranging in age from 18 to 27 years old, the mean age being 20.3. Participants were recruited from a broad range of academic interests such as fashion, economics, journalism, psychology and anthropology programs (as shown in Appendix). Twenty-seven participants held a part-time job and nine of them (21.4%) earned \$10,000 or more per year.

Visual Judgment

According to the results of visual judgment (as shown in Table 3), a large number of participants chose sample 'L' (n=19, 45.2%) and 'P' (n=11, 26.2%) as the two most expensive jeans and 'K' (n=11, 26.2%) and 'Z' (n=10, 23.8%) as the two least expensive jeans. In terms of quality, many chose 'L' (n=14, 33.3%) as the highest quality, whereas 'P' (n=9, 21.4%) and 'K' (n=9, 21.4%) were perceived as the lowest quality.

According to the current study, the perception of price was often related to the quality of jeans ('L': higher price/higher quality; 'K' and 'Z': lower price/lower quality), except for sample 'P' (higher price, but lower quality). Interestingly, eleven participants viewed 'P' as the most expensive pair of jeans and yet nine individuals perceived the quality of 'P' to be one of the lowest. A reasonable explanation is that the appearance of denim fabric for these jeans was slightly different from conventional denim material. A number of participants (n=8) indicated that they disliked sample 'P' because of the sheen or shininess of the fabric.

A few stated, "...the fabric doesn't look like pure denim," and "...it doesn't look comfortable." In other words, pair 'P' looked expensive, but not necessarily comfortable. A large number of participants strongly believed that the price of jeans was related to its quality and the quality was often associated with sturdiness and durability.

Apart from the relationship between price and quality, the results also indicated that changing perceptions occurred after touching and interacting with the jeans. For example, the perception of 'G' as the most expensive and highest quality jeans increased by 50% (n=4) and 25% (n=2) respectively. Several participants expressed that the fabric was nice, soft and durable. As one of the participants [P29] commented, "They're nice and soft. And they would fit probably pretty well ... stretch a little bit, but not to the point where they lose all elasticity and become saggy."

Similarly, fewer participants chose 'P' as the most expensive pair of jeans after tactile examination because they found that other stimuli ('G' and 'M') were relatively of better quality.

Additionally, more participants perceived 'Z' as least expensive and lower quality because the fabric was too thin and too stretchy. Their responses include:

The fabric feels worn out already. It feels like you're gonna put them on and they have a high tendency to stretch out of shape within a day. It's too much stretch in them." [P13]

They're almost too stretchy. I think they'd probably end up, you know, just baggy. [P5]

They feel, for the lack of a better word, cheap. [P31]

The denim doesn't feel as durable as the other ones. They would be the cheapest. [P30]

There were four primary cues frequently used by the participants to assess the price and quality of denim jeans, colour, fabric, stitch and style. Of these cues, style was relatively insignificant because the seven test stimuli were virtually homogeneous; all were dark-coloured basic five-pocket jeans. Apart from the similarity of style among these samples, many participants revealed that style was often associated with abstract values (e.g., formal, classic, sophisticated, flattering, etc.) rather than being associated with specific concrete values (e.g., price and quality). Thus, many participants tended to use colour and fabric cues to infer the price and quality of jeans rather than style (as shown in Table 4). For example, for sample 'L', the colour cue was frequently cited (n=14) as an important indicator of price whereas style was only cited once. In other words, some product cues relatively played a more significant role in visual judgment than others. According to the qualitative data, the visual inputs of jeans attributes were clearly associated with four categories: 'price association', 'quality association', 'social appropriateness' and 'appearance and body image.'

Table 3. Visual and tactile judgment of price and quality based on informant's first choice.

Visual Stimuli	Visual Judgment				Tactile Judgment			
	Most Expensive	Least Expensive	Highest Quality	Lowest Quality	Most Expensive	Least Expensive	Highest Quality	Lowest Quality
G – Ultra Premium	4	2	8	1	8	2	10*	1
L – High Price	19*	2	14*	0	13*	0	11*	2
P – High Price	11*	4	8	9*	6	1	4	5
K – Moderate Price	4	11*	2	9*	2	8	1	8
Q – Moderate Price	3	5	2	5	1	4	1	3
M – Low Price	0	5	4	3	4	3	5	1
Z – Low Price	1	10*	2	8	1	14*	2	11*
Missing	0	3	2	7	1	4	2	5
Total	42	42	42	42	42	42	42	42

Note: * Over 20% of participants selected this visual stimulus.

Table 4. Visual judgment – salient evaluative product cues for price and quality based on frequency count.

Salient Product Cue	Visual Judgment of Each Stimulus by Price and Quality																														
	Most Expensive							Least Expensive							Highest Quality							Lowest Quality									
	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z			
Colour	3	14	4	2	1					4		1	5	7	2											1	1	4		1	1
Fabric	2	4	5	1					3	4	1		2	4	7	6	2	1	1	1							8	2		1	6
Stitch	1	6	6	1	2	1	1	2	2	1	1	4	2	5	5					2	2						1	2	4	1	2
Style	1	1	2						1	2	1	1	2															1	1	1	3

Note: In some cases, participants cited more than one product cue (e.g., colour, fabric and stitch) for the same stimulus.

Price Association

Colour and Price

Based on the results of visual judgment, colour is the most recurring visual evaluative criterion, followed by fabric, stitch and style. In total, six participants revealed that dark coloured denim inferred higher price. For example:

I would say 'L' is the most expensive one because of the colour. The dark rinse looks really nice and it makes the jeans look a lot more expensive. [P12]

Well, just from looking at the colour of these denim jeans Pair 'L' looks much richer and the colour is more saturated. From my experience, the higher the price, the richer the colour. It seems these two elements are closely related. [P17]

Fabric/Stitch and Price

According to several participants' responses, it is evident that fabric and stitch attributes often served as a price indicator. For example:

I find 'P' is the most expensive pair because they look like a different kind of denim ... may be a bit lighter in weight. Anyway, they look expensive to me. [P15; fabric]

'L' is the most expensive pair. The denim just looks really rich. They don't look like they have been distressed. They look like how they were meant to be ... a little fancier, but not formal. In addition, the high contrast stitching is really nice and strong. [P6; fabric and stitch]

I think pair 'L' is really nice and expensive. The stitching seems to be really uniform. It seems they went through extra effort to make ... and the quality is good. [P7; stitch]

Quality Association

Fabric/Stitch and Quality

When the participants were asked to judge the quality of each stimulus, they tended to pay more attention to the fabric properties (e.g., perceived weight, texture, durability and comfort) and stitch (e.g., placement, visibility and thickness) rather than the colour. The following excerpts from several interviews clearly stated that fabric and stitch played a very important role when evaluating the quality of denim jeans.

I'm going to go with 'P' [as the lowest quality]. They're really rough and I just feel like that would be so awkward and uncomfortable. I really don't like them. [P41; fabric]

In terms of highest quality, I like 'L' because the fabric just looks thicker and they might last longer. [P11; fabric]

Pair 'Z' is the lowest quality. They just look really thin, and the waistband is sort of worn out. I'm sure that's [vintage or distressed look] what they were going for, but it just looks misplaced and kind

of cheap. And I don't really like how the stitching is done. [P29; fabric and stitch]

I like pair 'L'. The fabric looks thicker, but smooth ... it's not like very raw or anything. It leads me to believe that they are better quality. I also like the wash and stitching ... maybe aesthetics really lends a perception to buyers towards its quality, not the bad quality but the good quality. ... The stitching is really well defined so it makes me feel like it's sturdier. [P19; fabric/stitch]

These findings are similar to a study conducted by Park and Lee (1999) in Korea, which found that stitch was the most important evaluative criteria of quality for both foreign and domestic brand jeans, followed by fabric and colour for the foreign brands and fabric and design for the domestic brands.

Social Appropriateness

Colour and Social Appropriateness

Apart from price and quality association, many participants (n=13) stated that dark indigo jeans were more appropriate for dressy or formal situations whereas light blue denim jeans were more appropriate for casual occasions. This finding is consistent with DeLong et al. (2002), where they found that U.S. respondents wore various shades of blue jeans for different occasions – dark blue was more appropriate for formal settings and light blue for casual events. In addition to appropriateness, some participants (n=8) stated that darker jeans were more versatile than lighter jeans – they could be worn either during the day or at night. Some participants expressed:

I think darker jeans are better if you're going to a club or something like that, but otherwise, anything goes. The reasons why I associate dark wash with evening staples [black suit and evening dress] because I've seen it so often that it's just kind of embedded in my brain. [P19]

I feel dark jeans are more sophisticated. You can dress them up or keep them casual. If I'm going out and wearing jeans at night, I feel it's better to wear a pair of dark jeans. During the day, I guess you can wear lighter colour jeans. I think dark colour just looks a little classier. It's more dressed up. [P9]

Appearance and Body Image

Colour and Appearance/Body Image

It is evident that a large number of participants preferred dark jeans to lighter ones. According to their responses, the former was aesthetically pleasing and flattering, whereas the latter seemed dated and unflattering. Moreover, several participants (n=8) expressed that darker jeans could accentuate or enhance their body image.

Dark denim jeans make me feel good about myself. It slims my hips. [P15]

If you wear light colours on the bottoms, they'll give you bigger hips. People are going to notice that right away. I think dark denim make you look more well-proportioned. [P9]

I feel like any jeans that has a light wash or acid wash are old. They're just passé and I really don't like them. I think they make people look bigger than they are. They're not flattering. [P26]

Another participant made the following comment about pair 'Z',

Sometimes with the washes like this ['Z'], if you're in photos, it looks like you've wet your pants ... especially if the pictures are taken at night. Have you ever seen that? My friend had a pair of jeans like this and we used to make so much fun of her because it was that sort of washing effect. [P38]

Tactile Judgment

The results of the tactile judgment were in line with the visual judgment. 'L' and 'Z' were perceived as the most expensive/highest quality and the least expensive/lowest quality respectively in both sensory assessments. In this particular study, the tactile response did support and reinforce what participants perceived through vision. The only difference was that the colour cue played a more significant role for visual judgment whereas the stretch of the fabric was deemed to be more significant for tactile judgment.

According to the results of the tactile judgment (as shown in Table 5), over 30% of the participants chose sample 'L' (n=13, 31%) as the most expensive jeans and 'Z' (n=14, 33.3%) as the least expensive jeans. In terms of quality, many of them chose 'L' (n=11, 26.2%) and 'G' (n=10, 23.8%) the highest quality and 'Z' (n=11, 26.2%) the lowest quality. Clearly, to assess the price and quality the participants frequently used fabric hand, feel and stretch properties (see Table 5). This finding is in line with Hines and O'Neal's (1995) study on the quality of women's blazers. They found that fabric was the only attribute identified by 92% of participants when evaluating quality. The data also revealed an additional category of shape retention or ease of comfort (both physiological and psychological comfort). It was obvious that the shape retention and ease of comfort were closely related and were greatly affected by the stretch properties of the fabric.

Price Association

Fabric (Hand/Stretch) and Price

According to the present study, it is obvious that fabric hand and stretch were considered as the two most important evaluative criteria, or surrogate indicators of price. Indeed, tactile inputs can provide consumers with a considerable amount of associative and suggestive information regarding a product. For example:

I would say 'Z' is the least expensive pair. It's too soft, but not the way that jeans supposed to be. It seems the fibres are really short and it feels like they're pilled. [P6; hand/feel]

Well, when I feel jeans that don't stretch a lot, I always think they're more expensive. ... It's just like when I've been shopping for jeans ... something that I've noticed. [P12; stretch]

The feel ... it's hard to explain [the reasons why 'P' is the most expensive], but when I go shopping, I'm one of those people who always touch things. ... based on my experience of walking through expensive denim stores, it makes me think 'P' is an expensive pair of jeans. [P22; hand/feel]

Quality Association

Fabric (Hand/Stretch) and Quality

According to the findings, the tactile input of quality was often linked to ease of comfort, durability, warmth and pleasant feelings. It is evident that a positive sensory experience can increase participants' cognitive persuasion (instrumental touch) and affective response (autotelic touch). As Peck (2010) described in her article, "NFT is defined as a preference for the extraction and use of information obtained through touch. It includes two dimensions: instrumental touch and autotelic touch. ... The image of a consumer involved in instrumental touch is that of a problem solver consciously engaged in the goal-direct activity of searching for information and arriving at a final judgment. In contrast, autotelic touch involves a consumer seeking fun, sensory stimulation and enjoyment with no purchase goal necessarily salient" (pp. 25-26). In this study, it is obvious that most of the participants drew a great deal of instrumental information through tactile examination when judging the quality of jeans.

Table 5. Tactile judgment – salient evaluative product cue for price and quality based on frequency count.

Product Cue	Tactile Judgment of Each Stimulus by Price and Quality																											
	Most Expensive						Least Expensive						Highest Quality						Lowest Quality									
	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z	G	L	P	K	Q	M	Z
Fabric Hand	5	12	12	4		5	1	1		2	5	2	1	11	7	7	9	3	1	6	2	1	1	5	8	4	1	5
Fabric Stretch	2	5	3								2	1	7	5	1									4	1	1	4	
Stitch	1	3	1										2	1		1			1	1					1	5		
Style	2										2	2		3									1	2				

Note: In some cases, participants cited more than one product cue (e.g., fabric hand, fabric stitch and stretch) for the same stimulus.

If you feel pair 'G', they're softer, better and have a smoother hand. Unlike 'P', they just have that kind of treated finish. If you compare with, let's say 'Z' or 'M', both feel a little rougher. I don't know whether there is anything to do with the finishing or not. If I want to get a pair of quality jeans, I wouldn't consider 'Z'. I would pick either 'G' or 'P' because they look better and when you touch them, they actually feel better too. [P1; hand/feel]

I think this one [K] wouldn't last as long as the other pairs. It feels thinner and the stretch would probably make the jeans come down more when you walk. 'P' is thicker without stretch and I think they would last longer. [P11; hand/feel and stretch]

I normally wear jeans when it's colder outside, so I want them to be warm. Jeans are usually pretty warm. But 'Z' is probably the cheapest. There's really nothing ... it's really just a bit of material. ... I think I had a pair of jeans that felt like this one a while ago and it ripped very quickly. [P23; hand/feel]

The fabric of 'Z' has too much Lycra and it would stretch out really easily. From my experience, some stores like to put a lot of Lycra in the jeans because they don't fit well. Basically, they use Lycra to compensate the fit. [P7; stretch]

Many subjects did not look for a single tactile benefit for denim jeans and in many cases multiple or ideal properties were sought out, such as softness (comfort), sturdiness or thickness (warmth, protection and durability) and/or amount of stretch (fit, ease of movement, shape retention). In this current study, it is evident that 'L' could offer the best possible combination of benefits and values to the participants.

Shape Retention

Physical and Psychological Comfort

Fabric (Stretch) and Shape Retention

A number of participants stated that the amount of stretch in a pair of jeans was closely linked to its fit, shape retention and comfort. If a pair of jeans has too much spandex, they will stretch out quickly and become impossible to retain their original shape. As a result, it might affect the wearer's appearance and self-image. However, if the jeans are non-stretch, the level of comfort may be affected or diminished. In order to keep the original shape and offer the best comfort to the consumers, the amount of elastane (spandex/Lycra) to be used in the fabric could play a critical part in its acceptance and rejection. It is important to note that modern consumers are no longer satisfied with just a monolithic feature within a product; they are constantly seeking multi-dimensional values such as physical and psychological comfort. For example, several participants responded,

The right amount of stretch is important to retain its shape ... it's comfortable but it doesn't stretch out quickly. [P26]

'M' is the kind of jeans that feels like it would stretch out if you sat in a car too long. ... Saggy bum, big knee, or something. [P2]

I have a few pairs of stretched jeans. If they have too much spandex, they'll stretch out very soon ... they don't fit properly

any more and they're always falling down and a belt is needed. Now, I don't feel comfortable wearing them because they're too stretched out. [P12]

It [sample 'G'] is soft and would fit probably pretty well ... It stretches a little bit, but not to the point where it loses all elasticity and become saggy. [P29]

Conclusion







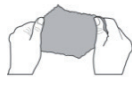
This study provides a number of insights concerning salience-of-vision and salience-of-tactile inputs influencing consumers' judgment of jeans in general and price and quality in particular. The findings suggest that consumers do not merely use specific product cues to judge the concrete/functional aspects of a product (e.g., weight, thermal properties), but also link various cues to higher or abstract values such as psychological and social values, sensory pleasure and symbolic meaning as shown in Table 6. Clearly, affective and cognitive processing occurred and coexisted throughout the course of the interviews. As Zajonc (1980) described, "Affective judgments implicate the self. ... Cognitive judgments deal with qualities that reside in the stimulus" (p. 157). In addition, both visual and tactile examination can enhance consumer judgment and further aid in the decision-making process. Most often, visual inputs offer consumers a broader view and impression about a product and tactile inputs can strengthen and re-confirm the visual perceptions.

Sensory Judgment – Actual and Perceived Value

Many subjects perceived 'L' as the most expensive or highest quality pair of jeans and 'Z' as the least expensive or lowest quality among the seven test stimuli. This finding indicated that the perceived price of 'L' and 'Z' was in line with the actual price as shown in Table 1. In other words, sensory experience and physical interaction with a product provides important and/or reliable information source for consumers to predict the perceived values of denim jeans. In addition to perceived price, several subjects disliked the quality of 'Z' because of the fabric stretch as illustrated in the preceding sections and revealed in Table 5. Coincidentally, the fibre content of spandex in pair 'Z' (3%) was slightly higher than other stimuli (2% or 1%) as indicated in Table 1. Thus, it offers an interesting view as to why some respondents perceived stimulus 'Z' as too soft and/or too loose. Given this perspective, it is reasonable to say that today's young consumers are savvy and sophisticated when it comes to apparel shopping.

Overall, the evaluation ability of the participants was quite accurate except with pair 'G'. Although these jeans sold for \$350 at retail, the respondents did not perceive them to be the most expensive/highest quality jeans as compared to 'L' or 'P'. It is important to note that the majority of the participants did not perceive 'G' as low quality at all. In some cases, subjects liked the tactile feelings of 'G' more than any other stimuli. For example, one of the participants [P29] said, "It's soft and would fit probably pretty well ... it stretches a little bit, but not to the point where it loses all elasticity and becomes saggy." Nevertheless, it could be

Table 6. Significant findings of visual and tactile judgment.

Sensory Modality	Salient Product Cues and Properties	Sensory Responses and Stimulation			
		Price Association	Quality Association	Social Appropriateness	Appearance & Body Image
Visual Judgment 	Colour 	Inferred high price • dark coloured denim	No significant correlation	Dark coloured jeans associated with • evening staples • more versatile • classier • more dressed up • more sophisticated	Dark coloured jeans • aesthetically pleasing & flattering • accentuated / enhanced body image: slimmer; well-proportioned
	Fabric 	Perceived high price • rich and not distressed • fancier	Inferred high quality • comfort: smooth (not rough) • durable: thicker • new: raw denim	No significant correlation	No significant correlation
	Stitch 	Inferred high price • well-defined • strong • uniform	Inferred high quality • studier (tension of stitch)	No significant correlation	No significant correlation
Sensory Modality	Salient Product Cues and Properties	Sensory Responses and Stimulation			
		Price Association	Quality Association	Shape Retention – Physical & Psychological Comfort	
Tactile Judgment 	Hand Feel 	Inferred high price • not too soft	Inferred high quality • smoother • softer but not flimsy • thicker: more durable	No significant correlation	
	Stretch 	Inferred high price • less stretch	Inferred high quality • less stretch	Too much stretch • not attractive • may stretch out easily Proper amount of stretch • provide physical and psychological comfort	

difficult to persuade consumers to spend a premium price on this type of jeans without a prestigious brand name.

Colour Cue and Visual Responses

As mentioned earlier, colour cue played a significant role in the visual judgment of denim jeans. It was frequently used by the subjects to predict or perceive price, accentuate body image, enhance aesthetic pleasure and/or conform to the current societal norm. In other words, it doesn't merely provide economic benefits, darker colour being associated with higher price, but also social, psychological and experiential benefits. Indeed, colour can be used to elicit specific emotional responses (Kaya & Epps, 2004), produce physical and psychological reactions and infer relevancy, such as old versus new. According to the present findings, many participants perceived lighter colour denim as 'old', 'passé', 'tacky', 'vintage' and 'Degrassi Junior High.' One participant [P35] commented, "The light colour may be more for day wear. I can associate lighter colour jeans with riding a bike in the summer.

... It's not to wear with a pair of stilettos." This simple response demonstrates that the colour cue was associated with a consumer's lifestyle/activities (casual, riding a bike), appropriateness of use (summer, during the day) and overall image/practicality (not with stilettos). It is obvious that the values associated with a product are not merely derived from its utilitarian benefits, but also from the meaning ascribed to it. Given this perspective, fashion practitioners could pay more attention to the symbolic meanings of colour cue in order to portray, depict and present their denim jeans as a more meaningful and relevant lifestyle product.

Fabric Cue and Tactile Responses

According to this study, fabric was the most important evaluative cue for tactile judgment. In other words, a large number of participants perceived fabric used for jeans as a significant indicator of quality. It is important to note that many subjects used fabric hand (feel or handle) to judge the thermo-physiological (warmth) and sensorial comfort (softness), and durability (weight,

sturdiness, thickness). Fabric stretch (stretch or pull) suggested shape retention (visual appearance), physical (ease of movement) and psychological comfort (body-/self-image). In regards to fabric stretch, many subjects expressed that over-stretched jeans could lead to improper fit, discomfort and shape distortion such as saggy hips and big knees. However, perceptions of fabric stretch do not only concern physical discomfort, they also indicate psychological discontent because the wearer may feel absurd, over-sized, or not accepted by others. Without a doubt, stretch properties (extension and recovery) are important to the performance and appearance of denim jeans. A small amount of elastane in the denim fabric can offer physical and psychological comfort to the end users.

To meet consumers' needs and aspirations, fashion practitioners could continually search for new textile materials (e.g., Xfit Lycra@ enables denim to stretch in all directions), or experiment with a more precise amount of elastane that can ensure optimal physical performance and psychological comfort. Other recommendations for product acceptance may include ongoing trial testing of fabric and garment extensibility, resilience and dimensional stability, and engineering and modification of jeans pattern according to the stretch properties of denim fabric deemed to be important and essential.

Relationships between Visual Input and Tactile Input

According to this study, colour was the most frequently used cue for visual judgment whereas qualities of fabric hand such as weight, temperature and texture, and stretch were more frequently used for tactile judgment. Vision was able to elicit greater intense sensation, whereas touch was able to elicit more association with the functional or instrumental aspects of denim jeans. Clearly, it was difficult for some subjects to derive quality information (durability and comfort) through vision rather than by touch. It is evident that touch enabled participants to make more accurate judgments and many subjects indeed used tactile inputs to reinforce, support and re-assess what they had perceived through vision in an earlier stage. For example, one of the participants [P16] commented, "Now that I'm able to touch them. I feel like ... perhaps I was wrong about the price and quality [referring to her visual judgment.]. Pair 'Q' feels thinner than I had originally anticipated them to be. I thought 'Q' was the highest quality, but now, I'm taking that back." Similarly, another participant said, "Without touching the jeans, the quality of pair 'L' looks very much like 'P', and I would say they don't strike me at all. ... But now I can touch them, pair 'L' feels much better and more like a comfy pair of jeans" [P5]. As Hultén et al. (2009) describes: "Seeing is reinforced by touch, in that touch helps us get a fuller understanding of what we see" (p. 90).

Table 3, shows that except for pair 'P', the overall results of both visual and tactile judgments are similar. To reiterate, some participants perceived 'P' as low quality because of the fabric sheen or surface luster. Nevertheless, both visual and tactile inputs provide valuable information to consumers on product evaluation and purchasing decisions.

Holistic Evaluation and Non-touch Channels

Regardless of the consistency of the visual and tactile judgments made, many participants clearly indicated that it is important to touch and feel the fabric before making final judgment and product choices. In other words, a holistic evaluation was deemed to be crucial when selecting and evaluating a pair of denim jeans.

Without doubt, some jeans (e.g., stimulus 'L') are more difficult to assess by their visual appearance than others. According to the present study, tactile examination clearly provided consumers with a stronger or more accurate judgment on the quality of jeans than judgments merely based on physical appearance. Aside from the product itself, the degree of "need for touch" also varied among consumers (Citrin et al., 2003; Peck & Childers, 2003). In general, if consumers are high in NFT, they often develop a habit of touching and interacting with clothing. As one of the participants said, "...but when I go shopping, I'm one of those people who always touch things ... I'm a very tactile person" [P22]. With this perspective in mind, many apparel consumers, particularly those high in NFT who might shop through the non-touch channels of online, catalogue and television would be frustrated if they could not touch the garments they were interested in. To meet these consumers' needs, some tactile experiences must be offered, either through fabric swatches or product trials. For example, online shoppers can currently request fabric swatches from J. Crew (2011) "Weddings and Parties" collection if they want to more fully experience the actual fabric. Indeed, by offering fabric swatches or product trials, e-tailers/retailers may reduce consumer perceptions of risk (i.e., financial, performance and psychological) and increase overall satisfaction around online shopping. As such, consumers would be better informed in their decision-making prior to purchasing. However, this could be a burden for e-tailers, because operational costs would increase. To be successful, comprehensive research, adoption of technologies and strategic planning and calculation are deemed to be imperative for the non-touch media as well as for multi-channel retailers (brick-and-mortar store, online and catalogue sales).

In addition, according to the findings of this study (as shown in Table 6), visual inputs were associated with personal and social values (e.g., self-/body-image, social appropriateness) whereas tactile inputs were more linked to utilitarian and tangible values (e.g., performance, durability, comfort). To reach out to existing and potential customers with diverse needs and aspirations, e-retailers and website designers might employ various strategies and technologies to present and convey their product information. For example, colour, style and material can be represented through three-dimensional and/or full-scale imagery or sensory enabling technologies that include both visualization technologies and haptic interface (Kim & Forsythe, 2008). Other than product information, fashion practitioners and marketers might also use their online web site to connect emotionally and psychologically with their consumers, using interaction media to communicate and engage internet shoppers. Indeed, a number of prior studies suggest that both informative and interactive online sites can

enhance consumer attitudes toward online shopping and their purchasing experience (Fiore & Jin, 2003; Kim & Forsythe, 2008).

Limitation and Further Research

To enhance product values and benefits, it is important to create or enhance the positive sensuality that exists within an apparel product. Creating and delivering garments with desirable values are essential to sustain fashion practitioners' competitiveness and connect with their customers. The more attention designers pay to the sensory attributes, the more likely that consumers will recall, respond to and accept the products.

The present research clearly demonstrates that both visual and tactile inputs influence a consumer's evaluation of denim jeans. Further research involving different apparel products could shed additional light to consumer sensory response and buying behaviours. Moreover, the associative learning of various product cues such as fit/shape (e.g., boot cut, bell bottom, skinny style) has not been fully examined in this study. The sizing system, model/fit of denim jeans and the relationships between body type and jeans fit could be examined as well, for many consumers normally choose to try on the jeans before purchasing. Other than the aforementioned limitations, the present study may not represent Canadian apparel shoppers as a whole because the current sample is primarily focused on younger females. Future studies could expand the focus to include male consumers and different age groups to avoid potential bias. In addition, combining qualitative and quantitative research methods can be used to strengthen the validity and reliability of the research findings (Brannen, 1992).

Acknowledgments

The author would like to thank Professor Lin-Lin Chen and two anonymous reviewers for helpful comments and insights on the earlier versions of this manuscript. The research was funded by the Faculty of Communication and Design (FCAD) Project Grant, Ryerson University. This assistance is gratefully acknowledged.

Reference

1. Apeageyi, P. R. (2008). Significance of body image among UK female fashion consumers: The cult of size zero, the skinny trend. *International Journal of Fashion Design, Technology and Education*, 1(1), 3-11.
2. Auty, S., & Elliott, R. (1998). Fashion involvement, self-monitoring and the meaning of brands. *Journal of Product and Brand Management*, 7(2), 109-123.
3. Belk, R. W. (1988). Possessions and the extended self. *Journal of Consumer Research*, 15(2), 139-168.
4. Berlyne, D. E. (1974). *Studies in the new experimental aesthetics*. New York, NY: John Wiley and Sons.
5. Brannen, J. (1992). Combining qualitative and quantitative approaches: An overview. In J. Brannen, *Mixing methods: Qualitative and quantitative research* (pp. 3-27). London, UK: Avebury.
6. Campbell, A., Converse, P. E., & Rodgers, W. L. (1976). *The quality of American life: Perceptions, evaluations and satisfactions*. New York, NY: Russell Sage Foundation.
7. Carey, J. W., Morgan, M., & Oxtoby, M. J. (1996). Intercoder agreement in analysis of responses to open-ended interview questions: Examples from tuberculosis research. *Cultural Anthropology Methods*, 8(3), 1-5.
8. Chen, X., Shao, F., Barnes, C., Child, T., & Henson, B. (2009). Exploring relationships between touch perception and surface physical properties. *International Journal of Design*, 3(2), 67-76.
9. Citrin, A. V., Stem, D. E., Spangenberg, E. R., & Clark, M. J. (2003). Consumer need for tactile input: An internet retailing challenge. *Journal of Business Research*, 56(11), 915-922.
10. Compeau, L. D., Grewal, D., & Monroe, K. B. (1998). Role of prior affect and sensory cues on consumers' affective and cognitive responses and overall perceptions of quality. *Journal of Business Research*, 42(3), 295-308.
11. De Klerk, H. M., & Lubbe, S. (2008). Female consumers' evaluation of apparel quality: Exploring the importance of aesthetics. *Journal of Fashion Marketing and Management*, 12(1), 36-50.
12. Dumaine, B. (1991). Design that sells and sells and *Fortune*, 123(5), 56-61.
13. De Long, M. R. (1998). *The way we look*. Ames, IA: Iowa State University Press.
14. De Long, M., Kim, S. H., & Larntz, K. (1993). Perceptions of garment proportions by female observers. *Perceptual and Motor Skills*, 76(3), 811-819.
15. De Long, M., LaBat, K., Nelson, N., Koh, A., & Kim, Y. (2002). Global products, global markets: Jeans in Korea and the United States. *Clothing and Textiles Research Journal*, 20(4), 238-245.
16. Eckman, M. (1997). Attractiveness of men's suits: The effect of aesthetic attributes and consumer characteristics. *Clothing and Textiles Research Journal*, 15(4), 193-202.
17. Eckman, M., Damhorst, M. L., & Kadelph, S. J. (1990). Towards a model of the in-store purchase decision process: Consumer use of criteria for evaluating women's apparel. *Clothing and Textiles Research Journal*, 8(2), 13-22.
18. Eicher, J. (1995). Introduction: Dress as expression of ethnic identity. In J. B. Eicher (Ed.), *Dress and ethnicity: Change across space and time* (pp. 1-5). Oxford, UK: Berg.
19. Feather, B. L., Ford, S., & Herr, D. G. (1996). Perceptions about their bodies, garment fit and uniform design preferences. *Clothing and Textiles Research Journal*, 14(1), 23-29.
20. Fenko, A., Schifferstein, H. N. J., & Hekkert, P. (2009). Which senses dominate at different stages of product

- experience? In *Proceedings of the 4th Conference of Design Research Society*. London, UK: Design Research Society.
21. Fiore, A. M. (1993). Multisensory integration of visual, tactile, and olfactory aesthetic cues of appearance. *Clothing and Textiles Research Journal*, 11(2), 45-52.
 22. Fiore, A., & Jin, H. J. (2003). Influence of image interactivity technology on approach responses towards an online retailer. *Internet Research: Electronic Networking Applications and Policy*, 13(1), 38-48.
 23. Fiore, A. M., & Kimle, P. A. (2010). *Understanding aesthetics for the merchandising and design professional* (2nd ed.). New York, NY: Fairchild.
 24. Fitzsimons, G. J., Hutchinson, J. W., Williams, P., Alba, J. W., Chartrand, T. L., Huber, J., ... Tavassoli, N. T. (2002). Non-conscious influences on consumer choice. *Marketing Letters*, 13(3), 267-277.
 25. Francis, S. K., & Evans, P. K. (1987). Effects of hue, value, and style of garment and personal coloring of model on person perception. *Perceptual and Motor Skills*, 64(2), 383-390.
 26. Francis, S. K., & Evans, P. K. (1988). Effects of hue, value, and garment style on college recruiters' assessments of employment potential. *Perceptual and Motor Skills*, 67(1), 87-93.
 27. Frijda, N. H. (2006). *The laws of emotion*. Mahwah, NJ: Lawrence Erlbaum Associates.
 28. Grohmann, B., Spangenberg, E. R., & Sprott, D. E. (2007). The influence of tactile input on the evaluation of retail product offerings. *Journal of Retailing*, 83(2), 237-245.
 29. Grunert, K. G., & Bech-Larsen T. (2005). Explaining choice option attractiveness by beliefs elicited by the laddering method. *Journal of Economic Psychology*, 26(2), 223-241.
 30. Hines, J. D., & O'Neal, G. S. (1995). Underlying determinants of clothing quality: The consumers' perspective. *Clothing and Textiles Research Journal*, 13(4), 227-233.
 31. Holbrook, M. B. (1986). Aims, concepts, and methods for the representation of individual differences in esthetic responses to design features. *Journal of Consumer Research*, 13(3), 337-347.
 32. Hultén, B., Broweus, N., & Van Dijk, M. (2009). *Sensory marketing*. Hampshire, UK: Palgrave Macmillan.
 33. J. Crew (2011). *Weddings & parties*. Retrieved June 12, 2011, from <http://www.jcrew.com/wedding.jsp>
 34. Jensen, H. R. (2001). Antecedents and consequences of consumer value assessments: Implications for marketing strategy and future research. *Journal of Retailing and Consumer Services*, 8(6), 299-310.
 35. Kahn, B. E., & Deng, X. (2010). Effects on visual weight perceptions of product image locations on packaging. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 259-278). New York, NY: Routledge.
 36. Kaya, N., & Epps, H. H. (2004). Relationship between color and emotion: A study of college students. *College Student Journal*, 38(3), 396-405.
 37. Kim, J., & Forsythe, S. (2009). Adoption of sensory enabling technology for online apparel shopping. *European Journal of Marketing*, 43(9/10), 1101-1120.
 38. Klatzky, R. L. (2010). Touch: A gentle tutorial with implications for marketing. In A. Krishna (Ed.) *Sensory marketing: Research on the sensuality of products* (pp. 33-47). New York, NY: Routledge.
 39. Klatzky, R. L., Lederman, S., & Reed, C. (1987). There's more to touch than meets the eye: The salience of object attributes for haptics with and without vision. *Journal of Experimental Psychology: General*, 116(4), 356-369.
 40. Klatzky, R. L., Lederman, S. J. & Matula, D. E. (1993). Haptic exploration in the presence of vision. *Journal of Experimental Psychology: Human Perception and performance*, 19(4), 726-743.
 41. Kwang, J. N., Holland, R., Shackleton, J., Hwang, Y. Y., & Melewar, T. C. (2008). The effect of evaluation criteria on design attributes and brand equity in the product evaluation process. *Brand Management*, 16(3), 195-212.
 42. Lederman, S. Thorne, G., & Jones, B. (1986). Perception of texture by vision and touch: Multidimensionality and intersensory integration. *Journal of Experimental Psychology: Human Perception and Performance*, 12(2), 169-180.
 43. Lester, D. H., Forman, A. M., & Loyd, D. (2005). Internet shopping and buying behavior of college students. *Services Marketing Quarterly*, 27(2), 123-138.
 44. McCabe, D. B., & Stephen, M. N. (2003). Effect of examining actual products or product descriptions on consumer preference. *Journal of Consumer Psychology*, 13(4), 431-449.
 45. McCracken, G. (1988). *The long interview: Qualitative research methods*. Newbury Park, CA: Sage.
 46. McGowan, K., & Sternquist, B. (1998). Dimensions of price as a marketing universal: A comparison of Japanese and U.S. consumers. *Journal of International Marketing*, 6(4), 49-65.
 47. Morganosky, M. (1984). Aesthetic and utilitarian qualities of clothing: Use of a multidimensional clothing value model. *Home Economics Research Journal*, 13(1), 12-20.
 48. Park, C. W., Jaworski, B. J., & MacInnis, D. J. (1986). Strategic brand concept-image management. *Journal of Marketing*, 50(4), 135-145.
 49. Park, W., & Lee, S. (1999). A market oriented study on the wearing attitude and purchase behavior of jeans. *Journal of Costume*, 43, 109-123.
 50. Peck, J. (2010). Does touch matter? Insights from haptic research in marketing. In A. Krishna (Ed.), *Sensory marketing: Research on the sensuality of products* (pp. 17-31). New York, NY: Routledge.

51. Peck, J., & Childers, T. L. (2003). To have and to hold: The influence of haptic information on product judgments. *Journal of Marketing*, 67(2), 35-48.
52. Reimann, M., Zaichkowsky, J., Neuhaus, C., Bender, T., & Weber, B. (2010). Aesthetic package design: A behavioral, neural, and psychological investigation. *Journal of Consumer Psychology*, 20(4), 431-441.
53. Rahman, O., Liu, W. -S., Lam, E., & Chan, M. -T. (2011). Lolita – Imaginative self and elusive consumption. *Fashion Theory: The Journal of Dress, Body and Culture*, 15(1), 7-28.
54. Rahman, O., Yan, J., & Liu, W. S. (2009). Evaluative criteria for sleepwear: A study of privately consumed product in the People's Republic of China. *International Journal of Fashion Design, Technology and Education*, 2(2-3), 81-90.
55. Rahman, O., Yan, J., & Liu, W. S. (2010). Evaluative criteria of denim jeans: A cross-national study of functional and aesthetic aspects. *The Design Journal*, 13(3), 291-312.
56. Rahman, O., Zhu, X., & Liu W. -S., (2008). A study of the pyjamas purchasing behaviour of Chinese consumers in Hangzhou, China. *Journal of Fashion Marketing and Management*, 12(2), 217-231.
57. Ross, P. R., & Wensveen, S. A. G. (2010). Designing behavior in interactions: Using aesthetic experience as a mechanism for design. *International Journal of Design*, 4(2), 3-13.
58. Santos, J., & Boote, J. (2003). A theoretical exploration and model of consumer expectations, post-purchase affective states and affective behavior. *Journal of Consumer Behaviour*, 3(2), 142-156.
59. Schifferstein, H. N. J. (2006). The perceived importance of sensory modalities in product usage: A study of self-reports. *Acta Psychologica*, 121(1), 41-64.
60. Schifferstein, H. N. J., & Cleiren, M. P. H. D. (2005). Capturing product experiences: A split-modality approach. *Acta Psychologica*, 118(3), 293-318.
61. Schmitt, B. H., & Simonson, A. (1997). *Marketing aesthetics: The strategic management of brands, identity and image*. New York, NY: Free Press.
62. Stemler, S. (2001). An overview of content analysis. *Practical Assessment, Research & Evaluation*, 7(17). Retrieved June 20, 2011, from <http://pareonline.net/getvn.asp?v=7&n=17>
63. Stevens, J. C., & Green, B. G. (1996). *History of research on touch: Pain and touch* (p. 1). San Diego, CA: Academic Press.
64. Swinker, M. E., & Hines, J. D. (2006). Understanding consumers' perception of clothing quality: A multidimensional approach. *International Journal of Consumer Studies*, 30(2), 218-223.
65. Thurston, J. L., Lennon, S. J., & Clayton, R. V. (1990). Influence of age, body type, fashion, and garment type on women's professional image. *Home Economics Research Journal*. 19(2), 139-150.
66. Workman, J. E., & Caldwell, L. F. (2007). Centrality of visual product aesthetics, tactile and uniqueness needs of fashion consumers. *International Journal of Consumer Studies*, 31(6), 589-596.
67. Veryzer Jr, R. W. (1993). *Aesthetic response and the influence of design principles on product preferences*. *Advances in Consumer Research*, 20, 224-228.
68. Veryzer, R. W., & Hutchinson, J. W. (1998). The Influence of unity and prototypicality on aesthetic responses to new product designs. *Journal of Consumer Research*, 24(4) 374-394.
69. Wang, Y., Chen, Y., & Chen, Z. (2006). The sensory research on the style of women's overcoats. *International Journal of Clothing Science and Technology*, 20(3), 174-183.
70. Yoo, S. (2003). Design elements and consumer characteristics relating to design preferences of working females. *Clothing and Textiles Research Journal*, 21(2), 49-62.
71. Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35(2), 151-175.
72. Zeithaml, V. A. (1988). Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.

Appendix: The forty two subjects' profiles.

Code	Age	Education Level	Major	Part-Time Job	Income / Year
P1	22	Undergraduate - Year 2	Fashion	Sales Associate	\$4,000
P2	20	Undergraduate - Year 2	Fashion	-	-
P3	20	Undergraduate - Year 2	Fashion	-	-
P4	19	Undergraduate - Year 2	Journalism	Waitress	\$9,000
P5	19	Undergraduate - Year 1	Economics	Sales Associate	\$4,000
P6	22	Undergraduate - Year 2	Fashion	MI	\$10,000
P7	20	Undergraduate - Year 2	Fashion	-	-
P8	19	Undergraduate - Year 2	Psychology	Lifeguard	\$6,000
P9	19	Undergraduate - Year 2	Fashion	Sales Associate	MI
P10	20	Undergraduate - Year 2	Fashion	Research Assistant	MI
P11	19	Undergraduate - Year 2	Fine Arts	-	-
P12	19	Undergraduate - Year 2	Environmental Studies	MI	\$6,000
P13	20	Undergraduate - Year 2	Fashion	-	-
P14	18	Undergraduate - Year 1	Art & Contemporary Studies	MI	\$8,000
P15	19	Undergraduate - Year 2	Social Work	-	-
P16	23	Undergraduate - Year 4	Anthropology	Waitress	\$10,000
P17	24	Undergraduate - Year 4	Science	Gymnastics Coach	\$30,000
P18	19	Undergraduate - Year 2	Information Technology	-	-
P19	19	Undergraduate - Year 2	Fashion	-	-
P20	19	Undergraduate - Year 2	Photography	Waitress	\$4,000
P21	19	Undergraduate - Year 2	Fashion	Sales Associate	\$3,500
P22	22	Undergraduate - Year 2	Fashion	Visual Merchandiser	\$16,000
P23	21	Undergraduate - Year 4	Criminology	MI	\$15,000
P24	19	Undergraduate - Year 1	Graphic Design	-	-
P25	19	Undergraduate - Year 1	Kinesiology	-	-
P26	19	Undergraduate - Year 2	Mass Communication	Supervisor	\$10,000
P27	22	Undergraduate - Year 4	History	Grocery Store	\$15,000
P28	19	Undergraduate - Year 1	Social Science	-	-
P29	18	Undergraduate - Year 1	Journalism	-	-
P30	22	Undergraduate - Year 2	Fashion	-	-
P31	19	Undergraduate - Year 1	Photography	-	-
P32	22	Undergraduate - Year 4	Music	Strategist Assistant	MI
P33	23	Graduate - Master	South African History	Teaching Assistant	\$12,000
P34	27	Graduate - Master	Pharmacy	Pharmacist	\$60,000
P35	21	Undergraduate - Year 2	Fashion	Seamstress	\$1,100
P36	20	Undergraduate - Year 2	Graphic Design	-	-
P37	19	Undergraduate - Year 1	Drawing	Receptionist	MI
P38	19	Undergraduate - Year 1	Journalism	Teller	MI
P39	24	Undergraduate - Year 4	Fashion	-	-
P40	20	Undergraduate - Year 2	Social Work	-	-
P41	20	Undergraduate - Year 2	Social Work	Tourist Guide	\$5,000
P42	22	Undergraduate - Year 3	Fashion	Campus Pub	\$4,000

Note: Mean age: 20.3; MI or missing information: participants did not provide information on this particular area.