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Ethnic Differences in Consumer Preference for Scented Textile Products

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ABSTRACT

The purpose of this study was to determine the role of ethnicity in product evaluation of scented textiles by three female ethnic groups. Differences were compared in product evaluation using the sense of smell alone, appearance and touch alone, or a combination of smell, appearance, and touch. The experimental design involved monitored product evaluations of 12 scented and unscented textiles by females from three ethnic backgrounds. Evaluations took place under 3 conditions: smell, look/touch, and smell/look/touch. A purposive sample with quota selected sampling was used to recruit 120 female consumer subjects from a metropolitan area in Hawaii with a quota of 40 from each of three ethnic groups: Caucasian, Chinese, and Hawaiian. Ethnicity was determined by the subject's response to an ethnicity question. A Descriptive data analysis, three-way ANOVA, and chi-squares were used to analyze differences in product evaluations based on the ethnicity of the respondent and based on which sensory stimuli were present in the evaluation. Product evaluations varied among the ethnic groups and were affected by the types or combinations of sensory stimuli.

Keywords: Scented textiles, tactile, ethnic groups, female consumers

Introduction

Scented T-shirts with unique Kona coffee and macadamia nut flavors are available in Hawaii retail stores to attract visitors. Models of consumer decision-making could indicate the direct role of product evaluation on the decision to purchase products (Blackwell, Miniard & Engel, 2005). These models further indicate that product evaluation is a function of the characteristics of the product and the desires or expectations of the consumer. Consumer desires and expectations, and subsequently their product evaluations, may be influenced by numerous characteristics of the consumer; ethnicity is one of those characteristics (Donthu & Cherian, 1992; Green, 1999). A product innovation such as scented textiles may be evaluated at the point of purchase for its scent as well as its appearance and tactile properties. While scented textiles have been available in the marketplace, little is known regarding the consumer factors that may influence a purchase.

May-Plumlee and Little (2001) and Fiore (1993) found that appearance factors such as color and tactile factors are very important in the initial engagement of the consumer with the product. For products where scent or fragrance is a primary purpose, such as perfumes or air fresheners, it is particularly important to know the role of scent in product evaluation. In the past few decades scent branding and marketing, as exemplified by the $31 billion perfume industry, has become one of the most lucrative businesses in the world (Matlack, 2008). The growth of the global fragrance market has been more than 3% per year (Arnum, 2005). Studies show that people want scents and are willing to pay for them (Liu, Tovia, Balasubramian, Pierce, & Dugan, 2008). According to forecasts by the Freedonia Group (2009), demand for flavors and fragrances in the U.S. will grow 3.7% per year to reach $5.3 billion in 2012. Scents are referred to as pure essential oils that are extracted from flowers. Perfumes are a mixture of two or more scents in alcohol.

Classen (1994) observed that sight and hearing were the dominant senses used in daily and mass communication, and the olfactory sense had been marginalized in modern Western culture. The growth of the fragrance market has brought more attention to the role of olfaction in the consumer process. The olfaction market has changed from its previous focus on health and/or spirit to its current emphasis on scents that provide functional and leisure benefits (Newman, 2005). For example, including certain scents in the retail environment can influence consumer-buying behaviors (Spangenberg, Sprott, Grohmann, & Tracy, 2006). As far back as 1966, Moncrieff suggested that odorizing some merchandise that is usually odorless can make it sell better. Research by Bone (1992) explained "the effects of olfaction on product performance judgments (p. 289)."

To capitalize on the trend of boosting profits by injecting scent into merchandise, textile engineers are developing new technologies to encapsulate aromas and embed them in fibers or finishes (Cook, 2000; Borland, 2005a; Borland, 2005b). Researchers from Philadelphia University indicated that consumers consistently responded with positive evaluations of scent-infused fabrics (Liu *et al.* 2008).

Theoretical Perspectives

Building on the work of Mahajan and Wind (1992), May-Plumlee and Little (2001) proposed a basic conceptual model of product evaluation criteria by analyzing several case studies. The model distinguishes between intrinsic and extrinsic evaluative criteria. Intrinsic criteria are those which are integral to the physical product, while external criteria include price, brand, and brand image. Intrinsic criteria include olfactory characteristics which have been shown to impact consumer preferences (Liu, *et al.* 2008; Fiore, 1993). This study uses fabric colors, print patterns, fabrications, and scents as intrinsic criteria to test consumer preferences.

Ethnicity

Chattaraman & Lennon (2008) found that ethnicity played a significant role when making purchase decisions. Their study investigated the impact of ethnicity on consumer behavior by having subjects show different shopping behavior, while marketing researchers identified ethnic identity as an individual's buying power of ethnic identification.

Cultural differences also play a major role in the use of scents. In Hawaii, people frequently use personal perfume, many times in the lotion form, on hand and body (Stillman, 2002). Wearing leis is customary, and the natural environment is abundant and fragrant with flowers. People in Hawaii may better appreciate the sense of smell due to their culture and environment. ***Aloha*** means **shared breath**, indicating the significance of air in Hawaiian culture (Canfield & Hansen, 2012).

Caucasians have a long history in the development and use of perfumes, colognes, and scented oils. Burn (2001) provides a history of perfume development beginning

with evidence of perfume making in ancient Mesopotamian palaces and continuing in the Roman period. Perfume shops became fashionable in the middle ages. The perfume industry is highly developed because of the sale of perfume and impulse use of perfume for lucrative ventures (Burn, 2001; King, 2007). Perfumed oil and incense were extracted from plants, flowers, or animal grease. Cinnamon was an expensive scent in the past. Many flowers including roses were reported to produce scent oil (Classen, Howes & Synnott, 1994; Sell, 2006). King (2007) indicated that musk was used in China and Western Europe for medical and spiritual purposes. Both Chinese and European consumers were reported to use musk for health and spirit activities (Brun, 2001; King, 2007).

On the other hand, according to the reports of Burr (2008) in the New York Times, Western luxury product, perfume, has been developed in the Chinese market to suit Chinese tastes. Perfume is not a Chinese cultural traditional product. Traditionally, Chinese people use natural scents for health, medicine, and religious purposes (Chua, Baldwin, Hocking & Chan, 2010; Lawless, 2013; Touw, 1981). Flowers are added into tea for aroma (e.g., rose, jasmine) and wood aromas are used for health or medicine (e.g., sandalwood) and incense (e.g., sandalwood). Literature suggests that the significance of strength of ethnic identification is a determinant of individual differences in consumer marketplace behavior (Chang, & Chieng, 2006; Cui, 1999; Chattaraman, & Lennon, 2008; Donthu & Cherian, 1992; Webster, 1994). Chinese people with the Confucian legacy in their early psychological development are more inclined to trust without questioning than are Western individuals (Littrell, 2002). Chinese consumers' behavioral intentions are more likely to be influenced by the culture than those of American consumers (Chen, Aung, Zhou, & Kanetkar, 2005).

Scented textile products

Scented textile products, such as stuffed toys, home furnishings, and lingerie, can be found in the global marketplace. In Hawaii, T-shirts scented with Kona coffee, chocolate, and vanilla aromas attract tourists (Canfield & Hansen, 2012). With a new scented world on the horizon, this research explored the effects of odorized textiles on different cultures' product preference. With many different uses of scents among the three ethnic groups, this project was designed to evaluate consumer preference of scent and scented textiles. A model of scent and look/touch scented textile preference was developed to provide a basis for testing the influence of scented textiles on consumer decisions (Figure 1). The objectives were to explore these differences in (a) scent preference, (b) textile preference, (c) scented textile preference, and (d) the differences of scented textile decisions among three ethnic groups.

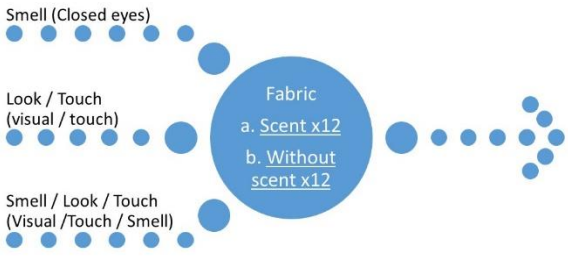

Figure 1. The process for looking/touching/smelling a scented textile workflow

Hypotheses. Specifically, the following hypotheses are formulated:

H1: There are no significant differences in scent preference among the three ethnic groups.

H2: There is no significant difference in fabric preferring selection by tactile (hand) among the three ethnic groups.

H3: There is no significant difference in look/touch/smell for scented textile preferences among the three ethnic groups.

H4: There is no significant difference in the final selection decision for textiles with scents among three ethnic groups.

Methodology and Procedures

An experimental design explored whether ethnicity and culture may influence customers' scent, color/design/touch, color/design/scented/touch, and final selection fabric with/without scent preferences. Show tests are one of 11 effective product development methods according to product development theory developed by Mahajan and Wind (1992) and May-Plumlee and Little (2005). The experiment was conducted in an empty air-conditioned classroom which was set up with two sets of fabrics both with and without scent. To reduce the foreign factor, the table was covered with a white tablecloth to provide a standard condition. Participants were asked to review the consent form, and the researcher gave an introduction to procedures before the experiment. Data were input into the computer by participants with a self-developed questionnaire in the fillable pdf file. A pilot study was conducted in eight Chinese and eight Caucasian American female subjects to examine the self-developed questionnaires. Based on feedback from the pre-test, the questionnaire was adjusted. The pilot study data were not included in the final dataset. Prior to data collection, the Institutional Review Board approved this procedure for the study of human subjects.

Sampling

Female human subjects were recruited by purposive sample method by quota sampling. A ten-dollar gift card for three popular stores (i.e., WalMart, Target, local grocery store) was provided to each participant as an incentive. Subjects were recruited using campus fliers and ads in the campus newspaper. A total of 120 non-smoking participants were recruited from three ethnic groups: Caucasian American, Chinese, and Native Hawaiian. Immigrant participants were restricted to those entering the country in the last five years. The variables were ethnic differences and customer preferences in products by olfaction, as well as by sight (i.e., intrinsic criteria: fabric colors, prints, fabrications) and touch. The average age of participants was about 22 to 28 years old (see Table 1).

Table 1. Subjects' Age

Ethnic	Age (mean)	N
Caucasian	27.5	40
Chinese	25.5	40
Hawaiian	22.45	40
Mean	25.15	120

The testing samples were two sets of twelve handkerchiefs in different colors or designs. One set was scented with different smells. The set of 12 fabrics included pink polyester knit, burgundy-printed silk satin, white polyester georgette, azure printed polyester organza, green polyester voile, anthurium cotton poplin, lavender printed silk satin, blue silk jacquard, fish printed cotton poplin, flower printed silk stain, graphic silk satin, and green polyester knit. A total of ten scents and two perfumes were selected to match the selected fabric in terms of color and pattern, including Rose, Sandalwood, White Ginger, Jasmine, Lemongrass, Honeysuckle, Lavender, YSL perfume, Musk, Plumeria, Cinnamon, and Elizabeth Arden *Green Tea* perfume.

The second set of the same twelve designs were all odor-free in order to control their appeal to the senses of sight and touch. All testing samples were individually packed in uniform covered jars to avoid a foreign factor impact. Data were collected in a

Pacific area university with a diverse multi-ethnic student body (about 45% Caucasian American, 40% Asian and Hawaiian students). Taking advantage of the cultural diversity of the international students at the university, this project explored cultural differences in product preference for scented textile products.

Procedures

Each subject completed three rounds of product evaluation tests, rating the two sets of twelve samples on interval scales from 1 to 10, with *Like the least* as *1* and *Like the most* as *10*. The three steps are as follows:

1. The first round is a smell only test. Have each subject, with eyes closed, sniff each odorized sample in a glass container, and rate them.
2. The second round is a look and touch test. The subjects will look at and touch each odor-free sample and rate them again.
3. The third round is an all-senses test. The subjects will look at, touch, and smell each odorized sample and provide their final impressions.

A self-developed scented textile product evaluation questionnaire concerning olfactory preference, hand and appearance preference, and the total impression with all three senses was used to collect data. A pilot study was conducted to evaluate the test procedures. Participants reported their interests and any suggestions on any significant differences in culture and ethnic groups. Because subjects were requested to close their eyes while at the same time answer questions, some questions were marked incorrectly and entered in wrong places. A revised questionnaire was designed in a fillable pdf file to collect data to allow the researcher to correct the input and keep data input error to a minimum. Four basic demographic questions (i.e., ethnicity, birthplace, age, and major), three questions on possession of scent products and usage of perfume (own bottles of perfume, perfume used frequency and occasion used) and three-step scented textile surveys (smell, look/touch, and smell/look/touch) were designed to examine 12 scented textiles on the questionnaire to explore consumer preferences. There were three evaluations for scents and look/touch scented textiles that used the ten-point Likert scale.

Data collection

All three steps used the same method. After testing each sample, subjects were asked to key in a rating onto the laptop computer. Subjects were asked to smell coffee beans between each sample. Each subject tested a sample or smell in a glass container, and rated them on the laptop. Keying in data to the laptop was the same procedure for all three steps of looking/touching and all senses, subjects were asked to rate each sample immediately and key in their ratings onto the laptop.

Data Analysis

The collected data were analyzed by using SPSS. Inferential statistics indicated whether there were any differences in scented product preference for consumers of different ethnicities/cultures. The hypotheses were tested by the ANOVA single-object three-treatment method (by smelling, touching/looking and smelling/touching/looking), with three factors: scent (12), untreated textile (12), and ethnicity (3) in 3x12x3. Descriptive data analysis, multiple one-way ANOVA to compare three ethnic groups, and chi-square test were used to analyze three ethnic groups' preferences.

Results

The mean age of the three ethnic groups was 25.15 years, while the Hawaiian group had the youngest average age at 22.45, and the Caucasian group had the oldest average of 27.5 years (see Table 1). All Chinese participants were born and raised in mainland China, while the majority of Caucasian and Hawaiian participants were born in the US and Hawaii. The average age of Hawaiian participants was about five years younger than the Caucasian participants. On average, Caucasians own 2.2 bottles of perfume, Chinese own 2.4 bottles and

Hawaiians own 3.7 bottles. Caucasians and Chinese participants own two bottles of perfume on average in their ethnic groups, while Hawaiian participants own three bottles. More Caucasians in this sample owned between 1-2 bottles of perfume. The number of Chinese participants in this sample owned above 2 bottles of perfume and more than any other group. More Hawaiian participants in the sample owned between 2-4 bottles of perfume.

Caucasian and Chinese participants apply perfume 0.88 and 1.15 times per week respectively, while Hawaiians use perfume 4 times (mean=7.15 times per week) more frequently than the other two ethnic groups. Results suggest that a quarter of Caucasian participants (n= 10, 25%) wear perfume when hanging out with friends, while Chinese (n= 14, 35%) wear perfume when hanging out with friends, and more than half of Hawaiian participants (n= 27, 67.5%) wear perfume when hanging out with friends.

Hypothesis 1: There are no significant differences in scent preference among the three ethnic groups. Based on the data, no significant differences in scent preference were found among three groups. However, among these scents, preference of seven-scent (i.e., rose, white ginger, jasmine, lemongrass, honeysuckle, musk, and plumeria) found significant differences in trends among the three groups which suggests unequal variance in their preferences (see Table 2).

Table 2: Mean of results of smelling scents from the three ethnic groups

	Caucasian (Mean)	Chinese (Mean)	Hawaiian (Mean)
Rose**	6.65	5.125	5.425
Sandalwood	5.525	5.275	5.025
White Ginger*	5.775	4.9	6
Jasmine**	5.875	4.65	6.125
Lemongrass**	6.025	4.75	4.475
Honeysuckle*	6.075	5.225	6.75
Lavender	3.625	4.325	3.9
YSL	4.8	5.425	4.35
Musk***	5.375	6.825	5.075
Plumeria*	5.6	5.2	4.325
Cinnamon	4.275	4.325	4.625
Green Tea	7.25	7.95	7.175

Note: * = $p < 0.05$
** = $p < 0.01$
*** = $p < 0.005$
**** = $p < 0.001$

The three ethnic groups are not different in the selection of the rose scent (df=2, F=4.963; *P=0.09*). The mean score for Caucasians for rose is 6.65, the mean score for Chinese participants is 5.12, and the mean score for Hawaiian participants is 5.42. The scores for sandalwood were not very different, with mean scores ranging from 5.52 for Caucasians, 5.28 for Chinese and 5.02 for Hawaiians. Based on culture, Chinese were expected to have stronger scent preference. However, the results did not reveal a difference among three groups.

White ginger had more variability between the groups; Caucasians had a score of 5.78, Chinese had a score of 4.09, and Hawaiian had a score of 6 (df=2, F=3.747; *P=0.026**). As for Jasmine, Caucasians had an average of 5.88, Chinese 4.65, and Hawaiian 6.12 (df=2, F=4.633; *P=0.012**). The Chinese and Hawaiian groups had relatively similar scores to each other for lemongrass Caucasian differed in score with

6.02, while the Chinese had a score of 4.75, and Hawaiians had a score of 4.48 (df=2, F=4.966; *P=0.009**). The three ethnic groups had relatively similar scores for honeysuckle; Caucasians had a score of 6.08, Chinese had 5.22, and Hawaiian had 6.75 (df=2, F=4.193; *P=0.017**). The groups also had similar scores for the lavender scent; the score for Caucasian is 3.62, the score for Chinese is 4.32, and the score for Hawaiian is 3.90. The YSL scores for Caucasian are 4.80, the score for Chinese was 5.42, and the score for Hawaiian was 4.35.

There were significant differences among three groups for both musk and plumeria. Musk scent for Caucasian was 5.38, Chinese 6.82, and Hawaiian 5.08 (df=2, F=6.419; *P=0.002**). Caucasian score for plumeria is 5.60, for Chinese is 5.20, and for Hawaiian is 4.32 (df=2, F=3.587; *P=0.031**). Cinnamon scores were similar among the three ethnic groups with Caucasians scoring 4.28, Chinese 4.32, and Hawaiian 4.62. The green tea scents also have results that were similar among the three groups; Caucasian with 7.25, Chinese with 7.95, and Hawaiian with 7.18.

The different ethnicities had varying scores for their preferences of the 12 scents. There is hardly any similarity between all of them except for the highest and lowest rated specific scents. Although each ethnicity group in this sample tended to have their own unique favor for a scent different from the other two groups, the mean scores for three groups are very significantly different. But the top choice for all three was the green tea scent. The lowest rated scent in the Caucasian group was the lavender. For the Chinese, it was the lavender or cinnamon. The Hawaiian group also liked lavender the least.

Hypothesis 2: There is no significant difference in fabric preferring selection by tactile (hand) among the three ethnic groups. Regarding textile preference, there is no significant difference among three groups. Unequal variance appears in the dragon print and flower silk satin preferences (see Table 3).

The mean scores of the three ethnic groups for textile design present the different preferences. The score for Caucasian for pink polyester knit is 5.425, Chinese score is 4.25, and the Hawaiian score is 5.675 (df=2, F=4. 367; *P=0.011**). Caucasian score for dragon print silk is 6.55, Chinese score is 5.725, and the Hawaiian score is 7.525 (df=2, F=8. 009; *P=0.001***).

Caucasian score for white polyester georgette is 3.95, Chinese score is 5.125, and the Hawaiian score is 3.425. Caucasian score for azure polyester organza is 5.4, Chinese score is 5, and the Hawaiian score is 4.875. Caucasian score for green voile is 5.92, Chinese score is 5.48, and the Hawaiian score is 5.10. There was no difference for three fabrics among three ethnic groups.

The three scores for anthurium cotton poplin are similar between the groups, with Caucasians score as 4.12, Chinese 5.48, and Hawaiian is 4.58 (df=2, F=3. 328; *P=0.039**). The Caucasian score for lavender silk is 6.48, for Chinese is 6.52, and Hawaiian is 7.50 (df=2, F=3. 962; *P=0.022**). Blue calligraphy scores varied largely within the groups; Caucasian scores were 7, Chinese were 5.95, and Hawaiian 6.88 (df=2, F=3. 029; *P=0.052*). However, fish print cotton poplin scores were very similar, with Caucasian as 5.25, Chinese as 5.62, and Hawaiian as 5.35.

The textile for flower print silk satin for Caucasian is 7.12, for Chinese is 6.70, and Hawaiian is 7.92 (df=2, F=4. 700; *P=0.011**). The Caucasian mean score for graphic silk jacquard is 6.10, Chinese is 5.78, and Hawaiian is 7.20 (df=2, F=4. 55; *P=0.013**). The green knit textile score for Caucasian is 5.42, Chinese is 4.60, and for Hawaiian are 6.32 (df=2, F=5. 365; *P=0.006***).

The three ethnic groups' choices for textiles are like their choices in scents. The Caucasians most favored the flower satin with a 7.12 average group score. For the Chinese, the flower satin and lavender silk were very close scores. The Hawaiian group also favored flower satin but also highly favored scores for dragon silk, lavender silk, and graphic satin.

Table 3: Mean of result of touch/look from the three groups

	Caucasian (Mean)	Chinese (Mean)	Hawaiian (Mean)
Pink Knit*	4.425	4.25	5.675
Dragon Silk**	6.55	5.725	7.525
White Georgette	3.95	4.125	3.425
Azure Organza	5.4	5	4.875
Green Voile	5.925	5.475	5.1
Anthurium Cotton*	4.125	5.475	4.575
Lavender Silk*	6.475	6.525	7.5
Blue Calligraphy	7	5.95	6.875
Fish Cotton	5.25	5.625	5.35
Flower Satin*	7.125	6.7	7.925
Graphic Satin*	6.1	5.775	7.2
Green Knit**	5.425	4.6	6.325

Note: * = $p < 0.05$
** = $p < 0.01$
*** = $p < 0.005$
**** = $p < 0.001$

Hypothesis 3: There is no significant difference in look/touch/smell for scented textile preferences within three ethnic groups. Equivalent variance appears in the nine out of 12 textiles preferences (see Table 4). In the pink polyester with rose, lavender print silk with lavender, and fish print cotton poplin with plumeria confirm unequal variance in preference among the three groups.

The mean scores of the three ethnic groups for textile design present little difference in preferences. Caucasian score for pink polyester knit with rose is 5.5, Chinese score is 5.125, and the Hawaiian score is 6.125 (df=2, F=3. 094; *P=0.049**).

These five fabrics did not suggest the difference among three ethnic groups. Caucasian score for dragon print silk with sandalwood is 5.7, Chinese score is 5.7, and the Hawaiian score is 6.45. Caucasian score for white polyester georgette with white ginger is 4.975, Chinese score is 4.875, and the Hawaiian score is 5.225. Caucasian score for azure polyester organza with jasmine is 5.375, Chinese score is 5.425, and the Hawaiian score is 6.025. Caucasian score for green voile with lemongrass is 5.525, Chinese score is 5.175, and the Hawaiian score is 4.725. The three scores for anthurium cotton poplin with honeysuckle are similar between the groups, with Caucasians score as 5.075, Chinese is 5.3, and Hawaiian is 5.75.

However, the score for lavender print silk with lavender varied largely within the groups; for Caucasian score is 4.4, for Chinese is 6.075, and Hawaiian is 5.15 (df=2, F=6.729; *P=0.002***). Blue calligraphy silk jacquard scores for Caucasian scores were 5.625, Chinese were 5.825, and Hawaiian 5.725; they were very similar scores. However, fish print cotton poplin scores with musk varied largely within groups; Caucasian as 5.175, Chinese as 6.6, and Hawaiian as 4.975 (df=2, F=6.40; *P=0.002***).

Table 4: Mean of results of touch/look/smelling Scents from the three ethnic groups

	Caucasian (Mean)	Chinese (Mean)	Hawaiian (Mean)
Pink Knit/ Rose*	5.5	5.125	6.125
Dragon Silk/ Sandalwood	5.7	5.7	6.45
White Georgette/ White Ginger	4.975	4.875	5.225
Azure Organza/ Jasmine	5.375	5.425	6.025
Green Voile/ Lemongrass	5.525	5.175	4.725
Anthurium Cotton/ Honeysuckle	5.075	5.3	5.75
Lavender Silk/ Lavender*	4.4	6.075	5.15
Blue Calligraphy/ YSL	5.625	5.825	5.725
Fish Cotton /Musk*	5.175	6.6	4.975
Flower Satin/ Plumeria	5.925	6.225	5.075
Graphic Satin/ Cinnamon	4.825	5.35	5.075
Green Knit/ Green Tea	6.375	6.9	7.025

Note: * = $p < 0.05$
** = $p < 0.01$
*** = $p < 0.005$
**** = $p < 0.001$

Then the textile for flower print silk satin with plumeria for Caucasian is 5.925, for Chinese is 6.225, and Hawaiian is 5.075. The Caucasian mean score for graphic silk satin with cinnamon is 4.825, Chinese is 5.35, and Hawaiian is 5.075. The green knit with Arden *Green tea* score for Caucasian is 6.375, Chinese is 6.9, and for Hawaiian are 7.025.

Hypothesis 4: There is no significant difference in the final selection decision for textiles with scents among three ethnic groups.

The final question "would you prefer the textile with scent or without scent" also suggests that the majority of Hawaiians prefer *with scent* versus Caucasian and Chinese prefer *without scent*. Cross-tabulation analyses and chi-square tests were conducted to analyze the scented textiles adoption among ethnic groups. Table 5 presents cross-tabulation analyses in two-way frequency distributions of the selected scented textiles by ethnic groups. About more than half of Caucasian (22 out of 40) and Chinese (23 out of 40) were reported to select unscented textile. More than 67% of Hawaiian (27 out of 40) reported selecting scented textile. Based on chi-square test χ^2 (2, N=120) = 6.073, *p=0.048**; significant differences in selection scented textile among ethnic group were found. Hawaiians indicated that they prefer to select fabric with scent.

Table 5: Selection of favorite fabric swatch with/without scent Crosstabulation among ethnic group

Ethnicity	Favorite fabric with/without scent		
	Without scent	With scent	Total
Caucasian	22	18	40
Chinese	23	17	40
Hawaiian	13	27	40
Total	58	62	120

Discussion and implication

All three ethnic groups had different preferences for certain textiles, scents, and their combinations. The results reveal that the majority of the Chinese participants preferred texture; the majority of Hawaiian participants were highly influenced by scents, and the Caucasian participants were influenced by both. It is shown in the data that there is a significant difference between the groups in liking scented textiles verses unscented

textiles. The majority of Caucasians (60 % of participants) and Chinese (65 % of participants) prefer unscented textiles whereas the majority of the Hawaiian group prefers scented textiles (70 % of participants).

The difference may result from the age difference. Most Chinese participants are international graduate students, with age average of 25.5 years. As visitors and older participants, the Chinese could be more experienced consumers and look more for inner value. Hawaiians are local and younger and may place great value on appearance (Kaomea, 2001).

Based on our observation of subjects' reaction and comments during the experiment, cultural differences may also impact the scented textile selection. Hawaiians have a long relationship with tropical flowers and insist on scented products more than other groups. Caucasians have been living in the consumer economy much longer than the Chinese who have been appreciating beauty and individual expression for less than thirty years (Zhou & Belk, 2004). It is not surprising to find Caucasians have a greater preference for the design elements than Chinese. China, the country in which silk was invented, may inspire its people to look for luxurious tactile qualities in the fabric, resulting in Chinese consumers looking for fabric quality more than scent and design elements.

Implication

Hawaiian people are more influenced by scent. Combined tactile and visual senses in preference evaluation were used in this study. Caucasians are more influenced by the look, mostly color and then pattern. Chinese participants show that they care most for the touch, whether the fabric is comfortable and of good quality.

This research explored ethnic differences in the degree of influence scents have on textile selection decisions. It may not be a universal truth that scents enhance product attractions and hence promote sales. How scents affect consumer behavior is culture-specific and therefore should not be generalized. This research may be of interest to manufacturers, product developers, textile mills, and retailers by making them more aware of cultural differences in scented textile product preference. As odorized products are the next big trend for textile products, a cultural sensitivity study may help fine-tune the products for different markets, such as the Chinese market. This case study included a limited number of subjects and ethnicities but has facilitated the exploration of the consumer preferences. Future studies should focus more specifically on particular scents with a larger subject group to reinforce results and benefit product developers and/or manufacturers.

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