

Young consumers' perceptions of sustainable clothing: Empirical insights from Chinese Post-90s' college students

By: [Jin Su](#), [Kittichai Watchravesringkan](#), Jianheng Zhou

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Abstract:

The scale of environmental and social impacts from global apparel production and consumption makes sustainability increasingly important in the contemporary business environment. This study explores the Chinese young consumers' perceptions of and attitudes toward sustainable clothing. Specifically, the study aims to answer the following two research questions: (1) How Chinese college students view and feel about sustainable clothing in terms of their perceived risks, and (2) How their sustainability knowledge, their personal values, and perceived risks impact their attitude toward and willingness to buy sustainable apparel products. The study results based on data collected from 381 Chinese post-90s' college students demonstrate that apparel sustainability knowledge strongly and positively predicts consumer attitude and willingness to buy. The study also reveals that consumer attitude and willingness to buy are significantly predicted by personal values and consumer perceived risks toward sustainable clothing. The study provides valuable baseline information for the Chinese textile and apparel industry and global sustainable textile and apparel marketers.

Keywords: sustainable clothing | sustainability knowledge | value | attitude | college student | millennial generation | China

Article:

Introduction

As the industry supplying and marketing one of the major consumer product categories clothing, the apparel industry has specific negative impacts on the environment through all stages of the apparel product life cycle, from fiber growth and manufacturing, fabric and garment dyeing and printing, transportation to stores and selling, to disposal at the end of garment life (Hill & Lee, 2012). Some of the key social and environmental sustainability issues in the clothing industry include the increased volume of clothing consumption fueled by "fast fashion"; employee working conditions and wages; pesticide use, excessive chemical usage, and disposal of used garments (Goworek, Fisher, Cooper, Woodward, & Hiller, 2012).

There is an increasing public demand that corporations take responsibility for environmental and societal problems (Dickson, 2000). The literature suggests a consumer-centered approach to sustainability, in which companies present a holistic application of sustainability

strategies, well integrated into company policies and product offerings (Hill & Lee, 2012). Textile and apparel firms have been implementing a variety of eco-conscious initiatives throughout their supply chains (Dickson, Loker, & Eckman, 2009; Hiller Connell, 2011). However, as the industry works toward being more environmentally and socially conscious, it is equally important to involve consumers in the process and encourage sustainable consumption of apparel products. Sustainable consumption is also called as ethical consumption, described as making purchase decisions not only on the basis of personal interests but also on the basis of the interests of society and the environment; therefore, it is closely connected with social and environmental sustainability (Goworek et al., 2012). Ethical consumerism has resulted in a market for ethical fashion which is a new approach of "fashion with conscience" (Joergens, 2006).

With the significant achievements of economic development from over 30 years of rapid urbanization and industrialization, China is facing serious environmental deterioration. As China is a major powerhouse of global apparel production, it is undeniable that awareness of environmental and social problems, including pollution, and labor issues and working condition, has grown in recent years in China. Interest in sustainable clothing production and consumption is growing, as evidenced by more and more designers and businesses promote sustainable lifestyle in China (Cerini, March 14, 2016; Song, April 24, 2017). The rapid increase in the size of the sustainable clothing market implies consumers' increasing concern about sustainability. However, most research on sustainable consumption has originated from, and focused on, Western countries; academic research attention to consumer sustainable consumption behavior in China has been very limited so far (Kolk, Hong, & Van Dolen, 2010). In addition, young Chinese consumers' perceptions of and attitudes toward sustainable clothing in China have hardly been studied so far. Thus, this study aims to fill the literature gap by examining Chinese post-90s' college students' perceptions of and consumer behavior toward sustainable clothing.

Previous research consistently indicates that knowledge is a determinant of eco-conscious consumer behaviors (Hill & Lee, 2012; Hiller Connell, 2010; Hwang, Lee, & Diddi, 2015). The literature also reveals the negative effect of perceived risk on consumers' attitudes (Beneke, Flynn, Greig, & Mukaiwa, 2013; Kang & Kim, 2013; Sweeney, Soutar, & Johnson, 1999). Furthermore, the literature maintains that consumers' personal values are associated with the formation of beliefs and attitudes, and often influence intentions to behave in a certain way (Ajzen & Fishbein, 1980). Previous studies explored personal values and socially responsible consumption in the USA and UK (Ma & Lee, 2012). However, little research examined Chinese young consumers' sustainability knowledge, their personal values, and their attitudes toward sustainable consumption. Considering the huge social and cultural impacts that Chinese young generation plays in the Chinese society and their market potential in Chinese apparel retail industry, built upon previous studies, it is crucial to explore the Chinese young consumers' perceptions of and attitudes toward sustainable clothing. Specifically, this study aims to answer the following two research questions: (1) How Chinese college students view and feel about sustainable clothing in terms of their perceived risks, and (2) How their sustainability knowledge, personal values, and perceived risks impact their attitudes toward and willingness to buy sustainable apparel products.

In the following section, the relevant literature is reviewed. Next, the research method employed to investigate the research questions is described. The empirical results of the survey are then presented. The concluding section discusses the implications of the findings, notes the limitations of the study, and offers suggestions for future research.

Literature Review

Chinese Post-90s: Emerging Consumers for Sustainable Apparel Products

Previous research indicates that young consumer segment is a main target consumer group for companies with corporate social responsibility (CSR) attributes, and these young consumers represent a large and powerful consumer segment (Hill & Lee, 2012; Hwang et al., 2015). Young consumers are only now entering their young adulthood; thus, their consumer purchase decisions will impact fashion retail industry for a long time. There are three reasons that motivate us to study Chinese post-90s' college students' perspective. First, given the current vibrant retail environment in China, young consumers are considered one of the most important market segments for apparel products (O'Cass & Choy, 2008; O'Cass & Siahtiri, 2014). Retailers have been attracted to this consumer segment due to its size and consumer spending power. In 2016, the total population in China is 1.37 billion people; however, noticeably the population count in the age group of 17-26 (born between 1990 and 1999) is about 202.1 million people, constituting about 14.7% of China's total population (U.S. Census Bureau, 2017). To put the power of this consumer segment into perspective, the head count of China's post-90s alone is about 62.4% of the entire US population (U.S. Census Bureau, 2017).

Second, the current Chinese post-90s have been growing up with China's rapid economic growth, a fact which affects their daily lives. Most Chinese post-90s are the only child in their family; as such, they represent a generation of young adults whose lifestyle is quite different from the previous generations. They are techno-logically connected to the global marketplace. They highly regard the power of economic freedom, even social freedom, and are aware of emerging global issues. This generation appreciates sustainable lifestyle and is interested in health and well-being issues in China (Rapp, 2016). Third, over the past decade, the Chinese government has realized the importance of educating young students about sustainability for China's sustainable development (Simoes, 2016). Sustainability is heavily promoted in China through all different news and media channels (Kolk et al., 2010; Simoes, 2016). As such, understanding Chinese post-90s' perspectives of sustainable clothing offers valuable insights to global sustainable apparel marketers.

Apparel Sustainability Knowledge

McDonald et al. (2009) found consumers process sustainability issues in decision making differently among product categories. General environmental concern may not carry over to the apparel industry specifically (Garn, 2011; Hiller Connell, 2010). Even with an increasing universal awareness of environmental and ethical issues, consumers who purchase apparel are often confused by the meaning of sustainability (Hiller Connell, 2010). Previous studies found that consumers have merely a broad awareness of environmental issues and lack knowledge specific to the apparel industry (Garn & Banning, 2011; Hiller Connell, 2010). Even consumers who are environmentally conscious have little knowledge of the environmental impact of apparel purchases (Hiller Connell, 2010). The notion of ethical clothing is complex as reflected by the use of various terms such as eco, organic, fair-trade, or recycled apparel. In addition, inclusion of sustainability in apparel purchasing decisions may be especially complicated due to additional evaluative criteria such as fit and aesthetic preferences (Garn, 2011; Hiller Connell, 2010).

Hill and Lee (2012) stated that specific understanding of the sustainable issues of the apparel industry is important, as the production and retailing of apparel products represents a large industry with great adverse environmental impacts. Students who were more knowledgeable about textile and apparel environmental issues perceived themselves to have more impact on the problems (Dickson, 2000; Hill & Lee, 2012; Hwang et al., 2015; Hyllegard, Ogle, & Yan, 2014). Additionally, some demographic factors, including age, gender, and education, have been associated with a variety of environmentally and socially responsible apparel consumption behaviors (Butler & Francis, 1997; Dickson, 2000; Garn, Cao, Farr, & Kang, 2010; Hill & Lee, 2012). Young consumers hold more favorable attitudes toward environmental regulation and about conserving the environment with sustainable clothing consumption practices (Butler & Francis, 1997; Dickson, 2000; Hill & Lee, 2012; Hyllegard et al., 2014).

Knowledge shapes an individual's beliefs, and attitude is derived from a group of beliefs that one holds about the object of the behavior (Ajzen & Fishbein, 1980). Consumer knowledge of environmental and social issues may play a role in their environmentally and socially responsible apparel consumption as well (Dickson, 2000; Hwang et al., 2015). Knowledge is frequently a prerequisite for consumers to engage in pro-environmental and prosocial behaviors, and a lack of knowledge is a constraint. Consumers with knowledge and concerns regarding environmental and societal issues would be motivated to purchase green and fair-trade products (Hwang et al., 2015). Chen and Burns (2006) maintained that consumer decisions in product purchasing play a vital role in making the textile industry move toward "green" or environmentally responsible production. Previous studies have reported that consumers' higher level of awareness of company's CSR attributes had positive effects on their purchase intentions (Bhaduri & Ha-Brookshire, 2011; Hwang et al., 2015; Smith, 2003). Different levels of consumers' knowledge about sustainability issues in the textile and apparel industry would result in different consumer behaviors, and consumers' apparel sustainability knowledge is the key to help consumers make the right choice. Therefore, based on the previous studies, the following hypothesis was proposed:

H1: There is a positive influence of consumers' apparel sustainability knowledge on (a) consumer attitude toward and (b) willingness to buy sustainable clothing.

Perceived Risks of Purchasing Sustainable Clothing

The issues surrounding consumers' decisions to try new brands and adopt innovative products are of both theoretical interest and pragmatic importance. One factor that research has identified as a critical determinant of consumers' willingness to buy a new item is the perceived risks associated with the purchase (Grewal, Gotlieb, & Marmorstein, 1994). Risk is a consumer's perception of the uncertainty and adverse consequences of engaging in an activity (Chang & Tseng, 2013; Dowling & Staelin, 1994). Perceived risk is commonly thought of as felt uncertainty regarding possible negative consequences of using a product or service. Dowling (1986) defined perceived risk as the uncertainty of a desired performance that customers experience when making purchasing decisions. When consumers perceive higher risks, it is less likely that they will buy the product. Past studies show that perceived risk is an important factor, which influences a consumer's purchase intention (Chang & Tseng, 2013; Grewal et al., 1994; Sweeney et al., 1999).

Mitchell (1999) contended that perceived risk is actually a "multidimensional phenomenon" which can be segmented into various risk components. A rich stream of consumer behavior literature supports the usage of these risk facets to understand consumer product and

service evaluations and purchases. Reviews of perceived risk illustrate a variety of conceptualizations of perceived risk (Dowling, 1986; Dowling & Staelin, 1994). The more common components of perceived risk include performance, financial, social and psychological risks (Beneke et al., 2013; Chang & Tseng, 2013; Featherman & Pavlou, 2003; Jacoby & Kaplan, 1972). Financial risk is the potential monetary loss and is defined as the potential monetary outlay associated with the initial purchase price as well as the subsequent maintenance cost of the product (Chang & Tseng, 2013; Grewal et al., 1994; Lim, 2003). Performance risk means the possibility that a purchased product fails to provide the desired benefits or does not function properly (Bauer, 1960; Crespo, del Bosque, & de los Salmones Sanchez, 2009; Grewal et al., 1994; Lim, 2003). Performance risk is considered to be a quality risk (Kang & Kim, 2013) and is similar to the usefulness or functionality of products. Social risk is a consumer's concern about how other people perceive their shopping behavior and about the potential loss of status (Crespo et al., 2009; Kang & Kim, 2013; Lim, 2003). Consumers contemplate whether purchasing and wearing an apparel product may damage or reduce their image in the eyes of others (Kang & Kim, 2013). It is the possibility that consumers' shopping behavior is not accepted by other society members (Lim, 2003). Psychological risk refers to mental stress a consumer suffers due to shopping behavior, and it will have a negative effect on the consumer's peace of mind or self-perception (Crespo et al., 2009; Lim, 2003). Psychological risk could possibly damage one's self-image and cause potential loss of self-esteem (ego loss) from the frustration of not achieving a buying goal (Kang & Kim, 2013).

Shopping and purchasing is a way for young consumers to define themselves and to create their identity of their own decision making. Young consumers use apparel products to develop, maintain, or reinforce their self-concept and self-image (Belk, 1988; Chaplin & John, 2005; Sirgy, 1982). For apparel products, one important factor influencing college students' purchasing decision is whether the product is fashionable or in style. Hiller Connell's (2010) study showed that there was a general perception among consumers that environmentally preferable apparel is less stylish when compared with mainstream apparel. Chen and Burns (2006) indicated that consumers may not want to sacrifice fashion or colors (e.g., organic fibers are available only in earth tone, off-white colors) for the sake of the environment when making decisions about the purchases of textiles and clothing. Therefore, fashion risk is an important risk dimension for clothing products. In the present study, we included fashion risk as one component of consumer perceived risk toward sustainable clothing.

The intentions to switch to products made by more socially responsible manufacturers may be contingent on the product's quality, style, and price equaling that of other available products (Dickson, 2000). It is highly likely that when a person contemplates the purchase of sustainable clothing, the individual has feelings of "uncertainty," "discomfort," and/or "anxiety." This type of feeling is the result of the consumer's perception of risk. Findings from previous studies reveal that the perception of higher prices is a major barrier to purchasing environmentally friendly apparel (Gam, 2011; Hill & Lee, 2012; Hiller Connell, 2010). Chen and Burns (2006) reported that although consumers say that environmental aspects of textiles are important to them, some retailers found it is more difficult to sell organic and recycled textile products because of the higher prices over regular items. Hiller Connell (2010) also found that society's expectation for individual's appearance is another external barrier to eco-conscious apparel acquisition. Therefore, based on previous literature research, we generate the following hypotheses to examine the influence of perceived risks on consumer attitude and purchase intention.

H2: There is a negative influence of (a) financial risk, (b) performance risk, (c) psychological risk, (d) social risk, and (e) fashion risk on consumers' attitude toward sustainable clothing.

H3: There is a negative influence of (a) financial risk, (b) performance risk, (c) psychological risk, (d) social risk, and (e) fashion risk on consumers' willingness to buy sustainable clothing.

Schwartz Values

Schwartz defined a value as a belief pertaining to desirable end states or models of conduct, that transcends specific situation, guides selection or evaluation of behavior, people, and events, and is ordered by importance relative to other values to form a system of value priorities (Schwartz 1992, 1994; Schwartz & Bilsky, 1987). Based on universal requirements of human existence, Schwartz and Bilsky (1987) identified 56 values, and specified a set of dynamic relations among the motivational types of values in an integrated manner. Forty-five of the value items have demonstrated nearly equivalent meaning across over 60 countries around the world (Schwartz, 1992, 1994; Schwarz & Sagiv, 1995).

Table 1. Definitions of types of values and the items that represent and measure them

Values	Definitions	Items
Power	Social status and prestige, control or dominance over people and resources	Social power, authority, wealth
Achievement	Personal success through demonstrating competence according to social standards	Successful, capable, ambitious, influential
Hedonism	Pleasure and sensuous gratification for oneself	Pleasure, enjoying life
Stimulation	Excitement, novelty, and challenge in life	Daring, a varied life, an exciting life
Self-direction	Independent thought and action-choosing, creating, exploring	Creativity, freedom, independent, curious, choosing own goals
Universalism	Understanding, appreciation, tolerance, and protection of the welfare of all people and of nature	Broad-minded, wisdom, social justice, equality, a world at peace, a world of beauty, unity with nature, protecting the environment
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact	Helpful, honest, forgiving, loyal, responsible
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provides the self	Humble, accepting my portion in life, devout, respect for tradition, moderate
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms	Politeness, obedient, self-discipline, honoring parents and elders
Security	Safety, harmony, and stability of society, of relationships, and of self	Family security, national security, social order, clean, reciprocation of favors

Source Bardi and Schwartz (2003)

The Schwartz (1992) value theory defines ten broad value types according to the motivation that underlies each of them/ These ten value types include power, achievement, hedonism, stimulation,

self-direction, universalism, benevolence, tradition, conformity, and security (see Table 1). Studies with samples from many countries have established that these indexes have adequate internal reliability, temporal stability, and external validity and that scores are not contaminated by social desirability (Bardi & Schwartz, 2003). The pursuit of each value has psychological practical and social consequences that may conflict or may be congruent with the pursuit of other values (Bardi & Schwartz, 2003).

Values are abstract principles that are central to an individual's self-concept (Dickson, 2000, Smith, 1982). They act as guides for assessing situations and determining an individual's social and ideological position (Rokeach, 1979; Smith, 1982). Values are important for understanding various social psychological phenomena and are believed to play the role of fundamental beliefs that direct or motivate our behaviors and decision making (Bardi & Schwartz, 2003). Bardi and Schwartz (2003) maintained that people may act in accordance with their values even when they do not consciously think about them; thus, values may operate outside of awareness but they are available for retrieval from memory. Values are relatively stable motivational characteristics of persons that change little during adulthood (Bardi & Schwartz, 2003). Thus, the following hypothesis was posited:

H4: There is a relationship between Schwartz value and (a) consumer attitudes and (b) consumers' willingness to buy with regard to sustainable.

Research Method

A structured questionnaire was designed based on a careful review of pertinent literature. Sustainable clothing, which is also called environmentally and socially responsible apparel products (Goworek et al., 2012; Harris, Roby, & Dibb, 2015), was defined at the beginning of the questionnaire, and examples of sustainable clothing products were provided. The survey was first developed in English. A translation and a back translation of the questionnaire were performed by two researchers who are fluent in both Chinese and English to ensure translation equivalence.

In terms of the measures of the variables, specifically, six items measuring consumers' sustainability knowledge about apparel products were obtained from Park and Kim (2016) .. Measures of perceived risks were compiled from the literature (Dickson, 2000; Kang & Kim, 2013). These items were measured using a five-point Likert-type scale (1 = "strongly disagree" to 5 = "strongly agree"). We measured values with the Schwartz Value Survey (1992). The survey listed 56 value items, each followed by a short definition in parentheses. Participants rated each value as a guiding principle in their own life on a five-point scale from 1 (not at all important) to 5 (extremely important). The forty-five value items in the survey that have demonstrated nearly equivalent meaning across over 60 nations around the world were used to index the ten values. Indexes are computed by averaging the importance ratings of the value items that represent each value, listed in Table 1. Four items of measuring consumer attitude were adapted from Chan (2001) on a five-point semantic differential scale. Three items adopted from Sweeney et al. (1999) were used to measure consumers' willingness to purchase sustainable clothing products on a five-point scale after modification to the research specific context. A sample of current college students from a large Chinese university in Shanghai, China, was recruited during March 2017.

Data Analysis

Sample Characteristics

A total of 430 responses were received, and a total of 381 valid responses were used for this study. Table 2 includes the sample characteristics information. Around 83% of the responses were from sophomore or juniors. The participants ranged in age from 18 to 26 years (45.4% were 18-20, 45.9% were 21-23, and 6.3% were 24- 26). About 75% were female, and about 94% of the valid responses were from students majored in the School of Business. In terms of the discretionary spending per month, 11.0% of the respondents spent less than 500 CNY (approximately US \$73.5), 52.0% spent 500-1,499 CNY (approximately US\$73.5-220.4), and 28.6% 1,500-3,000 CNY (approximately US\$220.6-441.2). Around 8.1% had over 3,000 CNY (over US\$441.2) discretionary spending per month.

Table 2. Sample characteristics

Demographic information	Sample	
	n	%
<i>Gender</i>		
Male	95	24.9
Female	286	75.1
<i>College</i>		
School of business	357	93.7
Others	24	6.2
<i>Age</i>		
18-20	173	45.4
21-23	175	45.9
24-26	24	6.3
27-30	5	1.3
Over 30	4	1.0
<i>Academic Status</i>		
Freshman	10	2.6
Sophomore	180	47.2
Junior	135	35.4
Senior	15	3.9
Graduate student	40	10.5
Others	1	0.3
<i>Discretionary spending per month</i>		
Less than 500 CNY (less than US \$73.5)	42	11.0
500 – 999 CNY (US \$73.5 – 146.9)	97	25.5
1000 – 1499 CNY (US \$147 – 220.4)	101	26.5
1500 – 1999 CNY (US \$220.6 – 294)	60	12.7
2000 – 3000 CNY (US \$294.1 – 441. 2)	49	12.9
Over 3000 CNY (US \$441.2)	32	8.1
Missing	1	0.3

Note CNY – Chinese Yuan Renminbi; at the time of the survey, US \$1 = 6.8 CNY

Preliminary Data Analysis

Preliminary data analysis was conducted using SPSS 23. Table 3 shows descriptive analysis results of Chinese college students' apparel sustainability knowledge. Young Chinese consumers have medium-level apparel sustainability knowledge ($M = 2.45-2.95$). The respondents were more informed about environmental issues (e.g., eco-fashion, environmental impact of clothing manufacturing) and child labor/sweatshop issues in the fashion apparel manufacturing business than the sustainable apparel brands/products. The respondents did not perceive themselves as more knowledgeable about socially responsible apparel business than the average person.

Table 4 shows the descriptive analysis results of the ten value types. Hedonism, security, and self-direction are the three values rated higher than other value types. Tradition, stimulation, and power were rated lower among the ten value types. Young Chinese consumers are willing to spend time and money in pleasure and sensuous gratification for themselves; they put high priority for safety, harmony, and stability, and they value independent thought and creativity, and freedom.

Table 3. Descriptive results of consumers' apparel sustainability knowledge

Apparel sustainability knowledge	Mean	SD
I am informed about environmental issues (e.g., eco-fashion, environmental impact of clothing manufacturing) in the fashion apparel manufacturing business	2.953 ^A	0.948
I am informed about child labor/sweatshop issues in the fashion apparel manufacturing business	2.871 ^{AB}	0.955
I am knowledgeable about child labor/sweatshop issues in the fashion apparel manufacturing business	2.751 ^{BC}	0.864
I understand the environmental impact of apparel products across the supply chain	2.625 ^{CD}	0.885
I am knowledgeable about apparel brands that sell environmentally friendly or socially responsible apparel products	2.562 ^D	0.920
I know more about environmentally or socially-responsible apparel business than the average person	2.454 ^D	0.847

Note ABCD denotes group differences by post hoc analysis (Tukey HSD)

Due to the multidimensional nature of perceived risk, exploratory factor analysis (EFA) was first conducted for perceived risk to investigate the dimensional structure of the variable. The KMO measure of 0.816 and the Bartlett's test statistic ($p < 0.000$) indicate that the data is appropriate for factor analysis. The EFA solution was determined using the following criteria: eigenvalue (>1), variance explained by each component, scree plot, loading score for each factor (>0.5), and meaningfulness of each dimension. Items were eliminated if they showed low communalities (<0.30), low factor loadings (<0.40), and/or high cross-loadings (>0.40). As a result, one item of the financial risk factor and one item of the performance risk factor were eliminated. After the eliminations, the final EFA resulted in a five-factor model with 14 items, including 3 items of social risk, 3 items of fashion risk, 3 items of performance risk, 3 items of psychological risk, and 2 items of financial risk. Table 5 includes the EFA results. The result is consistent with previous studies on multidimensional nature of perceived risk. Since the internal reliability Cronbach's alpha values for social risk ($\alpha = 0.890$), fashion risk ($\alpha = 0.858$), performance risk ($\alpha = 0.853$), and psychological risk ($\alpha = 0.842$) are satisfactory, the study calculated the averages

from the respective items for social risk, fashion risk, performance risk, and psychological risk in the further analysis. The internal reliability Cronbach's alpha for financial risk is low ($\alpha=0.450$) although the two items form one factor. This result indicates that the present study does not confirm Kang and Kim (2013)'s financial risk scale. In the further regression analysis, we included all the three items related to financial risk, reflecting consumer's perception of purchasing cost, maintenance cost, and risk of wasting money.

Table 4 Descriptive analysis results of ten value types

Value types	Mean	SD
Hedonism	4.243 ^A	0.639
Security	4.238 ^A	0.497
Self-direction	4.100 ^{AB}	0.547
Conformity	4.055 ^B	0.614
Universalism	4.020 ^B	0.557
Benevolence	4.004 ^B	0.622
Achievement	3.754 ^C	0.658
Tradition	3.698 ^C	0.576
Stimulation	3.537 ^D	0.757
Power	3.290 ^E	0.724

Note ABCDE denotes group differences by post hoc analysis (Tukey) HSD

EFA was also conducted on apparel sustainability knowledge, consumer attitudes, and willingness to buy. The results revealed unidimensionality in sustainability knowledge (internal reliability Cronbach's $\alpha=0.832$), consumer attitude (internal reliability Cronbach's $\alpha=0.855$), and willingness to buy (internal reliability Cronbach's $\alpha=0.825$).

Effects of Apparel Sustainability Knowledge and Perceived Risk on Consumer Attitude and Willingness to Buy

To examine the effects of apparel sustainability knowledge and perceived risk on consumer attitude and willingness to buy, standard multiple regression analyses were performed with consumer attitude and willingness to buy as the dependent variables and consumer apparel sustainability knowledge and perceived risks as the independent variables. We created composite variables by averaging the respective items for apparel sustainability knowledge, social risk, fashion risk, performance risk, psychological risk, and included those composite variables and the three items related to the financial risk (purchasing cost, maintenance cost, and risk of wasting money) as the independent variables in the regression analysis. The average of the items of consumer attitudes and the average of the items measuring willingness to buy were individually used as the dependent variable. Durbin-Watson statistic is in the range of 1.5-2.5, and the variance inflation factor (VIF) is under 4.0, indicating the data is appropriate for regression analysis.

Table 5 EFA results of perceived risks

	Social risk	Fashion risk	Performance risk	Psychological risk	Financial risk
I am worried about what others will think of me when I purchase the ESRAP	0.863	0.176	0.151	0.159	0.096
I am worried that my friends might think I look weird or funny in the ESRAP	0.830	0.251	0.182	0.187	0.037
I will not feel comfortable wearing the ESRAP in public	0.802	0.289	0.163	0.216	0.062
I will feel the ESRAP I purchased might be outdated	0.162	0.901	0.063	0.155	0.029
I will feel the ESRAP I purchased might not be the latest style	0.219	0.802	0.083	0.239	0.068
I will feel that the ESRAP I purchased might not be in fashion	0.308	0.767	0.121	0.156	0.077
The quality of the ESRAP will be unsatisfactory	0.142	0.094	0.871	0.147	0.102
The quality of the ESRAP will be poor	0.124	0.046	0.860	0.134	0.040
The life cycle of the ESRAP will not be long	0.149	0.098	0.937	0.029	0.030
The ESRAP that I purchased will not look good on me	0.128	0.141	0.123	0.872	0.001
It will be difficult for me to be able to match the ESRAP with my current clothing	0.130	0.246	0.096	0.852	0.002
Purchasing ESRAP will not match my own personal image	0.366	0.166	0.126	0.708	0.155
It will cost so much for me to purchase the ESRAP	0.115	0.147	-0.015	-0.064	0.797
It will cost a lot to manage and keep the ESRAP in good shape	0.020	-0.051	0.149	0.148	0.789
Eigenvalues	2.495	2.380	2.367	2.257	1.318
% of variance	17.821	17.003	16.905	16.118	9.412
Cumulative variance %	17.821	34.823	52.728	67.847	77.259
Cronbach's alpha	0.890	0.858	0.853	0.842	0.450

Note Rotated factor loadings that are 0.4 or larger are set in bold; ESRAP stands for the environmentally and socially responsible apparel products

As shown in Table 6, regression analysis results revealed that consumer attitude and willingness to buy were significantly predicted by the regression models. Consumer apparel sustainability knowledge positively and significantly predicts both consumer attitude and willingness to buy. Therefore, H1 (a) and H1 (b) were supported. Performance risk, risk of wasting money, and fashion risk negatively and significantly predict consumer attitude, which means when consumer perceives higher level of performance risk, risk of wasting money, and fashion risk with regard to purchasing sustainable clothing, they will have more negative attitude toward sustainable clothing. Other aspects of perceived risk such as psychological risk, social risk, and purchasing cost do not have a strong relationship with consumer attitude. Performance risk, risk of wasting money, and social risk negatively and significantly predict consumer willingness to buy, which shows when consumer perceives higher level of performance risk, social risk, and risk of wasting money, they are less willing to buy sustainable clothing. Other aspects of perceived risk such as psychological risk, fashion risk, and purchasing cost do not have a strong relationship with consumer purchase intention. Thus, H2 and H3 were partially supported.

Effects of Values on Consumer Attitude and Willingness to Buy

The ten value types from Schwartz's value model were used for the regression analyses. We created composite variables by averaging the respective items for each variable: ten value types, consumer attitudes, and willingness to buy. Standard multiple regression analyses were performed with consumer attitude and willingness to buy individually as the dependent variable and the ten value types as the independent variables (power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security). Regression analysis results show the Durbin-Watson statistic is in the range of 1.5-2.5 and the variance inflation factor (VIF) is under 4.0, indicating the data is appropriate for regression analysis. As shown in Table 7, regression analysis results revealed that consumer attitude and willingness to buy are significantly predicted by their personal value. Specifically, the value type benevolence significantly and positively predicts consumer attitude. Benevolence strongly and positively predicts consumer willingness to buy, while the value type achievement significantly and negatively predicts consumer willingness to buy. Thus, H4 was partially supported.

Table 6 Results of multiple regression

Dependent variables	Durbin-Watson statistic	Adj. R^2	F	Standardized beta	t-Value
Consumer attitude	1.822	0.131	8.134		
Sustainability				0.117	2.388**
Performance risk				-0.179	-3.226***
Psychological risk				-0.068	-1.172
Social risk				-0.037	-0.586
Fashion risk				-0.120	-1.994**
Purchasing cost				0.060	1.132
The risk of wasting money				-0.136	2.467**
Maintenance cost				0.122	2.374**
Willingness to buy	1.797	0.204	13.206		
Sustainability				0.188	3.994****
Performance risk				-0.106	-1.994**
Psychological risk				-0.062	-1.119
Social risk				-0.181	-2.995***
Fashion risk				-0.070	-1.219
Purchasing cost				0.054	1.064
The risk of wasting money				-0.209	-3.967****
Maintenance cost				0.085	1.728*

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$; **** $p < 0.001$

Table 7 Results of multiple regression

Dependent variables	Independent variables	Durbin-Watson statistic	Adj. R^2	F	Standardized beta	t-Value
Consumer attitude		1.835	0.072	3.913		
	Power				-0.041	-0.649
	Achievement				0.020	0.252
	Hedonism				-0.057	-1.002
	Stimulation				-0.000	-0.001
	Self-direction				0.066	0.827
	Universalism				0.041	0.453
	Benevolence				0.197	2.261**
	Tradition				-0.023	-0.293
	Conformity				0.011	0.139
	Security		0.081	1.076		
Willingness to buy		1.781	0.101	5.245		
	Power				0.103	1.677*
	Achievement				-0.210	-2.679***
	Hedonism				-0.048	-0.851
	Stimulation				-0.020	-0.309
	Self-direction				0.111	1.410
	Universalism				0.158	1.794*
	Benevolence				0.296	3.451***
	Tradition				-0.094	-1.211
	Conformity				-0.052	-0.646
	Security		0.062	0.840		

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Discussion and Implications

A limited number of academic studies have examined a holistic view of young consumers' knowledge level and attitude toward purchasing apparel products with different environmental and social responsibility attributes-organic, fair trade, and recycled (Hwang et al., 2015). Although more and more apparel companies have been concerned with the integration of environmental, social, and ethical considerations into business strategies and practices, the Chinese consumer's sustainability knowledge about apparel industry and Chinese consumer's perceptions of sustainable clothing have not been sufficiently examined in academia. Thus, this study investigated Chinese post-90s' perceptions of sustainable clothing by surveying Chinese college students. The study gained perspectives from Chinese post-90s' college students regarding their apparel sustainability knowledge, perceived risk of sustainable clothing, personal values. Moreover, it explored how the young Chinese consumers' apparel sustainability knowledge, personal values, and perceived risks impact their attitude toward and willingness to buy sustainable clothing products. This study provides valuable baseline information for the textile and apparel industry.

Previous studies suggested that consumers expressed positive sentiments toward sustainability in general but they lacked knowledge on social responsible practices in the apparel industry (Garo & Banning, 2011; Hill & Lee, 2012; Hiller Connell, 2010; Hwang et al., 2015). Dickson (2000) suggested that greater knowledge about industry issues leads to greater concern for industry workers, and when consumers have greater knowledge and concern, their support for socially responsible business goals increases. In the present study, Chinese young consumers may have insufficient knowledge of sustainability issues in the apparel industry and they slightly disagree that they have much knowledge. This confirms previous research stating that environmentally and socially responsible consumer behavior may not be catching on because educating consumers has not been a priority of industry (Dickson, 2000). Since the environmental and social issues in the apparel industry have only recently reached prominence in the media in China, the typical clothing consumer may feel inadequately informed or confused about actual industry conditions. Among all the sustainability issues in the apparel industry, young consumers are more aware of environmental impact and child labor issues than sustainable clothing brands or business, indicating the need for strengthening and expanding marketing promotion for sustainable apparel brands and business in China. The study results show apparel sustainability knowledge strongly and positively predicts consumer attitude and willingness to buy, confirming previous research on the importance of sustainability knowledge (Dickson, 2000; Hill & Lee, 2012; Hwang et al., 2015). Thus, knowledge underlies attitudes consumers form about sustainable apparel business. If greater levels of knowledge can be achieved, support for socially and environmentally responsible businesses will increase to a point that more directly affects purchase behavior. Firms in the textile and apparel industry may need to focus on providing information to consumers in hopes of strengthening their support for eco-friendly and socially responsible business. Chinese apparel firms and retailers could develop some educational strategies in their marketing and branding effort for sustainable apparel products. For example, the literature provided ideas such as using hangtags on garments in retail stores and extensive editorial space in catalogs to inform consumers about desired product attributes as well as company engagement in prosocial initiatives (Dickson, 2000; Hyllegard et al., 2014).

Sustainable clothing is still a new concept for many Chinese young consumers, and sustainable clothing business is an emerging market in China. Identified as a critical determinant of consumers' willingness to buy a new item, such as sustainable clothing product, is the perceived

risk associated with the purchase (Grewal et al., 1994). The study findings reveal that performance risk, maintenance risk, and risk of wasting money significantly influence consumer attitude, and fashion risk impacts attitude to some extent. Performance risk, social risk, and risk of wasting money significantly impact consumer willingness to buy sustainable clothing, and maintenance cost impacts willingness to buy to some extent. Psychological risk and purchasing cost are not influential predictors for consumer attitude and willingness to buy. The results indicate that consumers are not concerned about the purchasing cost or psychological uncertainty of sustainable clothing; however, the consumers are more concerned about whether a purchased sustainable apparel product fails to provide the desired benefits or does not function properly, and whether there is a potential cost for maintaining sustainable clothing, and whether there is feeling of wasting money for purchasing sustainable clothing. On the other hand, consumers may not feel restricted by the products offered by environmentally and socially responsible businesses; they may simply be overwhelmed by the complexity of product attributes that can be used in decisions to purchase clothing. Considering the fact that sustainable clothing products are relatively new product category, consumer may not fully understand the attributes of sustainable clothing; they are not sure about sustainable clothing's quality and performance and may merely think purchasing sustainable clothing needs extra maintenance cost or there is high possibility of wasting money.

Educating consumers seems to be an essential component for directing their purchases toward environmentally and socially responsible businesses. However, education alone will unlikely command changes in consumer behavior (Dickson, 2000). Manufacturers and retailers will have to supply the products consumers want, along with the assurance the business behaves responsibly. Purchasing sustainable clothing involves a variety of possible risks, including performance risk, psychological risk, social risk, fashion risk, higher purchase cost, maintenance cost, and risk of wasting money. Consumer's perception of the uncertainty and adverse consequences of engaging in sustainable purchasing influences their purchase intention. Moreover, it is necessary to know what types of perceived risk impact consumer attitude and purchase intention most.

In terms of the relationship between values and consumer attitude and willingness to buy sustainable clothing products, benevolence value significantly and positively impacts consumer attitude and purchase intention; achievement value significantly and negatively impacts consumer willingness to buy. Universalism impacts consumer willingness to buy to some extent. These results indicate that consumers who value benevolence more will have more favorable attitude toward sustainable clothing and more willing to buy sustainable clothing.

Limitations and Future Directions

There are several limitations in the study which provide opportunities for future research. First, generalization of the research findings is limited because of the use of a convenience sample (current college students) within a limited geographical location. Caution should be used in generalizing the findings of this study to the Chinese post-90s' population as a whole. The sample is also biased in that it reflects a more highly educated population of the Chinese post-90s. Less-educated Chinese post-90s' thoughts on environmental and social responsibility may not be represented here. Future research may use a random sample that is more heterogeneous in terms of geographic location and educational level to confirm the findings. Second, this study examined Chinese young consumers' sustainable clothing consumer behaviors. Future study could be extended to other countries to investigate how young consumers in other countries perceive

sustainable clothing. Cross-cultural research is desirable for research in sustainable consumer behavior. Third, this study surveyed post-90s; however, future research should be conducted with other generational cohorts too (e.g., post-70s and post-80s) to understand the way different generational cohorts perceive sustainable apparel products and to further investigate the systematic relationships among beliefs, attitudes, and purchase intentions. Fourth, financial risk in this study needs future scale development and the three items used in the study do not represent the financial risk well. Thus, more future research is needed for the financial risk scale. Finally, in order to obtain more in-depth reasoning behind Chinese post-90s' consumer behavior for the sustainable products, focus group interviews would be alternative approaches to explore in future research.

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