PREDICTORS OF PURCHASE INTENTION

TOWARD GREEN APPAREL PRODUCTS

IN THE U.S. AND CHINA

By

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CHAPTER I

INTRODUCTION

Background

Potential of the Chinese Market

There is no doubt that China is a huge market in the world. Measured on a

purchasing power parity (PPP) basis, China recorded a gross domestic product (GDP) of

USD $10.12 trillion in 2010, the world's second largest economy after the U.S. China has

been the world's fastest-growing major economy, with consistent growth rates of around

10% over the past 30 years. However, until the 1980s, the influence of China's economy

in the world was minimal. In 1979, Deng Xiaoping, leader of the Communist Party of

China, significantly reformed China's economy. In addition, the government of China

adopted a pragmatic perspective on political and economic problems, and it reduced

unnecessary regulations in the economy in order to encourage foreign investment and

trade. As a result, from 1997 to 2008, China's GDP grew at an average annual rate of

nearly 10%, and it jumped 13% in 2007 (Morrison, 2009). China's economy in 2011 and

2012 is expected to maintain a stable growth rate of 9.7% (Roseman, 2010).

Despite the current global economic crisis since 2008, foreign investment

continues to play a major role in China's booming economy (Morrison, 2009).

In 2010, foreign direct investment (FDI) in China totaled USD $573 billion, making it the third largest global destination behind the U.S. and E.U. for FDI. Also, China was the world's largest holder of foreign exchange (USD $1.9 trillion) at the end of 2008 (Morrison, 2009). Many economists have stated that China has ample potential to maintain relatively high economic growth rates (Chen, Cheung, & Tse, 2007). As had been forecasted, China was the world's largest exporter in 2010 world trade including the U.S.

This tremendous economic growth has changed the lifestyle of Chinese consumers (Eves & Cheng, 2007), and this change, in turn, has contributed to even more economic growth. Population shifts from rural to urban areas that offer opportunities to earn (and spend) money have accelerated; the urban population increased from 19.4% in 1980 to 42.3% in 2007, while the rural population fell from 80.6% to 57.7% in the same period. With this rapid urbanization, the level of income has increased rapidly. According to the National Bureau of Statistics of China (2006), per capita annual disposable income of urban households reached 10,493 renminbi (about USD $1,280) in 2005, a real increase of 9.6% year-on-year. With just over 1.3 billion people in 2008, China represents a full 20% of the world's population, and its urban adult population includes 25% of the world's 18- to 60-year-old individuals, a segment equivalent to the total population of the U.S. These urban adults represent a highly promising potential market of consumers who are spending more as their incomes rise (Chen, Cheung, & Tse, 2007).

China's tremendous economic growth has sparked consumption within the country (Eves & Cheng, 2007). In 1990, China's total consumption was USD $167 billion, and by 2005 it grew to USD $1,434 billion (China lifestyle report, 2006). In 2007,

it reached USD $2,970 billion (Zheng, 2010), and it is forecasted that by 2020 China's

total consumption will reach two-thirds of the U.S. consumption (Roseman, 2010).

Because of China's rapid economic growth and huge potential market, U.S.

businesses are keenly interested in doing business in China. In 2008, China was the

U.S.'s second largest trading partner, and numerous U.S. companies have built extensive

operations in China in order to sell their products in the booming Chinese market and

utilize low-cost labor for export-oriented manufacturing. These operations have helped

U.S. companies remain internationally competitive and have supplied U.S. consumers

with a variety of low-cost goods (Morrison, 2009). In addition, since late 2001 when

China joined the World Trade Organization (WTO), U.S. exports to China have grown

five times faster (Kunz & Garner, 2011). In 2006, China became the fourth largest export

market for U.S. companies (Kang, 2007), and in 2010 China emerged as the second

largest U.S. agricultural export market. China has also become a significant textiles and

apparel importer. In 2008, China was the world's third largest textiles and apparel

importer for their domestic market, after the E.U. and U.S. (Kunz & Garner, 2011).

Chinese Apparel Market

The apparel industry is one of the fastest-growing sectors in China's retail

industries. The growth in Chinese incomes has contributed to the growth in this sector. In

2009, China's apparel market was the world's third largest, behind only the U.S. (USD

$232 billion) and Japan (USD $100 billion). China's apparel market is the fastest

growing in the 'BRIC' countries of Brazil, Russia, India, and China (Chan, Cheung, &

Tse, 2007). The sales growth of China's apparel products increased 28.75% from 2006 to

2007 alone, as the average apparel consumption per capita among China's urban dwellers increased 15.5%. The China apparel market total capacity exceeded USD $123 billion in 2009 (Zheng, 2010). China has become the world's second largest consumer market after the U.S., as Chinese people are expected to consume 14% of world products by 2015 (Roseman, 2010). Additionally, according to statistics from China Intelli-Consulting, the sales volume of online clothing stores reached 17.2 billion yuan (USD $2.52 billion) in 2008, accounting for 23.5% of all online shopping in China, which registered at a total of 73.4 billion yuan (USD $10.74 billion) (Morrison, 2009).

Fast growth in the apparel industry has led to consumers' high expenditures for apparel products. In 2005, Chinese consumers spent USD $17 billion on apparel, only slightly more than 6% of the USD $275 billion (about $16.5 billion) that U.S. consumers spent during the same period (What consumers want, 2008). However, Chinese expenditures on apparel were up 19.6% in 2006 and are expected to continue to increase (Chinese shopping fundamentals, 2006). In 2010, clothing expenditures in China grew rapidly; thus, they may have exceeded $150 billion (Zheng, 2010). This growth may influence many international clothing manufacturers and retailers to see China as a huge potential market. Seventy percent of apparel sales in urban China take place in modern formats, typically department stores and specialty shops, which have recently begun to emerge (Chan, Cheung, & Tse, 2007).

With the growth of China's apparel market, the country has become a dominant player in apparel exports because it has an extremely competitive textile and clothing industry that is characterized by a high degree of vertical integration, low costs of production, a skilled workforce, and ample access to raw materials (Lum & Nanto, 2007).

According to the WTO, China represented about 33% of total global trade in the textiles and apparel sector in 2008 (Kunz & Garner, 2011). In trade with the U.S., China has been the largest textile and clothing exporter since 2003. In 2008, 34.32% of U.S. textile and apparel imports were from China, followed by imports from Vietnam (7.73%), Bangladesh (6.33%), and Honduras (5.87%) (Kunz & Garner, 2011).

Because of these changes (i.e., a growing Chinese economy, rapidly increasing foreign investment and trade in China, increasing consumption of Chinese consumers, and growth of the apparel market), China represents a huge economic opportunity for foreign investors.

Chinese Consumer Behavior toward Green Apparel Products

As manufacturing activities increase in China and the country's economy experiences rapid economic growth, the quality of China's environment is deteriorating (Cao, 2007). The concepts of green issues and green products are still relatively new to Chinese consumers, and the demand for green products from Chinese consumers remains weak (Chan, 2001). Although environmental concerns are increasing in China, actual environmental knowledge and awareness among Chinese consumers are still comparatively low (Cao, 2007). Along with low environmental awareness and lack of green behavior among Chinese consumers, the few companies that have taken steps to provide green products and services lack budgets for promoting the value of their green offerings (Xu, 2005). Therefore, due to deficient guidance and lower environmental awareness, China is in its infancy in terms of promoting the concept of green marketing (Geng & Doberstein, 2008).

Recently, Chinese consumers have become more aware of green apparel products, but this increase in awareness has not translated into increased perception of the products' importance or changed purchase intent (The Chinese supply chain for cotton, 2007). In 2007, a London-based research firm found that 76% of Chinese expressed their concern about environmental pollution and climate change and considered purchasing green products (What consumers want, 2008). In the apparel industry, Chinese consumers have become more aware of green apparel products. With high health concerns, Chinese consumers are interested in apparel products that use organic cottons and natural dyes (Kwan, Yeung, & Au, 2003). However, a large percentage of Chinese consumers are still trying to obtain the basic necessities and are not able to consider buying additional products, such as green products and services (Martens, 2006). For the small niche group of Chinese consumers that tends to seek out green apparel products, the choice of green apparel products is very limited (The Chinese supply chain for cotton, 2007). According to statistics from 2006, only 5% of Chinese consumers said they made efforts to look for green apparel products and less than 1% frequently purchased green apparel products (The Chinese supply chain for cotton, 2007). Therefore, few Chinese have had purchase experience with green apparel products. In addition, Chinese are comparatively more unwilling to pay a premium for green products than are consumers in developed countries (Bonini & Oppenheim, 2008). In Ip's study (2003), approximately 4.5% of Chinese consumers were willing to pay more for products with eco-friendly attributes. This number contrasts with about 14% of U.S. consumers who have said they are willing to pay a premium for green products (Bonini & Oppenheim, 2008).

The discussion above shows that Chinese consumers' actual consumption of green apparel products is low, but their interest in green consumption is increasing because their standard of living has increased and their environment is increasingly polluted. Therefore, studies that provide an understanding of Chinese consumers' green consumption behaviors are imperative.

U.S. Consumer Behavior toward Green Apparel Products

With global concerns about the environment increasing, markets for environmentally friendly goods and services in the U.S. and other developed countries are also increasing (Hamilton & Zilberman, 2006). Lifestyles of Health and Sustainability (LOHAS) documented that the U.S. green market has been estimated to include 50 million people and accounts for USD $229 billion (McTaggart, 2007), which was nearly 6% of the total U.S. retail sales (USD $3,945 billion) in 2006. This figure was higher than that of Internet sales. Approximately USD $150 billion in products were sold through the Internet in 2006, which is about 4% of the total U.S. retail sales. Moreover, sales of green products in the U.S. jumped from USD $414.7 billion in 2007 to USD $678.2 billion in 2008 (Tolliver-Nigro, 2009).

Expectations are that the green market will continue to grow (Bonini & Oppenheim, 2008) in many U.S. retail industries, such as food, vehicles, appliances, and building materials. Forty-two percent of U.S. consumers have had an experience in buying green food periodically (Onyango, Hallman, & Bellows, 2007). More than 55% of U.S. consumers prefer to purchase green electronics and appliances (Ciocci & Pecht,

2006). In the auto industry, environmentally friendly cars, such as hybrids, accounted for

about 3.5% of total U.S. car sales, and their share is growing rapidly (Zimmerman, 2008).

Despite the fact that green consumption is increasing in many retail sectors, though, the

size of the green apparel market in the U.S. remains tiny (Winston, 2001). Retail sales of

green apparel products in 2006 reached only USD $1.1 billion, compared to total apparel

sales of USD $195.6 billion (Hillar-Connell, 2008). It was estimated that the green

apparel market reached a value of about USD $3 billion in 2007 and was expected to

reach USD $11.02 billion by 2012 (Lipson, 2008). Green apparel sales in the U.S. have

grown significantly, but they are still a small portion of total apparel sales. One reason for

the small percentage of green apparel sales is that U.S. consumers have doubts about

green products. According to the 2007 GfK Roper Green Gauge study, 61% of U.S.

consumers believe that green products perform worse than conventional products (Bonini

& Oppenheim, 2008). In a 2002 Roper survey, 41% of consumers said they did not buy

green apparel products because they worried about the diminished quality of

environmentally friendly versions (Ginsberg & Bloom, 2004). Only about 25% of green

apparel consumers consider green apparel products to be of higher quality than

conventional products and as a result, only 8% of consumers purchase green apparel

products frequently (Hustvedt & Bernard, 2008). Additionally, most U.S. consumers are

not willing to pay a premium for green apparel products (Bonini & Oppenheim, 2008),

which are priced higher than conventional apparel products (Nimon & Beghin, 1999).

Recently, green apparel products have started to become less expensive, but consumers

are still required to pay extra to purchase them.

While consumer willingness to buy green products is relatively low in the apparel industry, many leading U.S. apparel companies have incorporated green responsibility into their brands and products. Patagonia has introduced polar fleece clothing made of recycled bottles, and the company uses 100% organically grown cotton for most sportswear (Textiles Intelligence, 2006). Levi's has employed organic and recycled cotton in their products, which are sold in recycled paper packaging printed with soy-based ink (Kim, 2008). American Apparel offers a sustainable line of organic cotton T-shirts and baby apparel products (Jana, 2006). Also, Habitual Organic launched a limited edition of organic cotton jeans, which featured recycled zippers and paper hangtags embedded with wildflower seeds (Kim, 2008). Finally, Gap, Inc. operates environmental strategies to reduce its carbon footprint, reduce energy usage, and promote sustainable cotton cultivation (Textiles Intelligence, 2006).

The Theory of Reasoned Action

The theory of reasoned action (TRA) suggests that the adoption of a behavior by a person is the immediate result of behavioral intention. TRA posits that an individual's actual behavior is driven by intentions, where intention is a function of an individual's attitude and subjective norm surrounding the performance of the behavior (Hester & Yuen, 1987) (see Figure 1). Intention can be explained easily as the probability of actual behavior. In other words, intentions are the perceived likelihood of performing the behavior. In the TRA framework, attitudes are defined as an individual's positive or negative feelings about performing a behavior (Ajzen & Fishbein, 1980). An individual's attitude toward a behavior is a function of his/her belief that performing the behavior will

lead to a particular outcome and his/her evaluation of that outcome. A person's attitude will vary depending on his/her evaluation of the probability of a positive or negative outcome (Housman, 2006). In general, if individuals have positive attitudes toward a particular behavior, they are more likely to form positive intentions toward it. Subjective norm is the person's perceptions of the opinions of significant others toward the adoption of the behavior. Subjective norm is a function of an individual's normative beliefs, which are the individual's perceptions of social pressures to perform or abstain from performing a behavior. Normative beliefs are affected by the presence of significant others (i.e., parents, coaches, teammates) and the individual's motivation to comply with the wishes of the significant others (Housman, 2006). Thus, if an individual believes significant others want him/her to perform a behavior and he/she is motivated to comply, it is expected the individual will intend to perform the behavior.
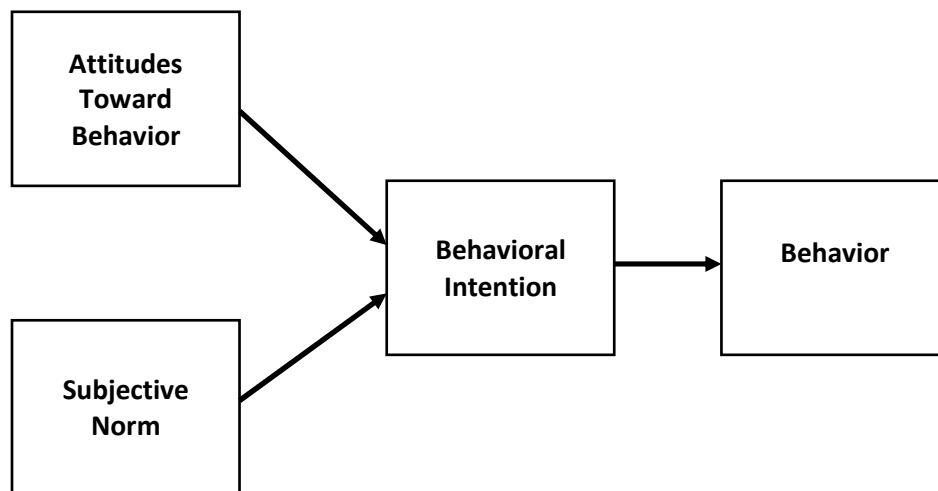
Figure 1. The Theory of Reasoned Action

Source: Ajzen & Fishbein (1980)

The Theory of Planned Behavior

The theory of planned behavior (TPB) was developed as an extension of the theory of reasoned action (TRA) (Ajzen & Fishbein, 1980) because TRA is limited in explaining behaviors that require one's control. With behaviors in which control was not completely volitional, the constructs of the TRA were vulnerable to outside influences (Godin & Kok, 1996). To reinforce TRA, Ajzen (1991) included perceived behavioral control (PBC) in the theory of planned behavior to account for the influence of one's internal and external control over a behavior. TPB proposes behavioral intention as a behavior's immediate psychological antecedent. Intention is determined by a person's overall evaluation of a behavior (attitude), perceived social pressure surrounding a behavior (subjective norm), and perceived control over factors that may facilitate or inhibit performance of a behavior (perceived behavioral control) (see Figure 2). Each of these three determinants of intention can be linked to a corresponding set of readily accessible beliefs. Attitude indicates the cognitive evaluation of a behavior, and subjective norm relates to perceptions of social pressure (Kidwell & Jewell, 2003). PBC specifies that the likelihood of successful behavioral performance will vary as a function of the individual's perception of his/her control in performing the behavior (Armitage, Conner, Loach, & Willetts, 1999). Intention is assumed to capture these three motivational factors; that is, intention is an indication of how much effort people are willing to exert in order to perform the behavior. As a general rule, the stronger the intention is to engage in a behavior, the more likely it will actually be performed (Ajzen, 1991).
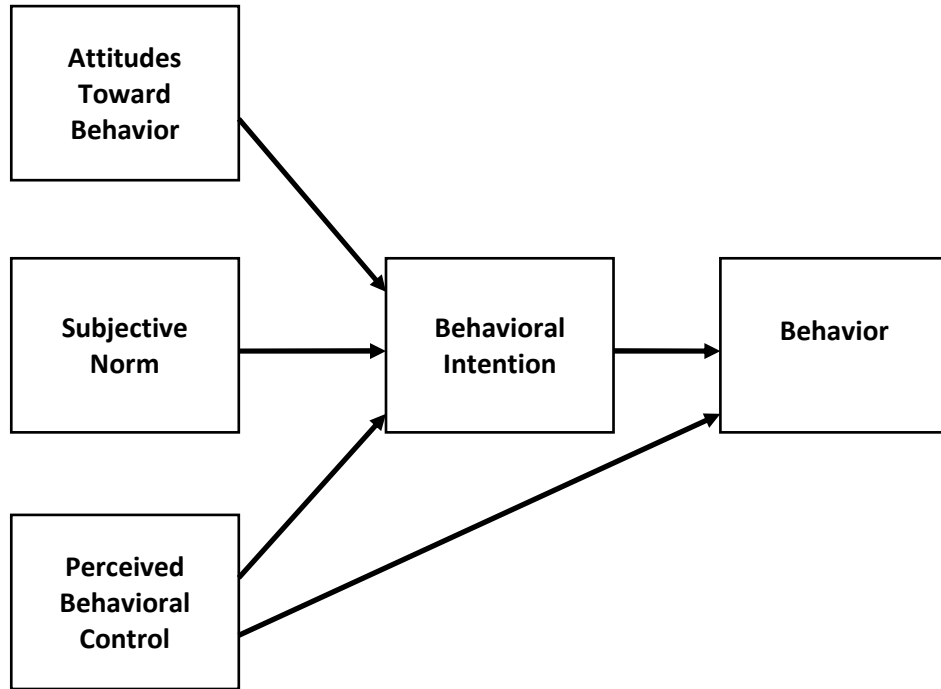
Figure 2. The Theory of Planned Behavior

Source: Ajzen (1991)

Perceived behavioral control (PBC) is one's perceived ease or difficulty of performing a particular behavior (Ajzen, 1991). It refers to an individual's perception of the extent to which factors, such as knowledge, skills, money, and time, might facilitate or inhibit performance of the behavior (Jin & Kang, 2010). Thus, if factors likely to facilitate a behavior are frequent and perceived as powerful, an individual would be expected to intend to perform the behavior (Housman, 2006).

Two types of PBC, internal and external, are suggested in TPB. Internal PBC indicates that the individual perceives that he/she possesses control over internal personal resources, such as requisite skills, confidence, ability, and adequate planning, to perform a behavior (Kidwell & Jewell, 2003). Internal PBC is synonymous with the Bandura's

(1986) concept of self-efficacy, which reflects perceptions of whether a behavior is easy or difficult. External PBC refers to an individual's perception of external personal conditions and situations, such as time and money, needed to perform a behavior (Kidwell & Jewell, 2003). The concept of external PBC is similar to the concept of facilitating conditions, which include the "state of the actor and any environmental conditions that make the act easy or difficult" (Triandis, 1977, p. 76).

Problem Statement

Based on a review of the literature related to China's market, Chinese consumers, the U.S. market, U.S. consumers, green apparel products, the TPB, and related attributes for green consumption, four research problems were identified. First, environmentally conscious consumption of apparel products is increasing and numerous apparel brands operate green strategies and provide green apparel products as consumer interest in green apparel products is increasing. Despite these trends, studies in the field of retail apparel regarding consumers' intentions to purchase green apparel products have been especially scant.

Second, green apparel consumption behaviors involve individuals' volitional controls, such as high knowledge about the environment (i.e., internal control) and monetary resources to pay extra for green apparel products (i.e., external control). Thus, TPB should be an appropriate framework to examine purchase intention toward green products because of dealing with volitional behavior. Despite this advantage of TPB over TRA, many previous environmental studies have primarily employed TRA (Bang, Ellinger, Hadjimarcou, & Traichal, 2000; Johns, Khovanova, & Welch, 2009; Mostafa,

2007; Ogle, Hyllegard, & Dunbar, 2004). Only two studies (Chan & Lau, 2001; Kalafatis, Pollard, East, & Tsogas, 1999) have used TPB to determine green consumer behaviors, and applications of TPB in the context of apparel products are very limited.

Next, most previous studies on green consumption have been primarily exploratory in nature. Issues such as how consumers think about green products/services, whether consumers intend to buy green products/services, to what extent consumers are willing to pay more to buy green products, and actual purchase behavior related to green products have been explored. However, research to identify factors that determine individuals' intentions to purchase green products has been very limited. Understanding such factors is critical, though, because it helps marketers implement proper marketing strategies and forecast green purchase behaviors. Therefore, psychological antecedents should be explored to explain and forecast consumer purchase intention toward green apparel products.

Finally, the level of consumer awareness toward green issues and green consumption behavior might be different by a country's development status and cultural difference. However, most studies have examined consumers' green behaviors within one country (Bahn & Wright, 2001; Chen, Lai, & Wen, 2006) and an examination of multiple cultures is a rarity. Therefore, examining two different cultures will help in understanding the pattern of purchase intention in two countries.

Purpose of the Study and Research Questions

Acknowledging the problems stated above, this study was designed to address them. This study aimed to identify and compare U.S. and Chinese consumers' behaviors regarding green apparel products using the theory of planned behavior (TPB). Two big research questions, then, led the focus of this study.

First, TPB explains that attitude, subjective norm, and perceived behavioral control (PBC) determine a person's behavior. So, are attitude, subjective norm, and PBC also effective in explaining a consumer's purchase intention toward green apparel products? How and to what extent does each variable affect purchase intention?

Second, what antecedents affect the variables of TPB (attitude, subjective norm, and PBC)? How and to what extent does each antecedent influence the variables of TPB? Is each influence the same for U.S. consumers and Chinese consumers or does each influence vary by country?

Research Objectives

To answer the above research questions, the following objectives were developed. First, this study proposed a theoretical model that incorporated several antecedents of TPB.

Second, this study examined whether an individual's attitude, subjective norm, and PBC independently influence consumer purchase intention toward green apparel products or not, and how and to what extent each variable of TPB affects purchase intention of U.S. and Chinese consumers.

Finally, this study investigated whether two indirect antecedents to purchase intention (man-nature orientation and environmental knowledge) influence U.S. and Chinese consumers' attitudes and internal PBC, and how and to what extent each of the antecedents impacts the variables of TPB.

Definitions of Terms

Man-Nature Orientation: Man-nature orientation is the degree of control that an individual has over his/her environment (Kluchhohn & Strodtbeck, 1961) and emphasizes the degree to which man is in harmony with nature (Chan & Lau, 2001).

Environmental Knowledge: "Environmental knowledge is a general knowledge of facts, concepts, and relationships concerning the natural environment" (Fryxell & Lo, 2003, p. 47).

Attitude: Attitude is the degree to which a person has a favorable or unfavorable evaluation or appraisal of a behavior (Ajzen, 1991).

Subjective Norm: Subjective norm is an individual's perception of the opinions of significant others toward the adoption of the behavior (Armitage, Conner, Loach, & Willetts, 1999).

Perceived Behavioral Control: Perceived behavioral control is the perceived ease or difficulty of performing a behavior; it is assumed to reflect past experience as well as anticipated impediments and consequences (Ajzen, 1991).

Intention: Intention is an indication of an individual's readiness to perform a given behavior. It is assumed to be an immediate antecedent of behavior (Ajzen, 2001).

Green Retailing: "Green retailing is a conscientious retailing built on environmentally sustainable, socially responsible, and economically profitable business practices" (Stern, 2009, p. 24).

Green Apparel Products: Green apparel products are environmentally friendly garments that make a minimum impact on nature. In this study, they are confined to eco-labeled apparel products that have the label of no-pesticide, no-synthetic dye, and organic or natural fibers.

<center>**Significance of the Study**</center>

This research is expected to make several significant contributions to the work of academic scholars and marketers. First, this study was an empirical research that focused on purchase intention of green apparel products rather than on the production of green textiles, a topic that has received considerable attention in previous studies. In addition, previous marketing research has addressed consumers' green purchasing behaviors in the areas of electricity use (Gärling, Gamble, & Juliusson, 2008), food (Onyango, Hallman, & Bellows, 2007), appliances (Ciocci & Pecht, 2006), automobiles (Williander, 2007), and building materials (Miller & Buys, 2008), but the current study is one of the earliest attempts to examine the consumption of green products in the apparel industry. Therefore, this study contributes to green marketing studies by adding empirical evidence from the apparel industry.

Second, this research is based on TPB with specified indirect antecedents to purchase intention. By testing the proposed model, the study explains the paths from two indirect antecedents (i.e., man-nature orientation and environmental knowledge) to the

intent to purchase green apparel products. While several previous marketing studies have documented the effects of each antecedent and consequence individually, very few studies have collectively incorporated multiple antecedents into TPB. Therefore, academically, this study contributes to understanding the interrelationships among the factors that lead to purchase intention of green apparel products.

Finally, this study enriches the understanding of U.S. and Chinese consumers' green apparel purchase behaviors. Several studies have examined both U.S. and Chinese consumers' cultural values and consumption behaviors, but no previous studies have attempted to examine the two countries in terms of green apparel purchase behavior by incorporating consumers' psychological values. Based on the findings, therefore, green apparel marketers are provided with more definitive information about U.S. and Chinese consumers' purchase intentions toward green apparel products. In particular, the U.S. green apparel companies that plan to expand their brands to China can better understand Chinese consumers' needs regarding green apparel products.

Limitations

This study is confined within certain contexts. First, there are numerous types of green activities such as green product consumption, recycling, and reuse. Among the many green activities, this study focused on consumers' purchase intentions toward green apparel products.

Second, the influence of antecedents and TPB variables on consumers' green apparel purchase intentions may differ by product categories (i.e., environmentally-friendly home textile products, footwear, or textile fabrics). To accurately explain the

purchase intention of green apparel products, this study focused on only wearable green apparel products.

Finally, consumers' green apparel purchase intentions may vary by consumer demographic variables and locations within a country. Thus, this study was confined to college students who reside in a couple of large cities in each country.

Outline of Work

This study consists of five chapters. Chapter I provides an introduction to research problems, analyzes previous literature related to the research problems, states the objectives of the study, identifies the research questions, discusses the potential for significant contributions, introduces definitions of terms used in this study, and states the research limitations. Chapter II provides an overview of the existing literature regarding each construct and presents a proposed conceptual model and the development of the hypotheses to be tested. Chapter III describes research methods that are used for this study, including methods of data collection, development of the survey instrument, and the statistical methodology employed. Chapter IV provides the results of the hypotheses testing. Chapter V discusses the findings, implications, limitations, and recommendations for future research.

CHAPTER II

REVIEW OF LITERATURE & DEVELOPMENT OF HYPOTHESES

This chapter consists of three sections. The first section reviews the literature related to consumer behaviors toward green apparel products and factors related to these behaviors. The second section introduces a proposed conceptual model based on the theoretical background discussed in the review of the literature. The third section explains the development of the hypotheses that provide causal-effect relationships in the conceptual model.

Review of Literature

This chapter addresses (1) background of green retailing and research trends in green retailing; (2) the review of applications of the theory of reasoned action (TRA) in apparel studies; (3) the review of applications of the theory of planned behavior (TPB) in apparel studies; and (4) the concepts of indirect antecedents to purchase intention, such as man-nature orientation and environmental knowledge.

Background of Green Retailing

The idea of green in the retailing field might be rooted in the making of a minimum impact on environmental changes, especially climate changes. Environmental changes started with the beginning of the Industrial Revolution (Cirman, Domadenik, Koman, & Redek, 2009), which has inevitably resulted in global warming. As a response to this environmental change, advanced countries have considered the seriousness of climate changes and have established environmental regulations. In order to avoid negative potential outcomes of global warming, in 1997 the Kyoto Protocol, a binding greenhouse gasses (GHG) reduction plan, was adopted, and in 2005 it was implemented. Many countries agreed to this five percent global joint GHG reduction plan (Cirman, Domadenik, Koman, & Redek, 2009). According to the plan, the reduction of carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulphur hexafluoride (SF_6) are to be regulated globally. The aims, which are to reduce these harmful gasses and prevent climate changes, have naturally affected the retailing field. Thus, the concept of green retailing has emerged. The definition of green retailing is "a conscientious retailing built on environmentally sustainable, socially responsible, and economically profitable business practices" (Stern, 2009, p. 24).

In this early stage of green retailing, retailers and consumer-product suppliers have rushed to provide environmentally friendly products. Recently, in addition to selling green products/services, retailers have developed strategies to integrate green practices into their stores or departments, such as buildings, store layouts, store designs, and store materials (Green commerce, 2003). For instance, in the case of huge retailers, Wal-Mart,

in October 2005, announced three new environmental goals directed particularly at new stores: to rely 100% on renewable energy, to create zero waste, and to sell products that sustain resources and the environment (Roseland & Markey, 2009). Wal-Mart has committed to several other environmental strategies, such as the use of compact fluorescent lamp (CFL) bulbs and light-emitting diodes (LEDs) in refrigerators and freezer cases for reducing carbon dioxide emissions, the use of skylights to refract natural daylight for energy reduction, and an increased use of recycled materials for packing (Stern & Ander, 2008). Also, new Wal-Mart stores are also being constructed with recycled materials and white roofs to reflect the heat (Landers, 2010). Target Corporation first committed to waste reduction through a recycling and reuse program, and they cut waste by 70% in 2006. Exterior neon signs at Target stores are being converted to LEDs to increase energy efficiency by 78% (Stern & Ander, 2008). Also, Target has launched permanent community recycling stations in all stores to recycle aluminum, glass, and plastic beverage containers; plastic bags; MP3 players; cell phones; and ink cartridges (Target launches recycling stations in all stores, 2010). Safeway, a major U.S. retailer, has committed to purchase approximately 80 million kilowatt hours of renewable energy annually from newly constructed wind turbine generators, in order to power their fuel stations, corporate offices, and stores with green energy (Landers, 2010). Safeway uses cleaner-burning biodiesel fuel in its transportation trucks. The use of biodiesel enables the company to reduce carbon dioxide emissions by 75 million pounds per year (Stern & Ander, 2008). Tesco, a British retailer, developed tri-generation combined heat and power technology, which is from a single heat source such as fuel or solar energy, for its

stores and distribution centers; thus, this retailer saves over 10,000 tons of CO_2 emissions a year (Stern & Ander, 2008).

In the apparel industry, Patagonia, a U.S.-based sportswear and outdoor clothing retailer, has been focused on using recycled and organic fabrics in their products, and they avoid employing chlorine and formaldehyde in the finishing process (Stern & Ander, 2008). An environmentally friendly wetsuit for surfers was created using recycled polyester and organically produced wool (Rarick & Feidman, 2008). Also, a fleece jacket was made from plastic soda bottles. The company does not utilize heavy-metal dyes that pollute water and they encourage customers to return old clothing to be recycled (Rarick & Feidman, 2008). Nau, a technical and lifestyle outdoor apparel retailer, has used recycled fabrics, certified organic cotton and wool, and biodegradable corn fiber in its apparel products. Also, based on the restriction of substances and toxins, Nau eliminated harmful fibers, dyes, and finishing chemicals (Green, 2007). In addition, Nau donates 5% of sales to ongoing environmental activities (Stern & Ander, 2008). Finally, REI, an outdoor and active wear brand in the U.S., has been at the forefront of green building. Many REI stores have earned Leadership in Energy and Environmental Design (LEED) certification from the U.S. Green Building Council (USGBC) (Stern & Ander, 2008). Through this effort, REI achieves lower operating costs and produces a healthier and safer store environment by reducing chemical emissions.

As environmental concerns in the public continue, retailers have found it necessary to make environmental consciousness an important issue to be considered in establishing business strategies. Environmental movements of retailers have led to increases in the size of the green market and in the rapid and steady growth of green

consumption. In 2005, green products accounted for approximately 9% of all newly introduced products in the U.S. (Hamilton & Zilberman, 2006). In the same year, Lifestyles of Health and Sustainability (LOHAS) estimated that 30% of the U.S. population (and 65% of women) were very interested in organic foods, hybrid vehicles, ecotourism, organic cotton markets, and home energy conservation products (Yudelson, 2006).

Globally, growing environmental concerns and climate changes have accelerated green consumerism and marketers' and retailers' concerns for environmental responsibility. Therefore, consumers have increasingly embraced green products and services over the past decade, and consumers will often pay a premium in order to get green products or services (Hopkins, 2009). Growth of green markets is expected to continuously increase at more than 25% per year globally (Ulasewicz & Vouchilas, 2008). As green consumption and the size of the green market increase, it is important for researchers to understand consumers' green consumption behaviors.

Research Trends in Green Retailing

Research on green retailing has been vigorous since 2000 in many countries. Most studies on green retailing have examined green consumer behaviors and suggested implications for green retailers. Table 1 presents green retailing literature by retail sectors such as foods, cleaning products, appliances, lodging, and general products.

Tanner and Kast (2003) examined Swiss consumers' green food consumption and found consumers had positive attitudes toward green food purchases, especially toward

fair trade and locally produced products that involve fewer harmful chemicals and less

transportation.

Table 1. Summary of Green Retailing Studies in Various Product Categories

Categories	Studies
Green products (did not specify a particular sector)	Chan (2001) D'Souza, Taghian, & Lamb (2006) Laroche, Bergeron, & Barbaro-Forleo (2001) Laroche, Tomiuk, Bergeron, & Barbaro-Forleo (2002) Lee (2008) Mostafa (2007) Tadajewski & Wagner-Tsukamoto (2006)
Foods (includes organic and genetically modified foods)	Tanner & Kast (2003) Verhoef (2005)
Cleaning products (includes toilet paper, paper towels, detergent, washing powder, etc.)	Bjørner, Hansen, & Russell (2004) Pickett-Baker & Ozaki (2008) Rios, Martinez, Moreno, & Soriano (2006)
Appliances (includes bulbs)	Banerjee & Solomon (2003)
Buildings (includes the lodging industry)	Manaktola & Jauhari (2007)
Green advertising (includes green messages)	Chan (2004) Phau & Ong (2007)
Green labels	Banerjee & Solomon (2003) Bjørner, Hansen, & Russell (2004) D'Souza, Taghian, & Lamb (2006) D'Souza, Taghian, Lamb, & Peretiatko (2007)
Recycling	Laroche, Tomiuk, Bergeron, & Barbaro-Forleo (2002) Tadajewski & Wagner-Tsukamoto (2006)

Verhoef (2005) investigated German consumers' preferences and purchase frequencies of organic meat. The study indicated that consumers intend to buy organic meat, but their actual purchasing behaviors, which include paying a premium price, are still in question. Pickett-Baker and Ozaki (2008) first indicated that most U.K. consumers cannot easily identify green cleaning products, although these products are made by green companies. U.K. consumers' previous experiences, such as using green cleaning products, impacted greatly on actual purchases of green cleaning products. Manaktola and Jauhari (2007) found that Indian consumers prefer to use green lodges, but they are not willing to pay extra for these services.

Many studies have employed cultural or psychological antecedents to explain consumers' attitudes, intentions, and actual behaviors toward green product purchases. For instance, Chan (2001) found that Chinese consumers' degree of actual commitment to purchase green products was low and concluded that environmental knowledge positively influences consumers' attitudes and intentions to purchase green products. Lee (2008) investigated Hong Kong Chinese adolescents' intentions to purchase green products. The researcher discovered that psychological factors, such as social influence, environmental concern, and responsibility, are powerful predictors of green purchasing behavior and concluded that more advertising campaigns and consumer education programs are needed.

Another stream of green retailing studies is related to how consumers feel when they are exposed to green advertising or messages (Chan, 2004; Phau & Ong, 2007) and green labels (Banerjee & Solomon, 2003; Bjørner, Hansen, & Russell, 2004; D'Souza, Taghian, & Lamb, 2006; D'Souza, Taghian, Lamb, & Peretiatko, 2007). For instance,

Chan (2004) attempted to understand Chinese consumers' behaviors regarding green advertising and found that Chinese consumers prefer print advertisements to broadcasting advertisements on green issues due to the pragmatic orientation of the Chinese language, which requires more information for services or products. Phau and Ong (2007) found that consumers respond positively to product-related green messages and tend to trust messages from green brands more than messages from neutral brands. Next, Bjørner, Hansen, and Russell (2004) found that the environmental label has had a significant effect on consumers' brand choices for these products, and that Nordic consumers have marginal willingness to pay more to purchase the products that contain the certified environmental label. In addition, studies that investigated consumers' willingness to recycle have been documented (Laroche, Tomiuk, Bergeron, & Barbaro-Forleo, 2002; Tadajewski & Wagner-Tsukamoto, 2006). Laroche et al. (2002) compared recycling behaviors of French-Canadians and English-Canadians, and the researchers concluded that English-Canadians are more likely to recycle.

Review of Application of the Theory of Reasoned Action in Apparel Studies

The TRA has been applied widely to account for behaviors (Shaw, Shiu, Hassan, Bekin, & Hogg, 2007), and it has provided strong support and overall predictive utility of the model (Randall, 1989) in diverse areas. In particular, many apparel studies have employed TRA to investigate apparel consumers in diverse contexts (see Table 2). For instance, in the study of apparel donation behavior, Ha-Brookshire and Hodge (2009) found that U.S. apparel consumers, who experienced both utilitarian and hedonic values regarding their donation behaviors, had positive attitudes toward performing the behavior

and significant subjective norms, which in turn translated positively into actual donation behavior. In the context of personalized fair trade apparel, Halepete, Littrell, and Park (2009) found that attitude toward personalized apparel was positively related to intention to purchase personalized fair trade apparel. In the study of consumer purchasing behavior of campus apparel products, Park and Park (2007) found that students with high university identification had positive attitudes and purchase intentions via multiple channels, and the researchers concluded that a positive attitude influences students' purchase intentions toward university-licensed apparel products. In foreign brand purchase behavior studies, Shen, Lennon, Dickson, Montallo, and Zhang (2003) investigated Chinese apparel consumers' behaviors toward U.S.-made apparel products and found that attitude toward purchasing those products significantly influenced their purchase intentions, but subjective norm did not work to predict their intentions.

Summers, Belleau, and Xu (2006) found that attitude toward performing the behavior and subjective norm were significant predictors of purchase intention of controversial luxury products, American alligator leather. Additionally, controversy perception (i.e., consumers' perceptions that products are controversial) and fashion involvement also acted as significant predictors of purchase intention.

Finally, regarding online apparel shopping, Xu and Paulins (2005) documented that students who intended to shop online for apparel products had positive attitudes toward online shopping. Additionally, Internet usage, employment status, and access to a car had a significant influence on students' attitudes toward online shopping for apparel products.

Table 2. Summary of Selected Applications of TRA in Apparel Studies

Studies	Research Settings	Major Findings
Ha-Brookshire & Hodges (2009)	U.S. consumers' intentions to donate apparel	Participants, who experienced both utilitarian and hedonic values regarding their donation behaviors, had positive attitudes and subjective norms, and these values, in turn, affected future apparel donation intentions.
Halepete, Littrell, & Park (2009)	U.S. consumers' intentions to purchase personalized fair trade apparel	Attitude toward personalization of apparel was positively related to intention to purchase personalized fair trade apparel.
Park & Park (2007)	U.S. consumers' intentions to purchase university-licensed apparel	When students have some university identification already established, as well as perceived greater status about the university, they are likely to have positive attitudes and purchase intentions via multiple channels, including traditional retail and online stores.
Shen, Lennon, Dickson, Montallo, & Zhang (2003)	Chinese consumers' intentions to purchase apparel made in the U.S.	Chinese consumers' attitudes toward U.S.-made clothing were more favorable than attitudes toward China-made clothing, and there was a positive relationship between attitudes and intentions to purchase U.S.-made clothing.
Summers, Belleau, & Xu (2006)	Female U.S. consumers' intentions to purchase American alligator leather	Attitude toward performing the behavior, subjective norm, controversy perception (social acceptance), and fashion involvement were significant predictors of purchase intention of a controversial luxury product, apparel made with American alligator leather.
Xu & Paulins (2005)	U.S. college students' intentions to purchase apparel online	Students who intended to shop online for apparel products had more positive attitudes than did those who were without the intention. Also, Internet usage, employment status, and access to a car had significant influence on students' attitudes toward online shopping for apparel products.

Review of Application of the Theory of Planned Behavior in Apparel Studies

TPB (Ajzen, 1991) has been empirically validated across the disciplines of psychology, education, marketing, and business. Table 3 presents a summary of applications of TPB in apparel marketing literature. Compared to Theory of Reasoned Action (TRA), TPB has been utilized less in apparel studies. However, the literature documents significant positive relationships between the three antecedents (i.e., attitude, subjective norm, and PBC) and intention to purchase apparel products (Cannière, Pelsmacker, & Geuens, 2009), intention to purchase apparel products via Internet stores (Shim, Eastlick, Lotz, & Warrington, 2001), intention to purchase apparel products via multichannel stores (Kim, Park, & Pookulangara, 2005), intention to purchase sweatshop-produced apparel products (Shaw, Shiu, Hassan, Bekin, & Hogg, 2007), and intention to purchase U.S. brand apparel products and foreign brand jeans (Jin & Kang, 2010; Jin & Kang, 2011).

Only two studies (Chan & Lau, 2001; Kalafatis, Pollard, East, & Tsogas, 1999) have used TPB to determine green consumer behaviors, and applications of TPB in the context of apparel products are very limited.

Table 3. Summary of Selected Applications of TPB in Apparel Studies

Studies	Research Settings	Major Findings
Cannière, Pelsmacker, & Geuens (2009)	Behavioral intention and purchase behavior of apparel	Intentions fully mediate the impact of attitudinal antecedents on behavior, both in terms of purchase incidence and purchase behavior (amount spent, number of visits, and types of products bought).
Kim, Park, & Pookulangara (2005)	Purchase behavior of apparel via multichannel stores	Attitude toward the offline store was a significant predictor of attitude toward the online store, and search intention for product information via the online store was a significant predictor of the consumer's purchase intention.
Shaw, Shiu, Hassan, Bekin, & Hogg (2007)	Intention to avoid purchasing sweatshop-produced apparel	Attitude, subjective norm, perceived behavioral control, and desire of avoiding purchasing sweatshop-produced apparel positively influenced purchase intention toward sweatshop-produced apparel.
Shim, Eastlick, Lotz, & Warrington (2001)	Intention to shop via the Internet	Direct and indirect relationships between two antecedents (attitude toward Internet shopping and previous Internet purchase experience) and Internet purchase intention were found.
Jin & Kang (2010)	Purchase behavior toward foreign brand jeans	Perceived behavioral control had strongest direct influence on Chinese college students' purchase intention of foreign brand jeans. Face-saving was stronger influence on purchase intention than subjective norm
Jin & Kang (2011)	Purchase intention to U.S. brand apparel	Attitude toward the U.S. brand apparel was the most important on Chinese consumers' purchase intention, followed by external PBC and subjective norm

Based on an extensive review of previous studies, this study identified the advantages of employing TPB over TRA for studying the purchase behavior of green apparel products because TRA is limited to predicting only intention and behavior that are under an individual's volitional control. For instance, even though a consumer has a positive attitude toward a certain behavior, if he/she does not have the financial resources (i.e., external perceived behavioral control), intention and behavior may not occur. Because environmentally conscious consumption may be a volitional behavior, it may require more resources, such as awareness or familiarity about the environment and adequate money. To incorporate these volitional controls in environmental consumption behavior, TPB is believed to be a more accurate and creditable framework than TRA. To accurately estimate green apparel purchase behavior, this study included two indirect antecedents to purchase intention (man-nature orientation and environmental knowledge) in the proposed framework. The next section introduces these antecedents this study employed.

Concepts of the Two Indirect Antecedents to Purchase Intention Employed

Man-Nature Orientation

Kluchhohn and Strodtbeck (1961) developed a framework of value-orientation to describe cultural values. The researchers initially categorized cultural values into five orientations: relational orientation, man-nature orientation, man-himself orientation, past-time orientation, and personal activity orientation. For the current research, the man-nature orientation was selected as an antecedent of consumer attitude toward purchasing green apparel products because the man-nature orientation determines the relationship

between human beings and the natural environment. Selecting this antecedent allowed this research to examine the possible influence of cultural value orientation on green apparel product purchase behaviors.

The man-nature orientation is based on a human being's relationship with nature (Jandt, 2004). Three possibilities can be included for the relationship between a human being and nature: subjugation to nature, harmony with nature, and mastery over nature. "Subjugation to nature" explains that human beings should be impressed with natural forces that control human beings, then accept these forces and not attempt to change them. "Harmony with nature" indicates that human beings do not control or try to conquer nature and should value nature and respect it. Thus, human beings have a harmonious relationship with nature. "Mastery over nature" refers to the human being's intent to control nature. A human being attempts to dominate over nature to influence the impact of nature. This might present itself in a culture through management of nature or through preventing or protecting oneself from the power of nature (Kluchhohn & Strodtbeck, 1961).

The Chinese culture's relationship with nature is that of harmony with nature because it relates to two doctrines of Chinese cultural values, Way (Tao) and Yuan (Karma) (Yau, 1994). Originated in Taoism, Way highlights harmony with nature and views that man is perceived as a part of nature, instead of as the ruler of nature. Taoism believes that man should not try to overcome or master nature, but that he has to learn how to adapt to it so as to reach harmony (Song, 2008). Therefore, the Chinese believe that nature has the Way by which all things become what they are (Chan, 1963). Apart from the doctrine of the Way, Yuan is another important doctrine that has been rooted

into the hearts of most Chinese and is referred to as predetermined relations with other things or individuals (Yau, 1994). This doctrine is a Buddhist-related Chinese concept and is commonly defined as the 'binding force' that links individuals or an individual and things in a relationship (Yau, 1994). Therefore, according to Yuan, the Chinese believe that a human being's relationship with nature is as important as a relationship between human beings. As far as man-nature orientation is concerned, the Chinese traditionally place a heavy emphasis on living in harmony with nature, and they conceive of flowers, trees, and grass as having their own consciousness, and thus they should not be destroyed without good cause (Chan, 2001). In contrast, as a representative of Western cultures, the U.S. attempts to master nature. People attempt to build the breakwater for hurricanes, change the course of rivers, harvest forests for wood and paper, and breed cattle for increased meat production. They believe they have domination over nature (Jandt, 2004).

Man-nature orientation has been proposed as a way to understand attitudes regarding the relationship of human beings to nature (Chandler & Dreger, 1993; Snodgrass & Gates, 1998). Man-nature orientation has also emerged clearly in multicultural research (Schwartz, 1992), and it has occupied an important place in the analysis of cultural biases (Koltko-Rivera, 2004). Differences in human beings' relationships with nature may influence communications with certain programs or developmental projects that relate to nature. The Chinese might not accept a program that attempts to master nature, but Americans might. These differences might also exist in the retailing sector, which deals with green products. Therefore, in order to examine environmental behavior with regard to cross-cultural comparisons between U.S. and Chinese consumers, the construct of man-nature orientation was employed.

Environmental Knowledge

Environmental knowledge can be defined as "a general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems" (Fryxell & Lo, 2003, p. 45). Environmental knowledge involves what people know about the environment, and it is a key factor leading to environmental aspects and responsibilities necessary for sustainable development (Mostafa, 2007).

Environmental knowledge may increase if one's concerns about environmental problems and change in the world increase (Laroche et al., 2002). In previous studies, an individual's knowledge about environmental issues has been identified as a significant predictor of environmentally friendly behavior. Dispoto (1977) concluded that environmental knowledge is a good predictor of environmental activities. Martin and Simintiras (1995) found that environmental knowledge has an impact on green purchases and uses. If consumers possess knowledge of environmental issues, environmentally conscious consumption behaviors follow (Chan, 1996). Therefore, this study employed environmental knowledge as an antecedent of consumer attitude toward purchasing green apparel products.

The Proposed Conceptual Model

This study employed the theory of planned behavior (TPB) as a theoretical framework. The conceptual model in this study was proposed to explain the process from two indirect antecedents (Man-nature orientation and Environmental knowledge) and four direct antecedents (Attitude, Subjective norm, Internal PBC and External PBC) to purchase intention for green apparel products. Figure 3 presents the proposed conceptual model and causal relationships among the constructs.
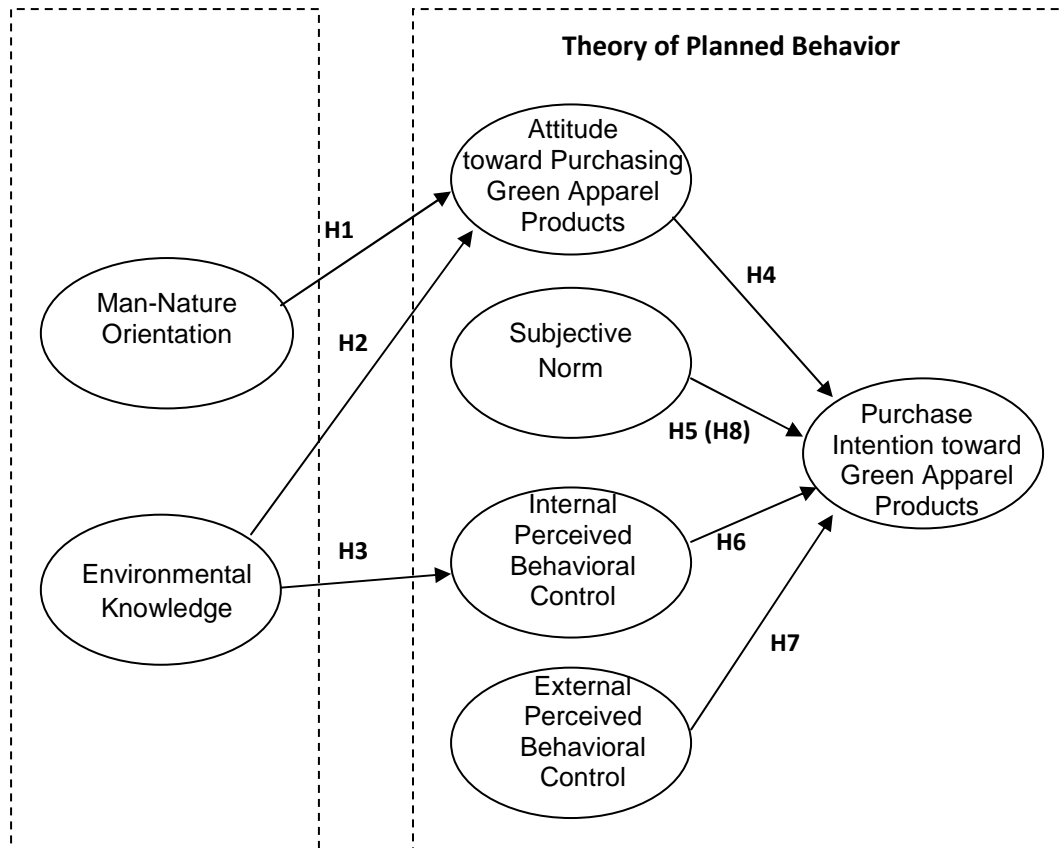
Figure 3. The Proposed Model for Purchase Intention for Green Apparel Products

Note: Hypothesis 8, inside the parentheses, indicates the country moderating effect.

This study considered internal and external PBC as separate constructs in order to examine how each control influences purchase intention toward green apparel products. Most previous studies using TPB have incorporated one dimension of PBC, as was originally suggested (Ajzen & Fishbein, 1980). However, the weaknesses in the operation of the single PBC have since been addressed, and it has been suggested that a behavior may be perceived as being within or not within an individual's internal and external control (Conner & Armitage, 1998; Kidwell & Jewell, 2003). Moreover, employing the measurement of a single PBC has caused low reliability (Conner & Armitage, 1998), and thus recently it was proposed to use a decomposed concept of PBC, which has high reliability of each construct.

As shown in Figure 3, the proposed conceptual model consists of two causal paths. For the first path, this study proposed that two indirect antecedents to purchase intention (i.e., man-nature orientation and environmental knowledge) influence consumer attitude and internal PBC. The second path presents the influences of the four direct antecedents on purchase intention. Based on the proposed model, this study developed seven hypotheses (H1~H7) to be tested. In H8, consumers in two countries (the U.S. and China) are compared to examine differences in the path from subjective norm to purchase intention.

Development of Hypotheses

The primary objectives of this study were to understand consumer purchase behavior toward green apparel products and to investigate the differences between U.S. and Chinese consumers regarding the behavior. To achieve these research goals, eight

hypotheses were developed based on the proposed conceptual model. The next section addresses the rationale for each hypothesis.

The Influence of Two Antecedents on Attitude and Internal PBC

Man-Nature Orientation and Attitude

The first hypothesis of this study posits that the man-nature orientation will positively influence consumers' attitude toward purchasing green apparel products. The following sequentially discusses how the man-nature orientation leads to consumers' positive attitudes toward purchasing green apparel products.

Man-nature orientation refers to the extent to which the individual accommodates himself/herself to living in harmony with nature. An individual's orientation to nature is different by culture (Gallagher, 2001). In an Oriental culture, such as China, Japan, and Korea, the culture emphasizes that human beings should not try to overcome or master nature, but should learn how to adapt to it (Chan & Lau, 2001). On the contrary, in a Western culture it is believed that human beings can dominate and control environments, such as changing the course of rivers and demolishing mountains for building roads (Jandt, 2004).

Because the primary essence of man-nature orientation is the degree of accommodating oneself to living in harmony with nature, individuals who are at a higher level of man-nature orientation do not harm or destroy the environment without good cause (Chan, 2001). Accordingly, individuals high in man-nature orientation are more concerned about environmental issues and are more likely to exhibit support for green activities of companies or governments. Therefore, a high man-nature orientation will naturally lead to a positive attitude toward green behaviors. Several studies have

supported the positive relationship between man-nature orientation and attitudes toward

green behaviors. Chan (2001) found that man-nature orientation significantly increases

Chinese consumers' attitudes toward green purchases. Van Liere and Dunlap (1980) used

eco-centric orientation as an antecedent of attitude toward U.S. national parks and

confirmed its significant positive relationship. Mostafa (2007) developed the concept of

natural environmental orientation, which is a concept embracing various inclinations

toward nature, and discovered a positive relationship between natural environmental

orientation and attitude toward environmental behaviors. Based on the above, this study

expects that man-nature orientation will enhance consumers' attitudes toward purchasing

green apparel products. Thus, the following hypothesis is posited:

H1: Man-nature orientation will positively influence a consumer's attitude toward

purchasing green apparel products.

Environmental Knowledge and Attitude

This study posits that environmental knowledge will positively influence

consumers' attitudes toward purchasing green apparel products. The following addresses

this proposed relationship. Environmental knowledge involves what individuals know

about facts, concepts, and relationships concerning the natural environment (Fryxell &

Lo, 2003), and environmental knowledge increases as concerns about environmental

problems increase (Laroche et al., 2002).

It is widely accepted that an increase in knowledge leads to a change in attitude,

which will in turn influence behavior (Matthews & Riley, 1995), and this mechanism

should apply to the relationship between environmental knowledge and attitude toward

environmental behavior. The positive influences of environmental knowledge on environmental attitudes and behaviors are well evidenced in previous studies (Blocker & Eckberg, 1997; Chan, 2001; Diekmann & Preisendörfer, 1998; Laroche, Bergeron, Tomiuk, & Barbaro-Forleo, 2002; Synodinos, 1990). Laroche et al. (2002) investigated differences between consumers in high and low environmental knowledge groups with respect to environmental attitudes and behaviors. The researchers found that an increase in consumers' environmental knowledge enhances their environmental attitudes and behaviors. Simmons and Widmar (1990) concluded that lack of environmental knowledge is a substantial barrier to possession of positive attitudes toward recycling behaviors.

Synodinos (1990) stated that "more positive attitudes may result by increasing knowledge about environmental issues" (p. 168). Kaiser, Wolfing, and Fuhrer (1999) even remarked that "knowledge about the environment is a precondition of his/her environmental attitude" (p. 4). Therefore, as a consumer's environmental knowledge increases, he/she recognizes immediate environmental problems, and his/her chance of having a positive attitude toward environmental behaviors increases. Based on these rationales and supportive findings of previous research, this study postulates that environmental knowledge will strengthen consumers' attitudes toward purchasing green apparel products. Thus, the following hypothesis is proposed:

H2: Environmental knowledge will positively influence a consumer's attitude toward purchasing green apparel products.

Environmental Knowledge and Internal Perceived Behavioral Control

This study holds that environmental knowledge will positively influence consumers' internal perceived behavioral control (PBC) toward purchasing green apparel products. This positive relationship is proposed because environmental knowledge is related to how much individuals possess control over performing an environmental friendly behavior. In previous research, it was widely accepted that knowledge is a determinant of self-efficacy (Bandura, 1986; Pajeres, 2002). Bandura (1986) initially developed the concept of self-efficacy as "judgment of one's capability to accomplish a certain level of performance" (p. 391), and the degree of one's self-efficacy determines what an individual will do with his/her knowledge and skills (Pajeres, 2002). Bandura (1986) presented that an individual's level of motivation, affective states, and actions are based more on how he/she perceives his/her knowledge and skills than what is objectively true. Therefore, a higher knowledge level affects an individual's self-efficacy level to accomplish a particular behavior.

Self-efficacy is positively related to internal PBC because higher self-efficacy leads to stronger control over an individual's choices of behavior (Barkhi, Belanger, & Hicks, 2008). Since knowledge is an important part of one's self-efficacy level and self-efficacy is closely related to internal PBC, environmental knowledge will affect internal PBC positively. If an individual has a great deal of knowledge about environmental issues and green products, he/she will be confident to purchase green apparel products. Although previous research on the relationship between knowledge and internal PBC is limited, it is quite reasonable to expect that environmental knowledge will increase internal PBC. Therefore, the following hypothesis is posited:

H3: Environmental knowledge will positively influence a consumer's internal perceived behavioral control.

Relationships among TPB Variables

Attitude and Purchase Intention

The next hypothesis anticipates the positive effect of attitude toward purchasing green apparel products on consumers' purchase intentions toward green apparel products. The information that follows presents how attitude increases consumers' purchase intentions toward green apparel products.

The relationship between attitude and intention is an integral part of the theory of planned behavior (Cannière, Pelsmacker, & Geuens, 2009). That is, the more favorable the attitude toward the behavior, the stronger the individual's intention to perform the behavior (Ajzen, 1991). As such, many studies in apparel marketing literature have confirmed this positive relationship. In foreign brand purchase behavior studies, Shen et al. (2002) discovered that attitude is a significant predictor of purchase intention for U.S.-made apparel. Other studies have found that consumers' attitudes toward a brand positively affect their intentions to purchase extended brands from a parent company (Faircloth, Capella, & Alford, 2001). In controversial luxury product purchase behavior studies, Summers, Belleau, and Xu (2006) found that individuals' attitudes toward purchases of American alligator leather apparel products had a highly significant influence on their purchase intentions of the leather apparel. Additionally, Kim, Park, and Pookulangara (2005) and Ha and Stoel (2009) also documented that behavioral

intention toward apparel shopping via the Internet is significantly influenced by attitude toward online apparel shopping.

The same positive relationship between attitude and purchase intention has been found in environmental-related behaviors. In studies of environmentally friendly products purchasing behavior, Diamantopoulos, Schlegelmilch, Sinkovics, and Bohlen (2003) found a significant relationship between environmental attitude and intention to purchase three types of green products: recycled paper products, products not tested on animals, and ozone-friendly aerosol products. Ellen, Wiener, and Cobb-Walgren (1991) discovered that attitude toward improving the environment s a significant predictor of purchasing intention toward environmentally safe products. Alwitt and Pitts (1996) documented that attitude toward the consumption of green products directly influences purchase intention for green products. In studies about recycling behaviors, Dahab, Gentry, and Su (1995) and Ellen, Wiener, and Cobb-Walgren (1991) discovered that attitude toward recycling is strongly related to the intent to recycle. Based on the above findings, this study proposes that attitude toward purchasing green apparel products will positively lead consumers' purchase intentions to purchase green apparel products.

H4: Attitude toward purchasing green apparel products will positively influence a consumer's purchase intention toward green apparel products.

Subjective Norm and Purchase Intention

This study maintains that subjective norm will positively influence consumers' purchase intentions toward green apparel products. Subjective norm refers to the individual's perception of significant referents' opinions toward a behavior (Baker, Al-

Gahtani, & Hubona, 2007). As with attitude, subjective norm is an important essence of the theory of planned behavior to predict a behavioral intention.

Since the theory of planned behavior is proposed with the idea that subjective norm and attitude lead to intention, a great number of studies have evidenced in diverse contexts that subjective norm is the principal predictor of intention to behavior (Armitage et al., 1999). In apparel literature, Summers, Belleau, and Xu (2006) found that the stronger individuals' perceptions of social pressure are not to buy controversial luxury products, such as American alligator leather apparel, the more negative individuals' purchase intentions become. Perkins, Crown, Rigakis, and Eggertson (1992) found subjective norm to be correlated with behavioral intention to wear protective clothing when administering chemical pesticides. Leong (2000) found that subjective norm has a significant effect on purchase intention for party clothes in Singaporean adolescents. Finally, Lajunen and Räsänen (2004) concluded that subjective norm is influential and a strong predictor of teenage cyclists' intentions to wear safety gear.

The same relationship between subjective norm and intention has been documented in environmental studies. Sparks and Shepherd (1992) found a positive significant relationship for U.S. consumers between subjective norm and intention to eat organic vegetables. Several studies have also discovered that subjective norm significantly predicts behavioral intention to use or purchase diverse environment-related products, such as environmentally friendly cars (Kaiser & Gutscher, 2003), environmentally friendly products (Kalafatis et al., 1999), and energy-saving light bulbs (Harland, Staats, & Wilke, 1999). Additionally, subjective norm was found to be the positive factor of intention toward recycling behavior (Hopper & Nielsen, 1991). The

above studies clearly show that subjective norm is the important factor in predicting positive intention toward environment-related behaviors. As mentioned previously, environmental behaviors may require ethical and socially responsible responses, thus individuals may feel more pressure from groups, which may lead to more engagement in environmental behaviors. Based on the above supportive findings of previous research and rationales, this study hypothesizes that subjective norm will increase consumers' purchase intentions toward green apparel products.

H5: Subjective norm will positively influence a consumer's purchase intention toward green apparel products.

Internal Perceived Behavioral Control and Purchase Intention

This study proposes that internal and external perceived behavioral control (PBC) will positively influence consumers' purchase intentions toward green apparel products. PBC refers to "the perceived ease or difficulty of performing the behavior" (Ajzen, 1991, p. 188) and will thus vary as a function of the perceived controllability toward performing the intention (Armitage et al., 1999). Individuals who possess the necessary resources or opportunities to perform a particular behavior show strong behavioral intentions (Kalafatis et al., 1999). Previous empirical studies have found a positive effect of PBC on behavioral intention (Compeau & Higgins, 1995; Mathieson, 1991).

Internal PBC refers to an individual's internal perception that he/she possesses control over personal resources, such as requisite skills, confidence, adequate planning, and the ability, to perform the behavior (Armitage et al., 1999). Baker, Al-Gahtani, and Hubona, (2007) documented that internal PBC directly impacts on intention to perform a

behavior. Laroche, Kim, and Zhou (1996) indicated that future purchase intention is directly influenced by internal confidence, such as awareness or familiarity of products and brands. Nataraajan and Angur (1998) suggested that intention should be considered explicitly by the perception of one's degree of self-efficacy and confidence. Finally, Kidwell and Jewell (2003) supported that internal PBC acts as a significant antecedent in predicting behavioral intention to donate blood. Therefore, stronger internal PBC leads to a more positive intention to a behavior because high capability of skill and ability regarding a particular behavior increases the confidence of conducting the behavior. Likewise, an individual with a great deal of confidence, skill, and ability regarding green apparel products (i.e., high internal PBC) will be more likely to purchase green apparel products. Based on the above supportive findings of previous research and rationales, this study posits that internal PBC will positively increase consumers' purchase intentions toward green apparel products. Thus, the following hypothesis is proposed:

H6: Internal perceived behavioral control will positively influence a consumer's purchase intention toward green apparel products.

External Perceived Behavioral Control and Purchase Intention

External PBC refers to an individual's perception that he/she has control over external conditions and situations, such as time, money, and availability, to perform a particular behavior (Armitage et al., 1999). Ajzen (1991) defined external PBC as facilitating conditions that determine the extent to which circumstances facilitate or interfere with the performance of a behavior. In other words, external PBC is associated with a person's perception of controllability of external barriers for a behavior (Jin &

Kang, 2011). As with internal PBC, external PBC has been shown in previous research to be an important determinant of intention. Armitage, Conner, Loach, and Willetts (1999) examined the influence of external PBC on intention and found a positive relationship between the two constructs. Jin and Kang (2011) concluded that external PBC has a significant impact on purchase intention of Chinese consumers because the most important barrier of Chinese consumers toward foreign brand apparel is price. Additionally, previous studies have supported the impact of external PBC on sunscreen use (Turrisi, Hillhouse, & Gebert, 1998), drinking and driving (Turrisi, Jaccard, & McDonnell, 2006), and fast-food consumption (Bagozzi & Kimmel, 1995). Therefore, external PBC increases positive intention toward a behavior because facilitating circumstances about the particular behavior increase self-reliance in conducting the behavior. For instance, if an individual does not have much enough time or money to purchase a particular product, he/she is not able to purchase it even though he/she wants to. Likewise, an individual with facilitating conditions, such as adequate time and monetary resources (i.e., high external PBC), will be more likely to purchase green apparel products. Based on these supportive findings of previous research and rationales, this study proposes that external PBC will positively increase consumers' purchase intentions toward green apparel products. Thus, the following hypothesis is posited:

H7: External perceived behavioral control will positively influence a consumer's purchase intention toward green apparel products.

Country Moderating Effect between Subjective Norm and Purchase Intention

This study posited that country moderates a proposed path between subjective norm and purchase intention. We expect a stronger relationship in China than in the U.S. because of cultural difference between the two countries. According to Triandis (1995), subjective norm is more influential for individuals in collective and Confucian cultures (e.g., China and Korea) than for those in individual cultures (e.g., U.S. and Canada). People in collective cultures tend to be aware of their referents' pressure in most of their behaviors. In China, opinion from family, friends, and other people in general has a major impact on apparel decisions, whereas U.S consumers are much more likely to rely on either themselves (72%) or store displays (56%) (The Chinese supply chain for cotton, 2007). Therefore, it is expected that Chinese consumers tend to feel more social pressures for purchasing green apparel products than do U.S. consumers.

H8: Country moderates the positive relationship between subjective norm and purchase
intention toward green apparel products such that a stronger relationship is expected
in China and a weaker relationship is expected in the U.S.

CHAPTER III

METHODOLOGY

This chapter presents the methods used in the study. First, the data collection procedure is explained. Second, the survey instrument development procedure is presented. Finally, the statistical data analysis procedure describing how the proposed hypotheses were tested is reported.

Data Collection

This study aimed to examine consumers' consumption behaviors for green apparel products and to test for possible differences between U.S. and Chinese consumers. To this end, a consumer survey was conducted to collect data in several cities of each country. Shanghai and Beijing in China were chosen because both cities are some of the most rapidly developing Chinese cities where the green movement actively occurs (Chan, Wong, & Leung, 2008). In the U.S., three large cities, Seattle (WA), San Francisco (CA), and Columbus (OH), as well as two medium sized cities, Waco (TX) and Normal (IL), were selected because consumers in large and medium cities are deemed to be more exposed to green apparel products than are those in small rural cities. Female college students in both countries were chosen as respondents because they are the

primary target of the apparel market and have relatively higher buying power for apparel products than do consumers in other age groups, making the younger group an ideal potential market for green apparel products (Gardyn, 2002). Because young female consumers place great importance on apparel products, they tend to spend more money on purchasing apparel than on purchasing most other merchandise (Seock & Bailey, 2008). According to Case and King (2003), apparel is one of the most popular categories for female college students. Internet shopping apparel is the top product category for female students' purchases. Also, because the college student group is more homogeneous (Peterson, 2001) in terms of socioeconomic characteristics across countries than any other group, this group provides a valid basis for comparing consumer green apparel behavior between two countries.

With professors' permission, college respondents were asked to fill out questionnaires during class periods. The survey was conducted in winter 2009 and spring 2010 in the U.S. and spring and summer 2010 in China. The survey took approximately 15 minutes to complete. A total of 519 questionnaires were collected initially, 258 data sets in the U.S. and 261 data sets in China. Among these completed data sets, 24 from the U.S. and 67 from China were discarded because of insincere or incomplete responses. Therefore, 234 questionnaires from the U.S. and 194 questionnaires from China were entered into statistical analysis.

Demographic details collected, such as age, household income, clothing expenditures, and previous experience and future willingness to purchase green apparel products, are presented in Table 4.

Table 4. Respondents' Demographic Characteristics

Profile		U.S.		China	
		Frequency	%	Frequency	%
Age	20 and Under	122	52.2	49	25.3
	21-23	85	36.3	82	42.3
	24-26	17	7.3	42	21.6
	27-29	5	2.1	7	3.6
	30 and Over	5	2.1	14	7.2
	Total	234		194	
Monthly	Under $1,000	85	36.3	79	40.7
household	$1,000~$2,999	25	10.7	35	18.1
income	$3,000~$4,999	23	9.8	44	22.7
	$5,000~$7,499	29	12.4	21	10.8
	$7,500~$9,999	15	6.4	10	5.2
	$10,000~$14,999	21	9.0	2	1.0
	$15,000~$19,999	7	3.0	1	0.5
	Over $20,000	25	10.7	0	0
	Non-response	4	1.7	2	1.0
	Total	234		194	
Monthly	Under $100	131	56.0	125	64.4
clothing	$100~$199	71	30.4	32	16.5
expenditures	$200~$299	9	3.8	4	2.1
	$300~$399	15	6.4	24	12.4
	$400~$599	4	1.7	7	3.6
	$600~$799	1	0.4	1	0.5
	$800~$999	1	0.4	1	0.5
	Non-response	2	0.9	0	0
	Total	234		194	
Experience of	YES	122	52.1	50	25.8
purchasing green	NO	111	47.5	142	73.2
apparel products	Non-response	1	0.4	2	1.0
	Total	234		194	
Willingness to	YES	90	38.5	105	54.1
purchase green	NO	21	9.0	49	25.3
apparel products	Non-response	123	52.5	40	20.6
	Total	234		194	

The mean age of the respondents was 21.64 in the U.S., with a range of 18 to 36 years old, and 21.96 in China, with a range of 17 to 38 years old. The most frequent response for monthly household income for U.S. respondents (nearly half of the total participants) was below $3,000, and over 40% of Chinese respondents had a monthly

household income that was below $1,000. The monthly expenditures for clothing most frequently reported for both U.S. and Chinese consumers was below $100. About 52% of U.S. respondents answered they had purchased green apparel products, while only about 26% of the Chinese respondents had experience purchasing these products. Finally, a willingness to purchase green apparel products in the future was reported by a little over 38% of U.S. respondents and just over 54% of Chinese respondents.

Development of the Survey Instrument

Two questionnaires were developed, one for U.S. participants and the other for Chinese participants. A questionnaire was initially developed in English and translated into Chinese by a bilingual student. It was back-translated into English by another bilingual to ensure translation equivalence. The questionnaire consisted of a section to collect demographics plus three sections to measure the constructs in the proposed model. The first of these three sections measured the constructs in the theory of planned behavior (attitude, subjective norm, internal perceived behavioral control, external perceived behavioral control, and purchase intention). The second section had measurement items for man-nature orientation, and the third section consisted of measurement items for environmental knowledge. Because this study focused on green apparel products, the questionnaire started with a description of the products. Green apparel products were confined to eco-labeled apparel products that had the label of no-pesticide, no-synthetic dye, and organic or natural fibers. Home furnishing products (carpets, curtains, and bedding and bath products), footwear, and textile fabrics were excluded from this study. Once respondents had been given this explanation of green apparel products, the survey

continued. The following section describes how each construct was measured. The items

for the seven constructs are described in Table 5.

Man-Nature Orientation

The man-nature orientation construct measures the extent to which an individual

accommodates himself/herself to living in harmony with nature. To measure this

construct, five items were adopted from Chan (2001) (reported reliability coefficient =

.81). The five items were "Human beings need to understand the ways of nature and act

accordingly," "We should maintain harmony with nature," "Being the master of the

world, human beings are entitled to deploy any of the natural resources as they like,"

"Human beings are only part of nature," and "We should master instead of adapting to

the environment." Among these five items, two items, "Being the master of the world,

human beings are entitled to deploy any of the natural resources as they like" and "We

should master instead of adapting to the environment," were reversely coded. All items of

man-nature orientation were measured by a seven-point Likert scale (1 = strongly

disagree, 7 = strongly agree).

Environmental Knowledge

Environmental knowledge measures the extent to which consumers know about

environmental issues and trends. Six items were adopted from Mohr, Eroglu, and Ellen

(1988) (reported reliability coefficient = .86). The six items were "I know that I buy

products and packages that are environmentally safe," "I know more about recycling than

the average person," "I know how to select products and packages that reduce the amount

of waste ending up in landfills," "I understand the environmental phrases and symbols on product packages," "I am confident that I know how to sort my recyclables properly," and "I am very knowledgeable about environmental issues." All items of environmental knowledge were measured by a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Constructs in the Theory of Planned Behavior

The theory of planned behavior consists of five constructs (attitude, subjective norm, internal and external perceived behavioral control, and purchase intention). The measurements of each construct were adopted from previous studies and modified to the study context (i.e., green apparel product consumption).

First, the attitude construct measures the extent to which an individual is favorable or unfavorable toward purchasing green apparel products. Respondents were asked to indicate their attitudes toward purchasing green apparel products on a seven-point semantic differential scale consisting of six bi-polar adjective sets. These items were adapted from Armitage, Conner, Loach, and Willetts (1999) (reported reliability coefficient = .78): Purchasing green apparel products is bad/good, foolish/wise, harmful/beneficial, unfavorable/favorable, negative/positive, and unsatisfactory/ satisfactory.

Second, the subjective norm construct measures to what extent an individual is aware of the opinions of other people (referents) about purchasing green apparel products. To measure this construct, three items were adopted from Armitage et al. (1999) (reported reliability coefficient = .83). The three items were: "People who are

important to me think I should purchase green apparel products," "People who are important to me would approve of my purchasing green apparel products," and "People who are important to me want me to purchase green apparel products." All items of subjective norm were measured by a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree).

Third, the perceived behavioral control construct measures to what extent an individual perceives that he/she possesses control over personal resources internally and externally in purchasing green apparel products. A total of eight items measuring internal PBC (four items) and external PBC (four items) were adapted from Armitage and Conner (1999) (reported reliability coefficient for internal PBC = .86 and for external PBC = .87) and revised to the study context (i.e., green apparel products). The four items measuring internal PBC were "I believe I have the ability to purchase green apparel products" (1 = strongly disagree, 7 = strongly agree), "If it were entirely up to me, I am confident that I would be able to purchase green apparel products" (1 = strongly disagree, 7 = strongly agree), "How confident are you that you will be able to purchase green apparel products?" (1 = very unsure, 7 = very sure), and "To what extent do you see yourself as capable of purchasing green apparel products?" (1 = very incapable of, 7 = very capable of). The four items measuring external PBC were "Whether or not I purchase green apparel products is entirely up to me" (1 = strongly disagree, 7 = strongly agree), "There are likely to be plenty of opportunities for me to purchase green apparel products" (1 = strongly disagree, 7 = strongly agree), "How much personal control do you feel you have over purchasing green apparel products?" (1 = very little control, 7 = complete control),

and "How much do you feel that purchasing green apparel products is beyond your

control?" (1 = very much so, 7 = not at all).

Finally, the purchase intention construct measures the extent to which consumers

intend to purchase green apparel products. To measure this construct, three items adopted

from Armitage et al. (1999) (reported reliability coefficient = .82) were modified to the

context of green apparel products. The three items were "I intend to purchase green

apparel products," "I plan to purchase green apparel products," and "I want to purchase

green apparel products." All items of purchase intention were measured by a seven-point

Likert scale (1 = strongly disagree, 7 = strongly agree).

Table 5. A Summary of Research Constructs and Measurement Items

Construct (# of items)	Item	Source
Man-Nature Orientation (5 items)	MNO1. Human beings need to understand the ways of nature and act accordingly.	Chan (2001)
	MNO2. We should maintain harmony with nature.	
	MNO3. Being the master of the world, human beings are entitled to deploy any of the natural resources as they like. (R)	
	MNO4. Human beings are only part of nature.	
	MNO5. We should master instead of adapting to the environment. (R)	
Environmental Knowledge (6 items)	EK1. I know that I buy products and packages that are environmentally safe.	Mohr, Eroglu, & Ellen (1998)
	EK2. I know more about recycling than the average person.	
	EK3. I know how to select products and packages that reduce the amount of waste ending up in landfills.	
	EK4. I understand the environmental phrases and symbols on product packages.	
	EK5. I am confident that I know how to sort my recyclables properly.	
	EK6. I am very knowledgeable about environmental issues.	

Attitude (6 items)	Purchasing green apparel products is… ATT1. Bad – Good ATT2. Foolish – Wise ATT3. Harmful – Beneficial ATT4. Unfavorable – Favorable ATT5. Negative – Positive ATT6. Unsatisfactory – Satisfactory	Armitage, Conner, Loach, & Willetts (1999)

Subjective Norm
(3 items)
	SN1. People who are important to me think I
	    should purchase green apparel products.
	SN2. People who are important to me would
	    approve of my purchasing green apparel
	    products.
	SN3. People who are important to me want me to
	    purchase green apparel products.
		Armitage, Conner,
		Loach, & Willetts
		(1999)

Internal Perceived
Behavioral Control
(4 items)
	IPBC1. I believe I have the ability to purchase
	    green apparel products.
	IPBC2. If it were entirely up to me, I am confident
	    that I would be able to purchase green apparel
	    products.
	IPBC3. How confident are you that you will be
	    able to purchase green apparel products?
	IPBC4. To what extent do you see yourself as
	    capable of purchasing green apparel products?
		Armitage &
		Conner (1999)

External Perceived
Behavioral Control
(4 items)
	EPBC1. Whether or not I purchase green apparel
	    products is entirely up to me.
	EPBC2. There are likely to be plenty of
	    opportunities for me to purchase green apparel
	    products.
	EPBC3. How much personal control do you feel
	    you have over purchasing green apparel
	    products?
	EPBC4. How much do you feel that purchasing
	    green apparel products is beyond your control?
	    (R)
		Armitage &
		Conner (1999)

Purchase Intention (3 items)	PI1. I intend to purchase green apparel products. PI2. I plan to purchase green apparel products. PI3. I want to purchase green apparel products.	Armitage, Conner, Loach, & Willetts (1999)

Note: (R) - reverse items

Data Analysis

Three statistical procedures were conducted sequentially. First, using

confirmatory factor analysis (CFA), a measurement model was tested to confirm

measurement reliability and validity. Second, to establish whether measurements of the

model were stable across the two different groups, U.S. and China, a multi-group

invariance test was conducted utilizing the most accepted procedures of measurement invariance testing. Finally, to test the proposed hypotheses, a structural equation modeling (SEM) analysis using Lisrel 8.80 was conducted. U.S. and Chinese data were analyzed separately to test H1-H7, and then a multi-group analysis test was proposed to test H8 (i.e., testing country moderating effect).

To assess the overall fit of the models in the CFA, measurement invariance test, and SEM, several model fit indexes, such as chi-square tests, the normed fit index (NFI), the comparative fit index (CFI), the standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA), were used. To discuss the fundamental measure of fit, chi-square (χ^2) was used. This value indicates the differences between the observed and estimated covariance matrices. The p-value of the chi-square is recommended to be larger than .05 to reflect statistically non significance. In addition to chi-square value, several additional fit indices were considered to assess model fit. NFI is one of the original incremental fit indices and a relative comparison of the proposed model to the null model (Hair, Anderson, Tatham, & Black, 1998) with a range between 0 and 1. If an NFI value closes to 1, the model is in a good fit. CFI represents the relative improvement in fit of the hypothesized model over the null model. Because the CFI has many desirable properties including its relative insensitivity to model complexity, it is among the most widely used indices. The CFI values range between 0 and 1, with higher values indicating a better fit (Bentler & Bonett, 1980). Acceptable model fits are indicated by NFI and CFI values exceeding 0.90. RMSEA is an estimate of the discrepancy per degree of freedom between the original and the reproduced covariance matrices and measures discrepancy in terms of population. It better represents how well a

model fits a population, not just a sample used for estimation. A typical acceptable RMSEA value is below .10. Generally, RMSEA values below .08 represent a moderate fit while values less than .05 are considered a good fit (Hair et al., 1998). Finally, SRMR is used to assess a model fit. SRMR is the overall difference between the predicted and observed variances and covariances in the model, based on standardized residuals. An SRMR value less than .10 is usually considered a good fit (Kline, 2005).

To validate the cross national invariance of scales, several types of invariances, such as configural, metric, and partial metric invariance, have been suggested (Cervellon & Dubé, 2002; Shukla, 2010; Singh, 1995; Steenkamp & Baumgartner, 1998). Configural invariance implies that the survey instrument measures the same underlying latent constructs in all groups. Metric invariance means that the observed variables are measured according to the same scale metrics or intervals. For instance, all items of each construct have the same loadings across groups. Partial metric invariance implies at least two factor loadings are equal across groups (Cervellon & Dubé, 2002). According to Steenkamp and Baumgartner (1998), the equivalence of scale across groups can be achieved by fulfilling at least two of the measurement invariance tests using multi-group analysis in SEM. First, through the configural invariance test, all factor loadings in the measurement model should be statistically significant and fitted well across groups. Second, according to Steenkamp and Baumgartner's (1998) study, the metric invariance test can be conducted using chi-square differences between the unrestricted model, in which the factor loadings are allowed to vary, and the restricted model, in which factor loadings are constrained to be equivalent across groups. If a non-significant chi-square difference value (over .05 p-values) is obtained between these two models, this

invariance test is confirmed. The partial metric invariance test was suggested by Singh (1995) if a significant chi-square difference value (less than .05 p-values) in a metric invariance test was obtained. Partial metric invariance can be confirmed if there is a non-significant chi square difference value between the unrestricted model, in which the factor loadings are allowed to vary, and the partially constrained model, in which at least two factor loadings are constrained to be equivalent across groups. After confirming measurement invariance tests, the proposed hypotheses should be tested using the multi-group structural equation model (SEM) test and the country moderating effect will be tested.

CHAPTER IV

FINDINGS

This chapter presents the results of the study. First, the results of the preliminary data analysis and the measurement model test are presented. Second, the tests of the proposed hypotheses are presented. Finally, the results of multi-group testing are reported.

Preliminary Data Analysis

Prior to testing the hypotheses, confirmatory factor analysis (CFA) was conducted for the seven constructs in the proposed model to test the reliability and validity of the measurement items; the assessments used factor loadings, composite reliability (CR), and average variance extracted (AVE).

The overall measurement model fit statistics for U.S. data ($\chi^2 = 875.42$ ($df = 413$), p-value = .00; NFI = .92; CFI = .96; RMSEA = .069; SRMR = .074) indicated an acceptable level of fit. Similarly, the overall measurement model fit statistics for China data also indicated a good fit: ($\chi^2 = 835.06$ ($df = 413$), p-value = .00; NFI = .85; CFI = .92; RMSEA = .071; SRMR = .071). The results of the CFA are reported in Table 6 (U.S.) and Table 7 (China).

The CFA results presented that all standardized factor loadings for the U.S. data ranged from .41 ~ .96 (Table 6) and for China data from .27 ~ .84 (Table 7). The t-value of these loadings were over the cutoff t-test value (1.96) and statistically significant at $p<.05$. Internal consistency was checked with construct reliability (CR), and average variance extracted (AVE) was taken as indicative of convergent validity. In the U.S. data, CR ranged from .75 ~ .93 and AVE ranged between .50 ~ .84, surpassing the recommended levels of .70 for CR and .50 for AVE (Fornell & Larcker, 1981). In the China data, CR ranged from .62 ~ .89 and AVE ranged between .43 ~ .69 (Table 7). The CR of man-nature orientation construct (.62) and external PBC construct (.63) and AVE of man-nature orientation construct (.43) and external PBC construct (.44) were below the suggested values. However, Hair et al. (1998) suggested that CR between .6 and .7 may be acceptable and that an AVE value that falls just short of a cutoff can be acceptable.

To confirm the distinctiveness of different constructs, discriminant validity was examined by comparing the square of correlations among constructs and the average of AVEs for two constructs. According to Fornell and Larcker's (1981) study, discriminant validity can be confirmed if the average of AVEs for two constructs is greater than the square of the correlation (Φ^2) between them. As shown in Table 8, the averages of AVEs of all paired constructs were greater than the squares of the correlations between them in both the U.S. and China data. Therefore, the measurement items have satisfactory discriminant validity. Since the measurement items both for the U.S. and China confirmed to be reliable and valid, the measurement invariance test followed.

Table 6. Results of the Measurement Model Test of U.S. Data

Latent	Indicator	U.S. Data			
		CSS (t-value)[a]	SMC	CR	AVE
Man-Nature Orientation	MNO1	.76 (12.22)	.58	.75	.50
	MNO2	.87 (14.30)	.75		
	MNO3	.51 (6.83)	.21		
	MNO4	.47 (6.97)	.22		
	MNO5	.42 (6.09)	.17		
Environmental Knowledge	EK1	.66 (11.00)	.44	.89	.65
	EK2	.83 (15.11)	.69		
	EK3	.86 (15.91)	.73		
	EK4	.76 (13.25)	.58		
	EK5	.63 (10.39)	.40		
	EK6	.81 (14.63)	.66		
Attitude	ATT1	.62 (10.12)	.39	.89	.64
	ATT2	.76 (13.34)	.59		
	ATT3	.75 (13.01)	.56		
	ATT4	.83 (15.04)	.69		
	ATT5	.81 (14.64)	.66		
	ATT6	.74 (12.79)	.55		
Subjective Norm	SN1	.83 (14.30)	.68	.79	.63
	SN2	.55 (8.52)	.30		
	SN3	.85 (14.92)	.73		
Internal Perceived Behavioral Control	IPBC1	.77 (13.74)	.59	.92	.78
	IPBC2	.85 (15.94)	.72		
	IPBC3	.92 (18.20)	.85		
	IPBC4	.92 (18.09)	.84		
External Perceived Behavioral Control	EPBC1	.69 (10.63)	.47	.75	.53
	EPBC2	.73 (11.35)	.53		
	EPBC3	.75 (11.85)	.57		
	EPBC4	.41 (5.90)	.17		
Purchase Intention	PI1	.96 (19.77)	.92	.93	.84
	PI2	.95 (19.31)	.90		
	PI3	.81(14.97)	.66		

Model fit indexes: $\chi^2 = 875.42$ ($df = 413$), p-value = .00; NFI = .92; CFI = .96; RMSEA = .069;

SRMR = .074

[a]:All t-values are significant at p <.05.

CSS: Completely Standardized Solution
SMC: Squared Multiple Correlations
CR: Construct Reliability = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) + (summation of error variances)}
AVE: Average Variance Extracted = (summation of the square of the factor loadings)/ {(summation of the square of the factor loadings) + (summation of error variances)}

Table 7. Results of the Measurement Model Test of China Data

Latent	Indicator	China Data			
		CSS (t-value)[a]	SMC	CR	AVE
Man-Nature	MNO1	.80 (10.30)	.64	.62	.43
Orientation	MNO2	.73 (9.44)	.53		
	MNO3	.30 (3.76)	.09		
	MNO4	.40 (5.12)	.16		
	MNO5	.34 (4.32)	.12		
Environmental	EK1	.51 (6.99)	.26	.80	.52
Knowledge	EK2	.52 (7.15)	.27		
	EK3	.70 (10.23)	.49		
	EK4	.75 (11.22)	.57		
	EK5	.70 (10.16)	.49		
	EK6	.61 (8.57)	.37		
Attitude	ATT1	.54 (7.80)	.29	.89	.64
	ATT2	.84 (13.88)	.70		
	ATT3	.80 (13.01)	.64		
	ATT4	.78 (12.45)	.60		
	ATT5	.79 (12.72)	.62		
	ATT6	.76 (12.05)	.58		
Subjective Norm	SN1	.63 (9.03)	.39	.79	.63
	SN2	.82 (12.89)	.68		
	SN3	.79 (12.18)	.62		
Internal	IPBC1	.64 (8.97)	.42	.72	.51
Perceived	IPBC2	.60 (8.26)	.36		
Behavioral Control	IPBC3	.52 (6.99)	.27		
	IPBC4	.72 (10.24)	.52		
External	EPBC1	.47 (6.08)	.22	.63	.44
Perceived	EPBC2	.79 (10.93)	.63		
Behavioral Control	EPBC3	.61 (8.17)	.37		
	EPBC4	.27 (3.33)	.07		
Purchase Intention	PI1	.73 (11.24)	.54	.83	.69
	PI2	.77 (11.89)	.59		
	PI3	.84 (13.61)	.71		

Model fit indexes: $\chi^2 = 835.06$ ($df = 413$), p-value = .00; NFI = .85; CFI = .92; RMSEA = .071; SRMR = .071

[a]: All t-values are significant at $p < .05$.

CSS: Completely Standardized Solution
SMC: Squared Multiple Correlations
CR: Construct Reliability = (square of the summation of the factor loadings)/{(square of the summation of the factor loadings) + (summation of error variances)}
AVE: Average Variance Extracted = (summation of the square of the factor loadings)/ {(summation of the square of the factor loadings) + (summation of error variances)}

Table 8. Summary of Discriminant Validity Results

Latent	U.S.			China		
	Average of AVE	Φ^2	Φ	Average of AVE	Φ^2	Φ
MNO – EK	.58	.07	.26	.48	.02	.14
MNO – ATT	.57	.12	.34	.54	.03	.17
MNO – SN	.57	.12	.34	.53	.07	.26
MNO – IPBC	.64	.03	.18	.47	.04	.21
MNO – EPBC	.52	.00	.09	.44	.00	.07
MNO – PI	.67	.12	.34	.56	.12	.34
EK – ATT	.65	.10	.32	.58	.06	.25
EK – SN	.64	.27	.52	.58	.10	.31
EK – IPBC	.72	.23	.48	.52	.12	.36
EK – EPBC	.59	.02	.13	.48	.19	.44
EK – PI	.75	.37	.61	.61	.11	.33
ATT – SN	.64	.23	.48	.64	.26	.51
ATT – IPBC	.71	.26	.51	.58	.08	.29
ATT – EPBC	.59	.02	.15	.54	.11	.33
ATT – PI	.74	.29	.54	.67	.27	.52
SN – IPBC	.71	.29	.54	.57	.50	.71
SN – EPBC	.58	.02	.15	.54	.27	.52
SN – PI	.74	.52	.72	.66	.58	.76
IPBC – EPBC	.66	.27	.52	.48	.45	.67
IPBC – PI	.81	.44	.66	.60	.45	.67
EPBC – PI	.69	.04	.21	.57	.45	.67

Average of AVE = (AVE of the first construct + AVE of the second construct)/2

Φ (phi): Correlation between constructs

Φ^2: Square of correlation between constructs

Notes: MNO (Man-Nature Orientation); EK (Environmental Knowledge); ATT (Attitude); SN (Subjective Norm); IPBC (Internal Perceived Behavioral Control); EPBC (External Perceived Behavioral Control); PI (Purchase Intention).

Measurement Invariance Test

Once the reliability and validity of the U.S. and China data sets were

demonstrated, the measurement invariance test was performed. For this study, the

measurement invariance of the scale across the nations (U.S. and China) was assessed

using sequential measurement invariance tests, such as configural, metric, and partial

metric invariance tests. Established practices indicate that the configural invariance test

should be established before conducting the metric invariance test. Therefore, the

configural invariance test was used to assess whether all the factor loadings for both the

U.S. and China were found to be significant. It also was used to address whether the

number of factors was the same across the samples and whether the same items loaded on

the same factors across samples. The results of multi group confirmatory factor analysis

test (CFA) are presented in Table 9. As Table 9 denotes, both the U.S. and China data

had significant factor loadings. The standardized factor loadings for the U.S. ranged from

.46 to .96 and for China they ranged from .30 to .84. The goodness of fit statistics of the

model, $\chi^2 = 1710.48$ ($df = 826$), p-value = .00; RMSEA = .070; NFI =.90; CFI = .94,

indicated an acceptable fit. Also, the number of factors was the same across the U.S. and

China, and the same items loaded on the same factors across the U.S. and China.

Therefore, the criterion for establishing configural invariance of the scale across the

nations was satisfied.

Table 9. Results from the Multi Group Confirmatory Factor Analysis Showing Factor Loadings for the U.S. and China

Latent	Indicator	U.S.	China
		CSS (t-value)	CSS (t-value)
Man-Nature Orientation	MNO1	.76(5.86)	.80(4.08)
	MNO2	.87(5.93)	.73(4.10)
	MNO3	.46(4.77)	.30(2.90)
	MNO4	.47(4.82)	.40(3.40)
	MNO5	.1.00	1.00
Environmental Knowledge	EK1	1.00	1.00
	EK2	.83(10.90)	.52(5.34)
	EK3	.86(11.18)	.70(6.30)
	EK4	.76(10.14)	.75(6.50)
	EK5	.63(8.68)	.70(6.29)
	EK6	.81(10.72)	.61(5.86)
Attitude	ATT1	1.00	1.00
	ATT2	.76(9.47)	.84(7.77)
	ATT3	.75(9.35)	.80(7.62)
	ATT4	.83(10.01)	.78(7.50)
	ATT5	.81(9.89)	.79(7.56)
	ATT6	.74(9.27)	.76(7.41)
Subjective Norm	SN1	.83(8.29)	.63(8.61)
	SN2	1.00	1.00
	SN3	.85(8.37)	.79(11.02)
Internal Perceived Behavioral Control	IPBC1	.77(15.69)	.64(5.97)
	IPBC2	.85(19.21)	.60(5.74)
	IPBC3	1.00	1.00
	IPBC4	.92(23.14)	.72(6.28)
External Perceived Behavioral Control	EPBC1	.69(5.45)	.47(2.98)
	EPBC2	.73(5.54)	.79(3.25)
	EPBC3	.75(5.58)	.61(3.16)
	EPBC4	1.00	1.00
Purchase Intention	PI1	.96(19.03)	.73(10.86)
	PI2	.95(18.71)	.77(11.42)
	PI3	1.00	1.00

Model fit indexes: $\chi 2$ = 1710.48 (*df* = 826), p-value = .00; RMSEA = .070; NFI =.90; CFI = .94
Note: All t-values are significant at p<.05.
CSS: Completely Standardized Solution

Next, the metric invariance test was conducted as suggested by Steenkamp and

Baumgartner (1998). Metric invariance builds from the confirmation of configural

invariance, which tested whether factor loadings in the measurement model are equal in

both groups. For this invariance test, two types of measurement models are used, the fully

unrestricted model, in which the factor loadings are allowed to vary, and the restricted

model, in which the factor loadings are constrained to be equivalent across two groups.

The criterion for metric invariance is satisfied if a non-significant chi-square difference

value between the fully unrestricted model and the restricted model is achieved. The fully

unrestricted model in this study yielded the following fit statistics: $\chi^2 = 1710.48$ ($df =$

826), p-value = .00; RMSEA = .070; NFI = .90; CFI = .94, while the restricted model had

the following statistics: $\chi^2 = 1767.22$ ($df = 850$), p-value = .00; RMSEA = .071; NFI =

.90; CFI = .94. The chi-square difference value ($\Delta\chi^2$) between these two models is 56.74

with 24 degrees of freedom difference, which showed significantly different results

(p=.0001). Therefore, the criterion for establishing metric invariance of scale across the

groups was not met.

Because the full metric invariance test across all factors simultaneously failed,

evidence of full metric invariance one factor/construct at a time was needed. These

findings are presented in Table 10. Through this procedure, any construct that is not held

invariant across groups can be found. When a given construct fails, the examination of

partial metric invariance for that specific construct should be tested to find which factor

loading is not held invariant across groups. The first step is to use the unrestricted model

as a base model and to then impose constraints one construct at a time. The MNO

restricted model ($\chi^2 = 1712.18$ ($df = 830$), p-value = .00; RMSEA = .070; NFI = .90; CFI

= .94), which holds only MNO factor loadings to be invariant across groups, was tested

first. This model, when compared to the unrestricted model ($\chi^2 = 1710.48$ ($df = 826$), p-

value = .00; RMSEA = .070; NFI = .90; CFI = .94), yielded a non-significant chi-square

difference of 1.70 on 4 degrees of freedom difference (p= .7907). Therefore, the

invariance of the MNO factor loadings was supported and retained as a base model to

compare to the next restricted model (EK restricted model). The EK restricted model (χ^2

= 1723.31 (df = 835)), holds all 5 EK indicators (except EK1 as the referent indicator)

invariant. This model, when compared to the MNO restricted model (χ^2 = 1712.18 (df =

830)), yielded a significant chi-square difference of 11.13 on 5 degrees of freedom

(p=.049), which means the overall invariance test (all 5 EK indicators collectively) failed.

However, the follow up tests on each indicator one at a time showed no indicators that

failed the invariance test. Although the 5 invariance constraints could not be supported as

a set, individually, none of the indicators showed failure of constraint because all the EK

loadings were held to be invariant. Then, another restricted model (ATT restricted model)

was tested to compare it to the new base model (EK restricted model). The ATT

restricted model (χ^2 = 1734.28 (df = 840)) yielded a non-significant chi-square difference

of 10.97 on 5 degrees of freedom difference (p= .052). Therefore, the invariance of the

ATT factor loadings was supported and it was retained as the new base model to compare

to the next restricted model (EPBC restricted model). The EPBC restricted model (χ^2 =

1737.46 (df = 843)) also yielded a non-significant chi-square difference of 3.18 on 5

degrees of freedom difference (p= .367) when compared to the ATT restricted model.

This indicates that the invariance of the EPBC factor loadings was supported and it was

retained as the new base model to compare to the next restricted model (IPBC restricted

model). The IPBC restricted model (χ^2 = 1746.02 (df = 846)) showed a statistical

significance with 8.56 chi-square difference on 3 degrees of freedom difference (p=

.036). This means the invariance test of the IPBC construct failed, and follow up tests on

each indicator, one at a time, are needed. The IPBC1 restricted model, which added

IPBC1 invariance constraint, was compared to the new base model (EPBC restricted

model) because as a set, the IPBC restricted model was not supported. IPBC1 restricted

model ((χ^2 = 1744.58 (*df* = 844)) yielded a significant chi-square difference of 7.12 on 1

degrees of freedom difference (p= .007), which means the IPBC1 indicator was rejected

to be constrained and left to freely vary across the two groups. The next indicator, IPBC2

restricted model, was compared to the EPBC restricted model because the IPBC1

restricted model failed. The IPBC2 restricted model (χ^2 = 1737.68 (*df* = 844)) yielded a

non-significant chi-square difference of 0.28 on 1 degrees of freedom difference (p=

.597). Therefore, the invariance of the IPBC2 factor loading was supported and retained

as the new base model to compare to the next restricted model (IPBC4 restricted model

because IPBC3 was a referent indicator). The IPBC4 restricted model (χ^2 = 1740.17 (*df* =

845)), which held only the IPBC4 factor loading to be invariant across groups, was

compared to the IPBC2 restricted model. The test yielded a non-significant chi-square

difference of 2.49 on 1 degrees of freedom difference (p= .1145). The new base model,

IPBC4 restricted model, was compared to the next restricted model (SN restricted

model). The SN restricted model (χ^2 = 1752.55 (*df* = 847)), when compared to the IPBC4

restricted model, yielded a significant chi-square difference (12.38) on 2 degrees of

freedom (p=.002), which means the overall invariance test (all 2 SN indicators

collectively) failed. Also, the follow up tests on each indicator one at a time (SN1 and

SN3 restricted models) failed. Therefore, the IPBC4 restricted model was still the base

model for the next restricted model (PI restricted model). The PI restricted model (χ^2 =

1748.73 (*df* = 847)) was compared to the IPBC4 restricted model and showed a

significant chi-square difference of 8.56 on 2 degrees of freedom difference (p= .014).

This indicates the invariance of the PI factor loadings as a set was not supported and

follow up tests were needed. However, the follow up tests (PI1 and PI2 restricted models)

also showed a significant result, which means all invariances of PI factor loadings

showed failure of constraints.

In conclusion, the scales for MNO, ATT, EK, and EPBC were metrically

invariant. However, the scale for IPBC was partially metrically invariant with only

indicators IPBC2 and IPBC4 invariant. The indicator IPBC1 should freely vary across the

groups. Finally, the scales for SN and PI show no evidence of metric invariance partially.

Therefore, MNO, ATT, EK, and EPBC constructs showed evidence of full metric

invariance, the IPBC constructs showed evidence of partial metric invariance, and the SN

and PI constructs showed no evidence of metric invariances. This indicates that any

inferences about differences across U.S. and China samples in a relationship that involves

either SN or PI cannot be tested.

Since only the configural invariance was supported for the proposed model and no

evidence of metric invariance for SN and PI constructs existed, the multi-group structural

equation model test and the moderating effect test could not be tested. Therefore, the

results of structural equation model tests, which were conducted separately by country,

followed.

Table 10. Results for the Metric Invariance for Each Construct and Fit Indices for Models

Models	χ^2	df	$\Delta\chi_2$	$\frac{\Delta}{df}$	P value	RMSEA	NFI	CFI	Invariance supported
Fully Unrestricted Model	1710.48	826	-	-	-	.070	.90	.94	
Man-Nature Orientation (MNO)	1712.18	830	1.70	4	.791	.070	.90	.94	**YES**
Environmental Knowledge (EK)	1723.31	835	11.13	5	.049	.070	.90	.94	**YES**
EK1	Referent indicator								
EK2	1714.32	831	2.14	1	.143				Yes
EK3	1715.97	832	1.65	1	.199				Yes
EK4	1719.74	833	3.77	1	.052				Yes
EK5	1722.24	834	2.50	1	.114				Yes
EK6	1723.31	835	1.07	1	.301				Yes
Attitude (ATT)	1734.28	840	10.97	5	.052	.070	.90	.94	**YES**
External Perceived Behavioral Control (EPBC)	1737.46	843	3.18	3	.365	.070	.90	.94	**YES**
Internal Perceived Behavioral Control (IPBC)	1746.02	846	8.56	3	.036	.070	.90	.94	**NO**
IPBC1	1744.58	844	7.12	1	.007				No
IPBC2	1737.68	844	0.28	1	.597				Yes
IPBC3	Referent indicator								
IPBC4	1740.17	845	2.49	1	.115				Yes
Subjective Norm (SN)	1752.55	847	12.38	2	.002	.070	.90	.94	**NO**
SN1	1750.45	846	10.28	1	.001				No
SN2	Referent indicator								
SN3	1751.01	846	10.84	1	.0009				No
Purchase Intention (PI)	1748.73	847	8.56	2	.014	.070	.90	.94	**NO**
PI1	1747.46	846	7.29	1	.007				No
PI2	1746.41	846	6.24	1	.012				No
PI3	Referent indicator								

Structural Model Testing

The hypotheses (H1 ~ H7) of the proposed model were tested separately for the U.S. sample and the Chinese sample because of limited evidence of invariance tests. First, the fit index for the structural model for U.S. data indicated an acceptable fit (χ^2 = 1004.93 (df = 421), p-value = .00; RMSEA = .078; NFI = .91; CFI = .95). Among the seven hypotheses proposed, six paths were supported and one path (external perceived behavioral control → purchase intention toward green apparel products) was not supported. Table 11 and Figure 4 present the results of the structural model test for the U.S. data.

The relationship between man-nature orientation and attitude toward purchasing green apparel products was significant (γ = .27), supporting H1. This means that a higher man-nature orientation positively influences attitude toward purchasing green apparel products for U.S. consumers. Next, the relationship between environmental knowledge and attitude was significant (γ = .29), supporting H2. That is, a U.S. consumer's environmental knowledge enhances his/her attitude toward purchasing green apparel products. Testing the effect of environmental knowledge and internal perceived behavioral control was significant (γ = .52), supporting H3. That is, a U.S. consumer's environmental knowledge enhances his/her internal perceived behavioral control toward purchasing green apparel products.

The path between attitude and purchase intention toward green apparel products was found to be significant (β = .17), supporting H4. This means that a positive attitude toward green apparel products increases purchase intention toward green apparel products for U.S. consumers. Subjective norm also significantly enhanced purchase

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intention toward green apparel products (β = .51), supporting H5. This indicates that

subjective norm positively influences a U.S. consumer's purchase intention toward green

apparel products. Next, the relationship between internal perceived behavioral control

and purchase intention was significant (β = .39), supporting H6. That is, a U.S.

consumer's internal perceived behavioral control positively enhances his/her intention

toward purchasing green apparel products. However, testing the effect of external

perceived behavioral control on purchase intention was not significant (β = -.06), failing

to support H7. That is, a U.S. consumer's external perceived behavioral control does not

enhance his/her purchase intention toward green apparel products.

Table 11. Results of the Structural Model Test of U.S. Data

Hypothesis	Path	Coefficient (t-value)	R^2	Results
H1	Man-nature orientation → Attitude	.27**(3.57)	.07	Supported
H2	Environmental knowledge → Attitude	.29**(3.87)	.08	Supported
H3	Environmental knowledge → Internal PBC	.52**(7.23)	.27	Supported
H4	Attitude → Purchase Intention	.17**(3.22)	.03	Supported
H5	Subjective norm → Purchase Intention	.51**(8.64)	.26	Supported
H6	Internal PBC → Purchase Intention	.39**(7.13)	.15	Supported
H7	External PBC → Purchase Intention	-.06(-1.23)	.00	Rejected

Model fit indexes: χ^2 = 1004.93 (*df* = 421), p-value = .00; RMSEA = .078; NFI = .91; CFI = .95
** p<.05
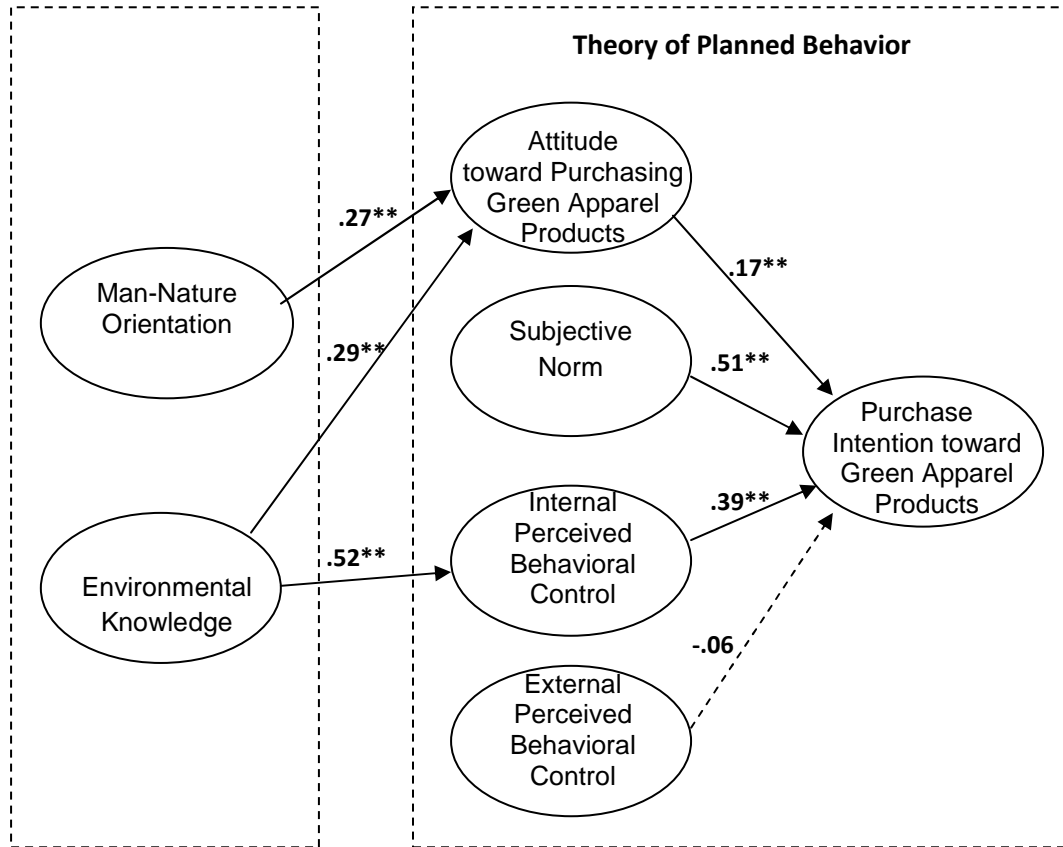
Note: The values on the seven paths denote the completely standardized solution (CSS)
**p<.05

Figure 4. The Results of the Structural Model Testing H1-H7 of U.S. Data

Regarding the China data, the fit index for the structural model showed an

acceptable fit (χ^2 = 942.08 (*df* = 421), p-value = .00; RMSEA = .076; NFI = .83; CFI =

.90). Similar to the U.S. data, the analysis of the Chinese data resulted in six supported

hypotheses and one unsupported path (man-nature orientation → attitude toward green

apparel products). Table 12 and Figure 5 present the results of the structural model test

for the China data.

Testing the effect of man-nature orientation and attitude toward purchasing green

apparel products for Chinese consumers was not significant (γ = .16), failing to support

H1. That is, for Chinese consumers, a higher man-nature orientation does not enhance a consumer's attitude toward purchasing green apparel products. The relationship between environmental knowledge and attitude toward purchasing green apparel products for Chinese consumers was significant ($\gamma = .27$), supporting H2. This indicates that for a Chinese consumer, environmental knowledge positively influences attitude toward purchasing green apparel products. Environmental knowledge also significantly enhanced internal perceived behavioral control toward green apparel products ($\gamma = .42$), supporting H3. That is, a Chinese consumer's environmental knowledge enhances his/her internal perceived behavioral control toward purchasing green apparel products.

The relationship between attitude and purchase intention toward green apparel products was found to be significant ($\beta = .25$), supporting H4. This means that a positive attitude toward green apparel products enhances purchase intention toward green apparel products for Chinese consumers. Testing the effect of subjective norm and purchase intention toward green apparel products was significant ($\beta = .43$), supporting H5. That is, a Chinese consumer's subjective norm positively influences his/her purchase intention toward purchasing green apparel products. Next, the relationship between internal perceived behavioral control and purchase intention toward green apparel products was significant ($\beta = .21$), supporting H6. This indicates that a Chinese consumer's internal perceived behavioral control enhances his/her purchase intention toward purchasing green apparel products. External perceived behavioral control also significantly enhanced purchase intention toward green apparel products ($\beta = .30$), supporting H7. This means that external perceived behavioral control positively influences a Chinese consumer's purchase intention toward green apparel products.

Table 12. Results of the Structural Model Test of China Data

Hypothesis	Path	Coefficient (t-value)	R^2	Results
H1	Man-nature orientation → Attitude	.16(1.89)	.03	Rejected
H2	Environmental knowledge → Attitude	.27**(3.08)	.07	Supported
H3	Environmental knowledge → Internal PBC	.42**(4.44)	.18	Supported
H4	Attitude → Purchase Intention	.25**(3.39)	.06	Supported
H5	Subjective norm → Purchase Intention	.43**(4.73)	.18	Supported
H6	Internal PBC → Purchase Intention	.21**(2.76)	.04	Supported
H7	External PBC → Purchase Intention	.30**(3.20)	.09	Supported

Model fit indexes: $\chi^2 = 942.08$ ($df = 421$), p-value = .00; RMSEA = .076; NFI = .83; CFI = .90
** p<.05
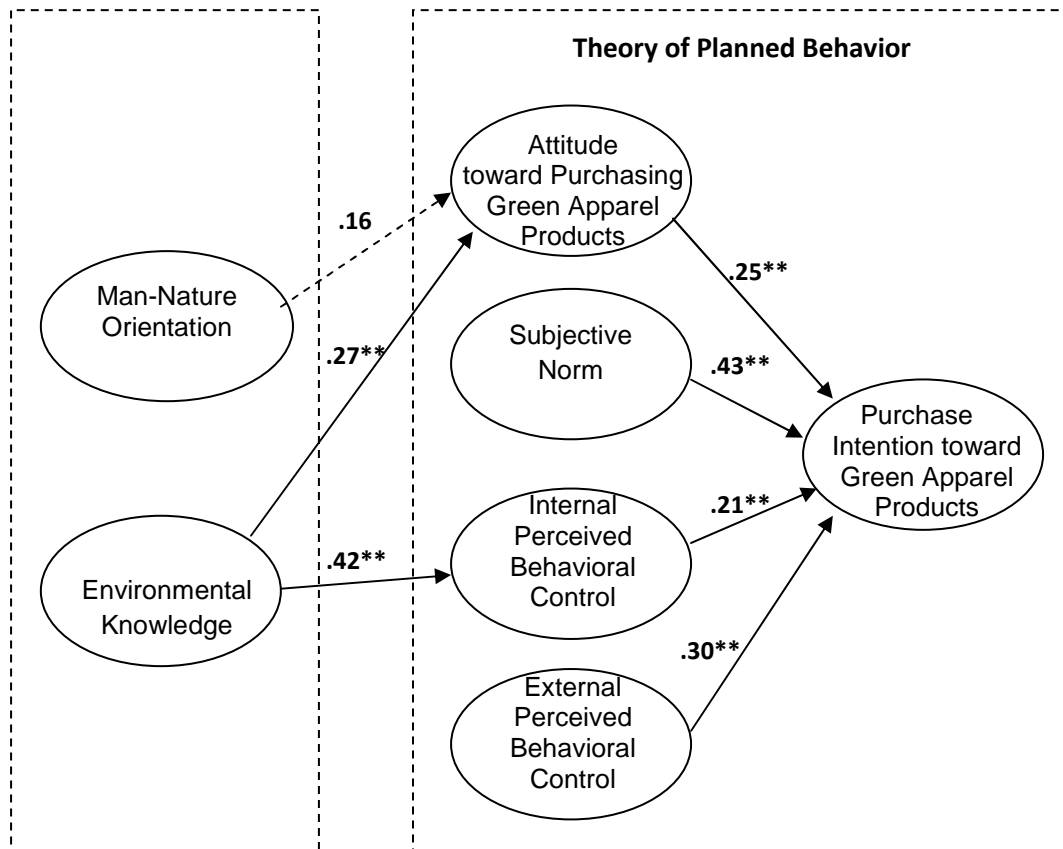
Note: The values on the seven paths denote the completely standardized solution (CSS)
**p<.05

Figure 5. The Results of the Structural Model Testing H1-H7 of China Data

Testing the Country Moderating Effect

Since measurement invariance tests were not supported, the multi-group analysis in SEM was not conducted to test H8 (i.e., testing a country moderating effect between subjective norm and purchase intention).

CHAPTER V

CONCLUSION

This chapter presents the conclusions of this study. First, the summary and discussion of

major findings are explained. Second, the theoretical implications of this study are

discussed. Third, managerial implications are addressed. Finally, the limitations of this

study and recommendations for future research are suggested.

Summary and Discussion of Major Findings

Summary

Concern for the environment and markets for environmentally friendly goods and

services are increasing in the world; however, research in the field of apparel retailing

with regard to consumers' intentions to purchase green apparel products has been limited.

Moreover, no previous studies have attempted to examine both U.S. and Chinese

consumers in terms of green apparel purchase behavior, despite the fact that both

countries are huge markets in the world. To this end, this study aimed to test consumers'

purchase behaviors of green apparel products in the two cultures. As a systematic

approach, this study proposed a conceptual model incorporating two indirect antecedents

into the theory of planned behavior. Through the findings, this study attempted to identify whether U.S. and Chinese consumers differ in forming purchase intention for green apparel products. Data were collected from several universities in the U.S. and in China; a total of 428 usable data (234 for U.S. and 194 for China) were entered into the structural equation models.

Among the seven hypotheses proposed in the suggested research model, for the U.S. data, six hypotheses (Man-Nature Orientation → Attitude (H1), Environmental Knowledge → Attitude (H2), Environmental Knowledge → Internal Perceived Behavioral Control (H3), Attitude → Purchase Intention (H4), Subjective Norm → Purchase Intention (H5), and Internal Perceived Behavioral Control → Purchase Intention (H6)) were found to be statistically significant; only one hypothesis (External Perceived Behavioral Control → Purchase Intention (H7)) was non-significant. In contrast, non-significance between man-nature orientation and attitude (H1) existed for the China data, but the other six hypotheses were significant. Overall, an indirect antecedent to purchase intention (environmental knowledge) influenced attitude and internal PBC in both the U.S. and China data, while the other indirect antecedent (man-nature orientation) influenced attitude only for U.S. consumers. In addition, except for external PBC in the U.S. data, the other variables in the TPB had a positive effect on purchase intention of green apparel products for both the U.S. and China data.

In order to compare the U.S. and China, a country moderating effect was planned to test the proposed path (H8). However, because of no supported evidence of invariance tests, testing of country moderating effect was not conducted.

Discussion of Hypotheses 1-7

One of the most important findings of the study is that newly suggested indirect antecedents to purchase intention (man-nature orientation and environmental knowledge) positively affect attitude and internal PBC. Different results, however, occurred in Hypothesis 1 between the U.S. and China data. For the U.S., man-nature orientation enhanced consumers' attitudes toward purchasing green apparel products (H1, $\gamma = .27^{**}$). This indicates that U.S. consumers with high man-nature orientation are more concerned about environmental issues than are low man-nature oriented individuals because those with a higher orientation tend to live in harmony with nature and maintain a balance with nature. As a result, they naturally develop positive attitudes toward green apparel products. This finding supports studies by Chan (2001), Mostafa (2007), and Van Liere and Dunlap (1980) that maintain that a high level of man-nature orientation significantly increases consumers' attitudes toward green activities. However, for Chinese consumers, man-nature orientation did not enhance consumers' attitudes toward green apparel products (H1, $\gamma = .16$), rejecting H1. This finding is inconsistent with previous studies that revealed a positive relationship between man-nature orientation and attitude toward a behavior. Albeit surrounded by Oriental philosophy and Confucian culture, which emphasize harmony with nature, Chinese consumers, especially young generations, may not realize the importance of preserving nature because of indiscreet growth, quickly absorbed Westernization, and materialism, all of which may not value preserving nature. Therefore, man-nature orientation was regarded not to influence positively on Chinese consumers' attitudes toward green apparel products.

However, both U.S. and Chinese consumers' environmental knowledge was found to enhance attitude toward purchasing green products (H2, $\gamma = .29^{**}$ for U.S. data and $\gamma = .27^{**}$ for China data). As a consumer's environmental knowledge increases, he/she recognizes immediate environmental problems (Laroche et al., 2002) and tends to avoid incidences that are harmful to the environment. These practices increase his/her chance of having a positive attitude toward purchasing green apparel products. The finding of this positive environmental knowledge-attitude link corresponds to previous environmental studies (Blocker & Eckberg, 1997; Chan, 2001; Diekmann & Preisendörfer, 1998; Laroche, Bergeron, Tomiuk, & Barbaro-Forleo, 2002; Synodinos, 1990).

As posited, consumers' environmental knowledge was also found to enhance their internal perceived behavioral control in both the U.S. and China (H3, $\gamma = .52^{**}$ for U.S. data and $\gamma = .42^{**}$ for China data). A higher knowledge level affects an individual's self-efficacy level, which is positively related to internal PBC, to accomplish a particular behavior (Barkhi, Belanger, & Hicks, 2008). Therefore, if an individual has a great deal of knowledge about environmental issues and green products, he/she will perceive to possess the ability to purchase green apparel products.

Positive relationships were also found among the variables in the theory of planned behavior, except in the relationship between external PBC and purchase intention of U.S. consumers. Confirming the positive relationship found in many previous studies (Alwitt & Pitts, 1996; Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003; Ellen, Wiener, and Cobb-Walgren, 1991), this study also found that the more favorable the attitude toward green apparel consumption, the stronger the individual's intention to

purchase green apparel products; this was true for both U.S. and Chinese consumers (H4, $\beta = .17^{**}$ for U.S. data and $\beta = .25^{**}$ for China data). This finding supports studies by Kaiser and Gutscher (2003); Kalafatis, Pollard, East, and Tsogas (1999); Harland, Staats, and Wilke (1999); and Hopper and Nielsen (1991), documenting that attitude significantly predicts behavioral intention to use or purchase. A positive relationship between subjective norm and purchase intention was found in both the U.S. and China data (H5, $\beta = .51^{**}$ for U.S. data and $\beta = .43^{**}$ for China data), as was found in previous studies (Harland, Staats, & Wilke, 1999; Kaiser & Gutscher, 2003; Kalafatis, Pollard, East, & Tsogas, 1999). If an individual more strongly considers significant referents' opinions toward a behavior, he/she may have a positive purchase intention of green apparel products because he/she may feel more pressure from groups, which may lead to more engagement in purchase intention toward green apparel products. Finally, a positive relationship between internal PBC and purchase intention was found in both the U.S. and China data (H6, $\beta = .39^{**}$ for U.S. data and $\beta = .21^{**}$ for China data), supporting previous studies (Baker, Al-Gahtani, & Hubona, 2007; Kidwell & Jewell, 2003). That is, an individual with a great deal of confidence regarding green apparel products is more likely to have purchase intention toward those products.

However, external PBC did not enhance U.S. consumers' purchase intentions of green apparel products (H7, $\beta = -.06$), rejecting H7, while a positive relationship was found in the China data (H7, $\beta = .30^{**}$). For the U.S. data, this finding is inconsistent with previous studies that revealed a positive relationship between external perceived behavioral control and positive intention toward a behavior. Previous studies suggested that facilitating circumstances about a particular behavior (i.e., external PBC) increase

self-reliance in conducting the behavior (Bagozzi & Kimmel, 1995; Turrisi, Hillhouse, &

Gebert, 1998; Turrisi, Jaccard, & McDonnell, 2006). The insignificant relationship

between external PBC and purchase intention found in this study could be ascribed to the

fact that external conditions and situations, such as time and money, may not be

considerable reasons for purchasing green apparel products in the case of U.S.

consumers. Because of technology developments and Internet shopping, consumers can

buy green products easily without spending much time shopping. Therefore, external

PBC was deemed not to influence positively on U.S. consumers' purchase intentions

toward green apparel products. However, external PBC was found to be important in

influencing the purchase intention of Chinese consumers because external barriers, such

as money, time, and availability, are still considerably important for purchasing green

apparel products for these consumers.

Collectively, among direct paths to purchase intention of green apparel products

(attitude, subjective norm, internal PBC, and external PBC), for the U.S. data, subjective

norm influenced the most ($\beta = .51$), internal PBC was next ($\beta = .39$), and attitude

influenced the least ($\beta = .17$) on purchase intention toward green apparel products. For

the China data, subjective norm influenced the most ($\beta = .43$), external PBC ($\beta = .30$) and

attitude ($\beta = .25$) followed, and internal PBC influenced the least ($\beta = .21$) on purchase

intention toward green apparel products. These findings are quite surprising because the

influence of subjective norm was less than the influence of attitude in previous studies

(Alwitt & Pitts, 1996; Diamantopoulos et al., 2003; Ellen et al., 1991). The current

study's findings indicate that individuals may feel more pressure from their relevant

groups when they conduct environmental behaviors, such as green consumption,

recycling, and eco activities that may require ethical and socially responsible responses. Therefore, individuals tend to be more aware of salient referents' opinions in purchasing green apparel products than in purchasing conventional items.

Regarding internal PBC and external PBC, this study found that their importance can vary by country. For the U.S., internal PBC is more important than external PBC on purchase intention toward green apparel products. This finding indicates that self-efficacy and confidence about green apparel products are more related to enhancing purchase intention toward green apparel products than are facilitating financial resources and time. In contrast, external PBC influenced more than internal PBC on purchase intention toward green apparel products among Chinese consumers because facilitating circumstances, such as money, time, availability, are the most important barriers for purchasing green apparel products in China. This indicates that a Chinese individual with facilitating conditions will be more likely to have purchase intention toward green apparel products.

Theoretical Implications

Academically, this study makes several meaningful contributions to previous studies related to green apparel products. First, this study is an initial attempt to focus on purchase intention of green apparel products rather than on the production of green textiles and other green activities, which have received considerable attention in previous studies. Therefore, this study enriches the understanding of apparel consumer behaviors for green apparel products by providing empirical evidence.

Second, this research is based on the Theory of Planned Behavior and uses decomposed PBC, external and internal PBC, while most previous studies using TPB have incorporated one dimension of PBC (Chan & Lau, 2001; Kalafatis et al., 1999; Shim et al., 2001). This study examined how each dimension of PBC related with an antecedent and a consequence and validated the importance of consumers' internal and external resource controllability in green apparel purchase behavior.

Third, while several previous marketing studies have documented the effects of each antecedent and consequence individually, very few studies have collectively incorporated multiple antecedents into TPB. This study is one of the earliest endeavors to include man-nature orientation and environmental knowledge as antecedents of attitude and internal PBC toward green apparel products in a comprehensive model of purchase intention of green apparel products. Also, this study contributes new information on the identification of the relative importance among the antecedents in the study. In previous studies, Chinese consumers tended to have high man-nature orientation, which was thought be related to the man-nature orientation of traditional philosophies in China. Also, the effect of environmental knowledge on purchase intention of green products has been studied mostly in Western cultures or developed countries. However, this study discovered that these two indirect antecedents are important factors for influencing purchase intention of green apparel products in the U.S. Man-nature orientation was found not to be an important factor for influencing purchase intention of green apparel products in China, although the other indirect antecedent, environmental knowledge, is an important factor. Therefore, this study contributed to the literature by identifying the relative importance among these antecedents in the proposed model.

Lastly, this study enriches the understanding of U.S. and Chinese consumers' green apparel purchase behaviors. Limited previous studies have attempted to examine the two countries simultaneously in terms of green apparel purchase intention. By examining the U.S. and China individually, which belong to different cultures and economic conditions, this study was able to explain and provide a better understanding of whether the proposed paths are similar or different in the two countries and what factors are more important than others in leading to purchase intention of green apparel products in each country.

Managerial Implications

The findings from this study provide essential implications for marketers of green apparel products. First, since subjective norm was found to have the highest influence on purchase intention in both countries, marketers should put their initial efforts into creating valuable green movements and campaigns. Such efforts may increase consumers' interests in green apparel products and let them know the benefits of using green apparel products; thus, individuals may be more aware of green apparel products and give personal opinions or pressure to other relevant people when consuming green apparel products. Also, customer reference incentive programs may be a suggestion for increasing consumption of green apparel products. These programs give incentives to former buyers when they lead their relevant others to purchase green apparel products. An additional suggestion is to use popular reference groups, such as celebrities or other influential individuals, in promotion strategies. Such activities will expedite an individual's perception of social pressure toward purchasing green apparel products.

Second, the results of this study showed that the paths of both man-nature orientation and environmental knowledge are important in influencing attitude toward green apparel products for U.S. consumers. Thus, marketers should make efforts to create high man-nature orientation and environmental knowledge. The importance of nature and the reasons why nature should be preserved can be presented through campaigns, promotions, and other green movements. Also, companies should communicate the negative environmental impacts of conventional apparel products to highlight the relative benefits of green consumption to nature and individuals. For Chinese consumers, marketers need to put efforts into promoting environmental issues, impacts, and problems so that Chinese consumers become more aware of the environment and the importance of purchasing green apparel products.

Regarding the significant positive effect of internal PBC on purchase intention for both U.S. and Chinese consumers, an individual's perception of controllability regarding internal conditions, such as requisite skills to perform a behavior, may be required more in purchasing green apparel products than in purchasing conventional products because a purchase of green apparel products is a volitional behavior and still a new experience for most consumers with a low awareness. Due to this lack of experience and awareness about green products, many consumers may feel less confident about purchasing green products than about purchasing conventional products. In order to increase consumers' self-efficacy and confidence to purchase green products, marketers may choose to increase opportunities for consumers in the U.S. and China to have detailed information on environmental issues, green product sourcing, green production systems, and green products in order to enhance consumers' awareness or familiarity of green issues and

products. In addition, to encourage consumers to share their purchase and consumption experiences with potential buyers, companies can utilize blogs and other social network systems.

Finally, the finding of a significant positive effect of external PBC on purchase intention in China means that monetary and time resources are important factors for the purchase of green apparel products among Chinese consumers. Therefore, marketers should develop a feasible pricing strategy and determine the affordable price line of green apparel products. In addition, an increase in product availability, such as selling online and through well expanded department stores and supermarket stores, may lead to an increase in green consumption by Chinese consumers.

Limitations and Future Studies

This study has several limitations. First, while two dimensions (man-nature orientation and environmental knowledge) were newly incorporated in a comprehensive model, more antecedents (indirect and direct) need to be incorporated for more insightful implications. Previous researchers who have examined green topics have suggested antecedents such as consumer preference, previous purchase experience, cultural tendency, collectivism or individualism, various psychological factors, and environmental concern and responsibility for future study. Incorporation of these factors in future studies is recommended.

Second, this study focused on purchase intention, but for future studies, other consequences, such as actual purchase, satisfaction, trust, and willingness to pay more, are suggested.

Third, numerous types of green activities exist, such as green product consumption, recycling, and reuse. Among the many green activities, this study focused on consumption (i.e., purchase intention toward green apparel products). Therefore, further studies are recommended to investigate other green activities in order to examine and generalize consumers' green behaviors.

Fourth, this study was confined to purchase intention of green apparel products, which further specified these products as eco-labeled apparel products that have the label of no-pesticide, no-synthetic dye, and organic or natural fibers. The results of the study might have been different if other products, such as home furnishing products (carpets, curtains, and bedding and bath products), footwear, and textile fabrics, had been chosen. Further studies could consider testing the proposed model with these products to provide more generalized results and implications.

Fifth, this study examined two countries (the U.S. and China) to examine consumers' purchase intentions toward green apparel products. Public concerns about nature and green consumption may vary depending on country and culture. Most countries in Europe and with a collectivism culture have high concerns about preserving their environments and have strict environmental regulations. Therefore, future studies may consider examining more diverse countries with contrasting cultures to establish more comprehensive findings in purchasing intention of green apparel products.

Finally, there were study restrictions regarding survey participants (i.e., college students) and survey locations, which may limit the generalization of the findings. Therefore, the findings of this study might differ if data were collected in different areas of the U.S. and China and with different demographic groups. Future studies could

conduct the data collection in different areas with different demographic groups in order

to find more general and accurate results.

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APPPENDICES

APPENDIX A

INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER

Oklahoma State University Institutional Review Board

Date:	Friday, December 04, 2009
IRB Application No	HE0965
Proposal Title:	Predictors of Purchase Intention Toward Green Apparel Products: A Cross-Cultural Investigation in the U.S. and China
Reviewed and Processed as:	Exempt

Status Recommended by Reviewer(s): Approved   Protocol Expires: 12/3/2010

Principal
Investigator(s):

Seung Bong Ko	Byoungho Jin	Christine Johnson
431 HES	PO Box 26170	139 HES
Stillwater, OK 74078	Greensboro, NC 274026170	Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Shelia Kennison, Chair
Institutional Review Board

APPENDIX B

COVER LETTER AND A QUESTIONNAIRE (English)

Oct 27, 2009

This survey is to understand factors related to U.S. and Chinese consumers' behavior toward green apparel products. In order to understand differing importance of various consumer variables, your participation is essential. The questionnaire will take 20-25 minutes. The results of this research will only be used for academic purposes, not for commercial purposes.

Your responses will be kept anonymous; data will be analyzed and reported in an aggregate form. None of your information will be matched with your responses in reporting the results of the survey. Demographic information is requested for statistical purposes but will not be used to identify you in any way. Your participation is voluntary, and you may decline to answer any questions you choose; however, since your answers are so critical to this project, we hope you complete all parts of the questionnaire.

I would be most happy to answer any questions you might have. Please call, email or write me at the phone numbers and addresses listed below.

Thank you for your assistance.

Sincerely,

Seung Bong Ko
Doctoral Student
431 HES
Oklahoma State University
Stillwater, OK 74078
Tel: (405) 744-5035
seung.ko@okstate.edu

Date_____   No. _____

Dear Participants,

We are conducting a research study of apparel shoppers in the U.S. and China. Your participation is absolutely voluntary. During the survey you may choose to stop participating at any time. Your responses will be anonymous; data will be combined and analyzed as a whole unit. Your individual responses will be totally unidentifiable in this combined format. There are no known risks associated with this project which are greater than those ordinarily encountered in daily life. If you have any questions, please contact Seung Bong Ko (405-926-0148 or seung.ko@okstate.edu). If you have questions regarding your rights as a participant, you may contact Dr. Shelia Kennison, the Institutional Review Board (IRB) Chair at Oklahoma State University at 405-744-3377. Your participation in the study will be greatly appreciated.

Oklahoma State University
Dept. Design, Housing & Merchandising
Seung Bong Ko (Doctoral Student)
Dr. Christine Johnson (Professor)
Dr. Byoungho Jin (Professor)

1. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
Human beings need to understand the ways of nature and act accordingly.	O	O	O	O	O	O	O
We should maintain harmony with nature.	O	O	O	O	O	O	O
Human beings, being the master of the world, are entitled to deploy any of the natural resources as they like.	O	O	O	O	O	O	O
Human beings are only one part of nature.	O	O	O	O	O	O	O
We should master instead of adapting to the environment.	O	O	O	O	O	O	O

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2. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
I know that I buy products and packages that are environmentally safe.	O	O	O	O	O	O	O
I know more about recycling than the average person.	O	O	O	O	O	O	O
I know how to select products and packages that reduce the amount of waste ending up in landfills.	O	O	O	O	O	O	O
I understand the environmental phrases and symbols on product packages.	O	O	O	O	O	O	O
I am confident that I know how to sort my recyclables properly.	O	O	O	O	O	O	O
I am very knowledgeable about environmental issues.	O	O	O	O	O	O	O

3. Please indicate your attitudes toward purchasing green apparel products by circling the number that best reflects your thoughts about purchasing these types of products. To help in the understanding of green apparel products, a description is in the box below.

> Green apparel products are *environmentally friendly garments* that make *a minimum impact on nature*. In this study, they are confined to *eco-labeled apparel products* that have the label of no-pesticide, no-synthetic dye, and organic or natural fibers.
>
> -Products excluded from this study include home furnishing products (carpets, curtains, and bedding and bath products), footwear, and textile fabrics.-

▶ *Purchasing green apparel products is…*

	1	2	3	4	5	6	7	
Bad	1	2	3	4	5	6	7	Good
Foolish	1	2	3	4	5	6	7	Wise
Harmful	1	2	3	4	5	6	7	Beneficial
Unfavorable	1	2	3	4	5	6	7	Favorable
Negative	1	2	3	4	5	6	7	Positive
Unsatisfactory	1	2	3	4	5	6	7	Satisfactory

4a. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
I believe I have the ability to purchase green apparel products.	O	O	O	O	O	O	O
If it were entirely up to me, I am confident that I would be able to purchase green apparel products.	O	O	O	O	O	O	O

4b. Please indicate your certainty regarding your ability to accomplish the following.

	Very unsure						Very Sure
How confident are you that you will be able to purchase green apparel products?	O	O	O	O	O	O	O

	Very incapable of						Very capable of
To what extent do you see yourself as capable of purchasing green apparel products?	O	O	O	O	O	O	O

5a. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
Whether or not I purchase green apparel products is entirely up to me.	O	O	O	O	O	O	O
There are likely to be plenty of opportunities for me to purchase green apparel products.	O	O	O	O	O	O	O

5b. Please indicate the extent of control you have as a consumer.

	Very little control						Complete control
How much personal control do you feel you have over purchasing green apparel products?	O	O	O	O	O	O	O

	Not at all						Very much so
How much do you feel that purchasing green apparel products is beyond your control?	O	O	O	O	O	O	O

6. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
People who are important to me think I should purchase green apparel products.	O	O	O	O	O	O	O
People who are important to me would approve of my purchasing green apparel products.	O	O	O	O	O	O	O
People who are important to me want me to purchase green apparel products.	O	O	O	O	O	O	O

7. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
I intend to purchase green apparel products.	O	O	O	O	O	O	O
I plan to purchase green apparel products.	O	O	O	O	O	O	O
I want to purchase green apparel products.	O	O	O	O	O	O	O

8a. Please indicate the extent to which you agree or disagree with each of the following.

	Strongly Disagree						Strongly Agree
The price of green apparel products would have to go up quite a bit before I would switch to other conventional apparel products.	O	O	O	O	O	O	O
I am willing to pay a higher price for green apparel products than for conventional apparel products.	O	O	O	O	O	O	O
I am willing to pay a lot more for green apparel products than other conventional apparel products.	O	O	O	O	O	O	O

8b. Please indicate the extent to which you are willing to pay a premium.

	0%	5%	10%	15%	20%	25%	more
I am willing to pay ___% more for green apparel products over other conventional apparel products.	O	O	O	O	O	O	O

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9. We request general demographic information to help with our analysis.
_____ (*It will not be used to identify the source of responses*)

1. What is your gender?   1) Male   2) Female

2. How old are you? _____

3. Please indicate your household income <u>per month</u> on average?
        1) Under $1,000   2) $1,000-$2,999
        3) $3,000-$4,999   4) $5,000-$7,499
        5) $7,500-$9,999   6) $10,000-$14,999
        7) $15,000-$19,999   8) Over $20,000

4. What is your <u>monthly</u> spending money
  (e.g., monthly allowance from your parents)? $_____
   (If you have separate income by working part-time, please add it to the allowance)

5. How much do you spend on clothing <u>per month</u> on average?
      1) Under $99   2) $100-$199   3) $200-$299
      4) $300-$399   5) $400-$599   6) $600-$799
      7) $800-$999   8) Over $1,000

6. Have you had at least one experience of purchasing <u>green **apparel** products</u>?
    1) Yes (please go to question *6a*)   2) No (please go to question *6b*)

  6a. Where have you purchased <u>green **apparel** products</u>?
    1) Retail store (e.g., department store, mall, street store, etc.)
    2) Internet   3) Catalog or Phone
    4) Local (Fair trade)   5) Other _____ (please go to question *7*)

    6b. Are you willing to purchase <u>green **apparel** products</u> in the future?
      1) Yes (please go to question *7*)   2) No (please go to question *6c*)

    6c. Why aren't you willing to purchase <u>green **apparel** products</u>?
      1) Price   2) Quality
      3) Availability   4) Design
      5) Other _____ (please go to question *7*)

7. Which of following <u>green **non-apparel** products</u> have you ever purchased in the past?
    1) Appliance (e.g., energy star labeled computer, dryer, washer, etc.)
    2) Food (e.g., organic food (fruits, meat, or vegetables), locally produced food, etc.)
    3) Vehicle (e.g., hybrid car, electric car, etc.)
    4) Home material (e.g., light bulb, non-toxic paint or blinds, etc.)
    5) Bath & Laundry product (e.g., eco-friendly detergent, cleaner, etc.)
    6) Other _____

"Thank you again for your participation for this survey"

APPENDIX C

COVER LETTER AND A QUESTIONNAIRE (Chinese)

十月二十七日，二零零九年

这是一个关于了解美国和中国消费者对绿色服装产品行为因素的调查。您的参与对于我们了解各种消费者变量的不同重要性不可或缺。这项问卷调查将会占用您 20-25 分钟时间。这项研究所得出的结果也只会用于学术领域，而并非商业行为。

我们将会用一种集体的模式分析与报告数据，而且您所参与的问卷也将会是秘名的。在我们最后调查结果报告里将找不到与您所参与的问卷相匹配的您的个人信息。关于人口统计的信息也只是用于统计的用途，而并非用于识别您的个人信息。您可以按照您的个人意愿来参与我们的调查，您也可以拒绝回答任何您不想回答的问题，但是由于您的回答对于这项研究至关重要，所以我们希望您回答问卷调查上的所有问题。

我将会很乐意回答您关于这项问卷调查的所有问题，请随时致电，发电子邮件或者写信给我，我的电话号码和地址如下。

谢谢您的合作。

此至敬礼

高成鳳
博士生
431 HES
俄克拉何马州立大学
斯蒂尔霍特, 俄克拉何马州 74078
电话: (405) 744-5035
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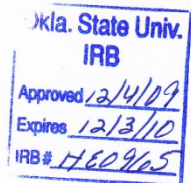
日期＿＿＿＿＿＿　　编号＿＿＿＿＿＿

亲爱的同学们，

我们正在进行一项关于中美两国服装消费者问卷的调查。您们的参与绝对是出于自愿的。在您进行问卷调查时，您有权随时中止对问题的回答。您的回答将是匿名的，数据将被合并并且作为一个整体分析。因此，您的个人回答将无法辨认。参与此项研究不会比在日常生活中遇到的风险大。如果您有任何问题，请联系 高成鳳 (1-405-926-0148 or seung.ko@okstate.edu).如果您有诸如关于作为一个参与者有哪些权利这样的问题，请联系 Oklahoma 州立大学机构审查委员会的主席 Dr. Shelia Kennison。电话是：1-405-744-3377。我们非常感谢您的参与！

Oklahoma 州立大学
设计，室内和商品企划系
高成鳳 (博士生)
Dr. Christine Johnson (教授)
Dr. Byoungho Jin (教授)

1. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常同意
人类需要了解大自然并且有相应行动。	○	○	○	○	○	○	○
我们应该与大自然保持和谐的关系。	○	○	○	○	○	○	○
人类，作为世界的主人，有权力有效地 利用任何他们喜欢的自然资源。	○	○	○	○	○	○	○
人类只是自然界的一部分。	○	○	○	○	○	○	○
我们应当掌握而不是适应环境。	○	○	○	○	○	○	○

2. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
我知道我买的产品和包装对环境安全。	○	○	○	○	○	○	○
关于"回收"，我知道的比一般人多。	○	○	○	○	○	○	○
我知道如何选择产品和包装，以减少垃圾场废物的数量。	○	○	○	○	○	○	○
我明白在产品包装上的环境标语和符号。	○	○	○	○	○	○	○
我很有信心知道如何正确的对可回收物品进行分类。	○	○	○	○	○	○	○
我非常了解环境问题。	○	○	○	○	○	○	○

3. 请表示您对购买绿色服装产品的态度。请在能表达您对购买此类产品的数字上花圈。
为了使您更好的理解绿色服装产品，请看方块里的说明。

> 绿色服装产品是环保的服装，它会对大自然产生最小的影响。在此项研究中，
> 绿色服装产品被限制为有环境标志的服装产品，它们没有农药标签，没有合成染料，
> 是有机或天然的纤维。
>
> – 除了在此项研究的产品，其它产品包括家居类（地毯，窗帘，及床上用品和浴室产品），
> 鞋类，纺织面料等等–

►*购买绿色服装产品是：*

不好的	1	2	3	4	5	6	7	好
愚蠢的	1	2	3	4	5	6	7	明智的
有害的	1	2	3	4	5	6	7	有益的
不喜欢的	1	2	3	4	5	6	7	喜欢的
负面的	1	2	3	4	5	6	7	正面的
不理想的	1	2	3	4	5	6	7	理想的

4. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
我相信我有能力购买绿色服装产品。	○	○	○	○	○	○	○
如果完全取决于我，我相信我会购买绿色服装产品。	○	○	○	○	○	○	○

	十分 不确定						十分 确定
您有多少信心会购买绿色服装产品？	○	○	○	○	○	○	○

	十分没 有能力						非常 有能力
在哪种程度上您认为自己有能力购买绿色服装产品？	○	○	○	○	○	○	○

5. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
购买绿色服装产品完全取决于我。	○	○	○	○	○	○	○
我有很大可能会购买绿色服装产品。	○	○	○	○	○	○	○

	几乎没有 控制						完全控制
您对购买绿色服装产品有多大控制力？	○	○	○	○	○	○	○

	没有						很多
您觉得购买绿色服装产品多少钱在您的控制下？	○	○	○	○	○	○	○

6. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
对我重要的人觉得我应该购买绿色服装产品。	○	○	○	○	○	○	○
对我重要的人应该支持我购买绿色服装产品。	○	○	○	○	○	○	○
对我重要的人想让我购买绿色服装产品。	○	○	○	○	○	○	○

7. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
我有意向购买绿色服装产品。	○	○	○	○	○	○	○
我打算购买绿色服装产品。	○	○	○	○	○	○	○
我想购买绿色服装产品。	○	○	○	○	○	○	○

8. 请表示在何种程度上同意或者不同意以下每一项。

	非常 不同意						非常 同意
我愿意花比买传统服装产品更高的价格买绿色服装产品。	○	○	○	○	○	○	○
我愿意花更多的钱买绿色服装产品而非传统服装产品。	○	○	○	○	○	○	○

	0%	5%	10%	15%	20%	25%	更多
我愿意花比购买传统服装多___%的钱来买绿色服装产品	○	○	○	○	○	○	○

9. 我们需要您的个人信息来帮助我们分析问卷。　*(它不会用作辨认您回答信息的来源)*。

1. 性别　1）男　　2）女
2. 年龄 _____年
3. 您的家庭月平均收入？ 　　1）低于 7,000 元　　　2）7,000-19,999 元 　　3）20,000-34,999 元　4）35,000-49,999 元 　　5）50,000-69,999 元　6）70,000-99,999 元 　　7）100,000-129,999 元　8）130,000 元 以上
4. 您的收入来源每月从父母所得零用钱？ 　　（如果你通过打工有其它收入，请说明）
5. 平均每月购买衣服花多少钱？ 　　1）低于 700 元　　　2）700-1,299 元　　　3）1,300-1,999 元 　　4）2,000-2,699 元　　5）2,700-3,999 元　　6）4,000-5,499 元 　　7）5,500-6,999 元　　8）7,000 元以上
6. 您曾有购买过绿色服装产品的经验？ 　　1）有 （请回答问题 7a）　　2）没有（请回答问题 7b） 　　7a. 你在哪里购买过绿色服装产品？（可多项选择）（回答此问题后，请关注问题 8） 　　　　1)百货公司　　　　　2)大型综合购物中心 　　　　3)街头专卖店　　　　4)家庭电视购物 　　　　5)网络购物　　　　　6)目录手册 　　　　7)非盈利组织　　　　8)其它：_____ 　　7b. 你愿意将来都买绿色服装产品吗？ 　　　　1)是（请回答问题 8）　　2)否（请回答问题 7c） 　　7c. 为什么你不愿意购买绿色服装产品？（请回答问题 8） 　　　　1)价钱　　　　　　　2)质量 　　　　3) 可利用性　　　　4)设计 　　　　5)其它：_____
7. 以下哪些是你曾经购买过得绿色飞服装产品？（多选） 　　☐ 家电（例如：有"能源之星"标记的计算机，熨斗，洗衣机，等等） 　　☐ 食物（例如：有机食品，水果；肉类；蔬菜或者当地生产的食品等等） 　　☐ 汽车（例如：混合动力汽车，电动车，等等） 　　☐ 家庭用品（例如：灯泡；无毒的油漆或百叶窗，等等） 　　☐ 浴室或者洗衣产品（例如：环保洗涤剂，清洁剂，等等） 　　☐ 其它：_____

感谢您的参与！

APPENDIX D

COVARIANCE MATRIX FOR VARIABLES (U.S. & China)

Group: US

Covariance Matrix

	ATT1	ATT2	ATT3	ATT4	ATT5	ATT6
ATT1	0.88					
ATT2	0.69	1.64				
ATT3	0.46	0.83	1.08			
ATT4	0.63	1.07	0.86	2.02		
ATT5	0.42	0.86	0.79	1.00	1.09	
ATT6	0.67	0.93	0.66	1.41	0.80	1.97
IPBC1	0.44	0.78	0.55	0.98	0.60	1.04
IPBC2	0.59	0.80	0.56	1.17	0.68	1.26
IPBC3	0.44	0.54	0.36	0.94	0.45	1.10
IPBC4	0.50	0.61	0.40	1.02	0.49	1.07
IT1	0.67	0.80	0.49	1.20	0.57	1.23
IT2	0.53	0.72	0.45	1.15	0.54	1.08
IT3	0.66	0.87	0.48	1.05	0.66	1.16
MNO1	0.31	0.27	0.19	0.27	0.26	0.47
MNO2	0.34	0.44	0.36	0.47	0.36	0.44
MNO3	0.19	0.42	0.57	0.40	0.37	0.31
MNO4	0.34	0.11	0.19	0.21	0.19	0.41
MNO5	0.00	0.19	0.30	0.26	0.20	0.35
EK1	0.28	0.36	0.27	0.59	0.31	0.75
EK2	0.15	0.23	0.25	0.66	0.38	0.56
EK3	0.27	0.23	0.24	0.67	0.31	0.73
EK4	0.23	0.13	0.21	0.59	0.23	0.57
EK5	0.21	0.14	0.26	0.35	0.20	0.32
EK6	0.28	0.27	0.33	0.67	0.26	0.70
EPBC1	0.21	0.10	0.20	0.20	0.04	0.21
EPBC2	0.29	0.21	0.19	0.47	0.07	0.54
EPBC3	0.20	0.11	0.14	0.16	0.05	0.20
EPBC4	-0.10	-0.23	-0.05	-0.16	-0.15	-0.17
SN1	0.36	0.46	0.29	0.86	0.42	0.95
SN2	0.49	0.47	0.41	0.57	0.44	0.69
SN3	0.40	0.52	0.33	0.85	0.45	0.91

Covariance Matrix

	IPBC1	IPBC2	IPBC3	IPBC4	IT1	IT2
IPBC1	2.49					
IPBC2	1.73	2.75				
IPBC3	1.92	2.20	2.92			
IPBC4	1.81	2.13	2.45	2.80		
IT1	1.18	1.71	1.58	1.70	2.74	
IT2	1.11	1.71	1.51	1.57	2.57	2.90
IT3	0.99	1.56	1.26	1.41	2.22	2.29
MNO1	0.28	0.22	0.40	0.44	0.55	0.46

MNO2	0.18	0.24	0.29	0.39	0.72	0.67
MNO3	0.28	0.34	0.22	0.24	0.51	0.45
MNO4	0.23	0.07	0.12	0.21	0.62	0.43
MNO5	0.43	0.39	0.25	0.25	0.45	0.49
EK1	0.67	0.90	1.01	0.94	1.12	1.08
EK2	0.52	0.93	0.83	0.88	1.23	1.28
EK3	0.68	1.00	1.03	0.97	1.34	1.38
EK4	0.64	1.13	1.07	1.00	1.20	1.22
EK5	0.60	0.90	0.66	0.77	1.07	1.08
EK6	0.66	1.05	0.96	0.95	1.26	1.25
EPBC1	0.76	0.35	0.59	0.65	0.07	0.07
EPBC2	1.27	1.14	1.45	1.35	0.89	0.90
EPBC3	0.79	0.62	0.89	0.84	0.34	0.39
EPBC4	0.20	0.00	0.11	0.26	-0.08	-0.13
SN1	0.85	1.10	1.07	1.13	1.40	1.50
SN2	0.66	0.86	0.98	1.04	1.14	1.08
SN3	0.80	1.10	0.96	0.96	1.44	1.55

Covariance Matrix

	IT3	MNO1	MNO2	MNO3	MNO4	MNO5
IT3	3.02					
MNO1	0.53	2.11				
MNO2	0.61	1.45	2.16			
MNO3	0.57	0.62	0.93	2.73		
MNO4	0.61	1.05	1.14	0.67	3.75	
MNO5	0.28	0.70	0.72	1.59	0.48	2.58
EK1	0.96	0.41	0.35	0.06	0.43	0.17
EK2	1.07	0.19	0.29	0.26	0.56	0.33
EK3	1.20	0.43	0.45	0.29	0.85	0.35
EK4	1.04	0.44	0.50	0.45	0.84	0.52
EK5	1.14	0.41	0.42	0.39	0.91	0.41
EK6	1.00	0.20	0.25	0.09	0.50	0.10
EPBC1	-0.16	0.05	0.06	0.08	0.08	0.04
EPBC2	0.64	0.08	0.12	0.24	0.04	0.06
EPBC3	0.02	0.13	0.15	0.23	-0.09	0.30
EPBC4	-0.25	0.03	0.08	0.36	0.07	0.30
SN1	1.34	0.58	0.61	0.15	0.21	0.37
SN2	1.30	0.61	0.74	0.40	0.68	0.27
SN3	1.51	0.46	0.41	0.09	0.36	0.30

Covariance Matrix

	EK1	EK2	EK3	EK4	EK5	EK6
EK1	2.15					
EK2	1.23	2.56				
EK3	1.42	1.90	2.68			
EK4	1.19	1.59	1.80	2.82		

EK5	0.84	1.41	1.41	1.56	2.75
EK6	1.28	1.80	1.75	1.66	1.34	2.54
EPBC1	0.07	-0.11	-0.03	0.12	0.17	0.01
EPBC2	0.61	0.30	0.37	0.58	0.54	0.45
EPBC3	0.24	0.06	0.03	0.25	0.20	0.07
EPBC4	0.02	0.18	0.06	0.24	0.27	0.09
SN1	0.79	0.85	0.97	0.82	0.68	0.75
SN2	0.45	0.54	0.72	0.64	0.81	0.52
SN3	0.78	0.90	1.07	0.86	0.80	0.70

Covariance Matrix

	EPBC1	EPBC2	EPBC3	EPBC4	SN1	SN2
	--------	--------	--------	--------	--------	--------
EPBC1	1.98					
EPBC2	1.22	2.68				
EPBC3	1.15	1.31	2.46			
EPBC4	0.58	0.47	1.18	2.42		
SN1	-0.07	0.73	0.14	-0.03	2.31	
SN2	0.17	0.52	0.37	0.20	0.88	2.32
SN3	-0.12	0.59	0.06	-0.04	1.74	1.17

Covariance Matrix

	SN3

SN3	2.54

Group:China

Covariance Matrix

	ATT1	ATT2	ATT3	ATT4	ATT5	ATT6
ATT1	0.73					
ATT2	0.54	1.24				
ATT3	0.38	0.98	1.37			
ATT4	0.48	0.88	0.84	1.77		
ATT5	0.38	0.85	0.92	0.97	1.40	
ATT6	0.38	0.79	0.85	1.31	0.94	1.65
IPBC1	0.07	0.08	0.07	0.42	-0.04	0.39
IPBC2	0.36	0.33	0.33	0.53	0.27	0.59
IPBC3	0.13	0.32	0.39	0.38	0.15	0.58
IPBC4	0.13	0.29	0.25	0.45	0.11	0.43
IT1	0.40	0.39	0.37	0.38	0.34	0.43
IT2	0.31	0.56	0.52	0.57	0.48	0.43
IT3	0.38	0.70	0.67	0.92	0.53	0.80
MNO1	0.03	0.10	0.09	0.09	0.04	0.08
MNO2	0.13	0.19	0.16	0.16	0.15	0.13
MNO3	-0.06	0.09	0.09	0.05	0.10	0.11
MNO4	0.10	0.08	0.06	0.04	0.10	0.02
MNO5	0.08	0.13	0.13	0.15	0.01	0.12
EK1	0.03	0.27	0.15	0.62	0.30	0.52
EK2	0.07	0.18	0.11	0.26	0.10	0.13
EK3	0.21	0.39	0.32	0.40	0.27	0.33
EK4	0.18	0.34	0.24	0.54	0.27	0.36
EK5	0.01	0.35	0.26	0.33	0.22	0.26
EK6	0.19	0.36	0.28	0.24	0.30	0.21
EPBC1	0.11	-0.05	-0.04	-0.05	0.01	0.02
EPBC2	0.43	0.58	0.55	0.59	0.50	0.38
EPBC3	0.22	0.01	-0.03	-0.05	0.00	-0.05
EPBC4	0.12	0.13	0.12	0.19	0.07	0.17
SN1	0.21	0.48	0.44	0.65	0.54	0.73
SN2	0.39	0.75	0.70	0.82	0.62	0.82
SN3	0.19	0.50	0.53	0.73	0.47	0.68

Covariance Matrix

	IPBC1	IPBC2	IPBC3	IPBC4	IT1	IT2
IPBC1	3.19					
IPBC2	1.17	2.34				
IPBC3	1.42	0.80	3.25			
IPBC4	1.31	0.88	1.23	2.73		
IT1	0.52	0.86	0.36	0.70	2.08	
IT2	0.84	0.86	0.66	0.95	1.17	2.14
IT3	0.81	1.09	0.65	1.10	1.32	1.44
MNO1	0.18	0.21	0.09	0.04	0.54	0.16

MNO2	0.20	0.29	0.03	0.23	0.56	0.24
MNO3	-0.01	0.09	0.17	-0.01	0.30	0.04
MNO4	0.08	0.11	0.10	0.26	0.27	0.12
MNO5	0.12	0.05	0.04	0.24	0.29	0.40
EK1	0.49	0.52	0.28	0.52	0.34	0.24
EK2	0.50	0.36	0.25	0.29	0.19	0.28
EK3	0.70	0.21	-0.12	0.38	0.31	0.47
EK4	0.55	0.52	0.42	0.93	0.59	0.70
EK5	0.62	0.34	0.21	1.00	0.51	0.84
EK6	0.40	0.10	0.17	0.30	0.21	0.31
EPBC1	0.47	0.21	0.17	0.56	0.50	0.58
EPBC2	0.74	0.76	0.58	1.07	0.81	0.94
EPBC3	0.63	0.44	0.19	0.86	0.43	0.48
EPBC4	0.44	0.30	0.22	0.53	0.52	0.40
SN1	0.48	1.05	0.92	0.91	0.78	1.13
SN2	1.05	1.11	0.84	1.11	1.45	1.06
SN3	1.01	0.84	0.81	1.16	0.84	1.10

Covariance Matrix

	IT3	MNO1	MNO2	MNO3	MNO4	MNO5
IT3	2.24					
MNO1	0.12	0.85				
MNO2	0.29	0.55	1.01			
MNO3	0.10	0.32	0.29	2.48		
MNO4	0.05	0.29	0.33	0.34	1.21	
MNO5	0.31	0.26	0.19	0.49	0.35	1.25
EK1	0.37	0.36	0.10	-0.10	-0.01	0.06
EK2	0.20	0.28	0.09	0.18	0.12	-0.17
EK3	0.39	0.19	0.01	-0.13	-0.14	0.01
EK4	0.82	0.22	0.20	-0.25	0.10	0.11
EK5	0.72	-0.01	0.09	-0.10	0.03	0.01
EK6	0.15	0.11	0.08	0.22	0.16	0.14
EPBC1	0.40	-0.05	0.14	-0.03	-0.08	-0.11
EPBC2	1.14	-0.05	0.17	-0.08	0.07	0.15
EPBC3	0.40	-0.02	0.16	-0.16	0.00	0.00
EPBC4	0.40	0.20	0.22	0.04	0.01	0.17
SN1	1.03	0.04	0.07	-0.34	-0.09	0.09
SN2	1.33	0.47	0.54	-0.03	0.33	0.24
SN3	1.16	0.07	0.14	-0.42	-0.05	0.05

Covariance Matrix

	EK1	EK2	EK3	EK4	EK5	EK6
EK1	3.35					
EK2	1.43	3.29				
EK3	1.59	1.65	3.63			
EK4	1.26	1.16	1.72	3.66		

```
EK5    0.91    0.75    1.75    2.13    3.44
EK6    0.74    1.36    1.45    1.69    1.42    3.35
EPBC1   0.10   -0.01    0.33    0.35    0.47    0.37
EPBC2   0.43    0.12    0.49    0.91    0.92    0.54
EPBC3   0.24    0.12    0.39    0.49    0.81    0.33
EPBC4   0.44    0.17    0.24    0.41    0.38    0.28
 SN1    0.71    0.63    0.24    0.49    0.52    0.05
 SN2    0.53    0.44    0.18    0.88    0.43    0.43
 SN3    0.47    0.22    0.33    0.80    0.63    0.44
```

Covariance Matrix

```
         EPBC1    EPBC2    EPBC3    EPBC4     SN1      SN2
        -------- -------- -------- -------- -------- --------
EPBC1    2.05
EPBC2    0.68    2.13
EPBC3    0.84    0.93    1.80
EPBC4    0.31    0.28    0.48    2.20
 SN1     0.24    0.67    0.16    0.30    3.41
 SN2     0.25    0.95    0.49    0.70    1.35    2.69
 SN3     0.55    0.74    0.44    0.55    1.85    1.74
```

Covariance Matrix

```
         SN3
        --------
 SN3     2.76
```

VITA

SEUNG BONG KO

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Thesis: PREDICTORS OF PURCHASE INTENTION TOWARD GREEN APPAREL
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Institution: Oklahoma State University   Location: Stillwater, Oklahoma

Title of Study: PREDICTORS OF PURCHASE INTENTION TOWARD GREEN
                APPAREL PRODUCTS IN THE U.S. AND CHINA

Pages in Study: 127   Candidate for the Degree of Doctor of Philosophy

Major Field: Human Sciences

Scope and Method of Study: Despite the increase in interest of green apparel products, studies in the field of retail apparel regarding consumers' intentions to purchase green apparel products have been especially scant. Also, research to identify factors that determine individuals' intentions to purchase green apparel products has been very limited. Understanding such factors is critical, though, because it helps marketers implement proper marketing strategies and forecast green apparel purchase behaviors. Therefore, a model that simultaneously examines the antecedents of consumer purchase intention toward green apparel products is needed. This study aimed to examine U.S. and Chinese consumers' behaviors regarding green apparel products using the theory of planned behavior (TPB). Therefore, this study proposed and tested a theoretical model to explain how and to what extent each variable affects purchase intention.

Findings and Conclusions: For the U.S., among the seven hypotheses proposed, six paths were supported. The one unsupported path was external PBC → purchase intention toward green apparel products. Two indirect antecedents to purchase intention (man-nature orientation and environmental knowledge) positively influenced variables in the TPB. In addition, other than external PBC, all variables in the TPB had a positive effect on purchase intention of green apparel products. In contrast, for China, the path between man-nature orientation and attitude toward green apparel products was not supported, but all other paths were supported. Only environmental knowledge (indirect antecedent) positively influenced internal PBC. All variables in the TPB positively influenced purchase intention of green apparel products. Among variables in the TPB, subjective norm was found to have the highest influence on purchase intention in both countries. Country moderating effects were not tested because of no supported evidence of invariance tests. Based on these findings, theoretical and managerial implications were discussed.

ADVISER'S APPROVAL: Dr. Byoungho Jin