

ABSTRACT

SAMPSON, LAURA KATHRYN. Consumer Analysis of Purchasing Behavior for Green Apparel. (Under the direction of Dr. Nancy Cassill, Professor Nancy Powell and Dr. Marguerite Moore).

The purpose of this research is to evaluate consumer knowledge, beliefs, norms, motivations and attitudes on purchase intention and purchase behavior for green apparel. Specifically, the study examines the impact of consumer knowledge of green industry initiatives and green textile brands, consumer beliefs related to the general environment, subjective norms influencing green apparel purchasing, the motivation to purchase green apparel, consumer attitudes towards green products on the intention to purchase green apparel products and actual purchase behavior.

The Theory of Reasoned Action (TRA) provided the theoretical framework for the research. The TRA, often referred to as the behavioral intentions model, was constructed to explain the relationships between attitude and behavior (Ajzen and Fishbein, 1980). According to the theory, a person's intention is a function of two basic determinants, one personal in nature and the other reflecting social influence (Ajzen and Fishbein, 1980). To increase the scope of the model, beliefs, knowledge and motivations were added as items that influence intention to purchase.

This research is performed on a convenience sample of college students which represents an important future market for environmentally friendly products both within and outside the textile industry. Data was collected from student respondents (N=303) in the College of Textiles at North Carolina State University using a self-administered survey. Measurements for the model's constructs were adopted from the literature and in some cases

adapted for the study. Cronbach's Alpha was used to evaluate the internal consistency of the scale items and linear regression was used to test the proposed hypotheses. Results indicated significant relationships for all nine proposed hypotheses.

Results suggest that consumer knowledge of green industry initiatives and green brands, beliefs relating to corporate responsibility, subjective norms, motivations to research, search and buy green apparel, and attitudes toward purchasing green apparel are all influential on the intention to purchase and purchase behavior within the context of purchasing green textiles and apparel. Implications for textile and apparel marketing are presented along with future directions for research academics and industry practitioners.

Consumer Analysis of Purchasing Behavior
for Green Apparel

by
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BIOGRAPHY

Laura Kathryn Sampson was born in Jamestown, North Carolina on June 13, 1985. She is the daughter of Doug Sampson and Maria Sampson and has one older sister, Melanie. In Jamestown, she graduated from Ragsdale High School in June 2003. Following graduation, she continued her education at North Carolina State University in the College of Textiles. While at North Carolina State, Laura was a member of Alpha Delta Pi Sorority, Order of Omega Greek Honor Society and Golden Key International Honor Society. In May 2007, she graduated Magna Cum Laude with a Bachelor of Science in Textile Brand Management and Marketing.

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CHAPTER 1

INTRODUCTION

Concern for the environment has arisen over the past half century. From the 1960's ecology movement focusing on pollution and energy conservation to the recent use of environmental issues as a source of competitive advantage in business, concern for the environment has become progressively more apparent. Due to increased social pressures, companies are looking for alternative packaging composition and design, alternative product formulations, and cause-related promotion in an effort to keep up with the environmental movement (Straughan & Roberts, 1999).

Sales of green products jumped from \$414.7 billion to an estimated \$678.2 billion in 2008 (Mintel, 2008). Currently there is no actual definition for green products; however the Federal Trade Commission is working to make revisions to the existing Green Guidelines in spring 2009. Green products are often thought of as items that have little to no effect on the environment during the manufacturing process (Hustedvt, 2006). Green items can be found in all product categories including: food, apparel, electronics, hotels, and vehicles. Among other things, products that claim to be good for the environment contain non-toxic ingredients or produce little pollution and waste to water, air and land by using environmentally friendly manufacturing processes. Green products are often identified on packages by words such as natural, organic, recyclable, environmentally friendly and biodegradable. Shoppers are buying green products for a variety of reasons including:

helping the environment and concern for health and safety. Regardless of the reason, consumers' environmental demands are reshaping the U.S. and global market.

LOHAS or "Lifestyles of health and sustainability," is a consumer trend that has been growing over the past decade. LOHAS consumers are interested in making sure that they are healthy and the earth's natural resources will be available for their children and for future generations. LOHAS consumers were estimated at 63 million U.S. in 2002 and spent over \$230 billion on environmentally friendly products in 2000 (Everage, 2002). Companies and manufacturers around the globe are focusing on providing LOHAS consumers with environmentally friendly products that will fit their preferences, reflect their values and adequately represent their lifestyle.

Manufacturers are designing new, green products and packaging, altering production processes, and using sustainable materials as a way to attract eco-conscious shoppers (CG Researcher, 2008). Companies who provide for the "lifestyle of health and sustainability" feel the need to ensure that their products and services reduce the negative human and environmental impact of doing business (Everage, 2002). Today, there are more and more fashion choices, and retailers from Barney's to Target sell clothes that claim to be green (Smith, 2008).

According to Textiles Intelligence (2008), apparel production is the most environmentally friendly stage in the textile supply chain. Several decades ago, dyes and chemicals were the only part of the apparel production process that was thought to negatively affect our planet. However, in recent years, clothing manufacturers have shifted operations to lower cost countries, which often have little or no environmental regulation, negatively

affecting the environment. Manufacturing clothing requires substantial amount of energy as finished goods travel from the country of origin to destination markets in the USA, the European Union and Japan (Textiles Intelligence, 2008). Today, expansion and consumption of textiles contributes to increasing pollution, shortages of clean water, depletion of fossil fuels and raw materials and climate change (Textiles Intelligence, 2008).

Organic, sustainable and natural are they latest buzzwords in fashion (Kim, 2008). However, these words are often interpreted differently by consumers and companies. According to Bloom's research, the problem for consumers is not awareness so much as knowing which products and corporations they can believe (Bloom, 2008). Many researchers believe that there will be a backlash among consumers if marketing claims and company behavior are not consistent (Dolliver, 2008). Company initiatives are being driven by consumers who are not only growing more interested in organic products, but they are holding their favorite brands accountable for their environmental practices (Dolliver, 2008).

As reported by Marshal Cohen, Chief Analyst of the NPD Group, only six percent of consumers were interested in eco friendly products, excluding food and auto, in 2006. Today, the number has grown to 21 percent (Sopelsa, 2008). With consumers becoming more interested in environmentally friendly products and companies feeling pressured to offer green products to compete, the textile industry needs to understand consumer perceptions and behaviors toward this emerging phenomenon. Despite recent company efforts to target the green apparel consumer, academics and practioners know very little about consumer knowledge, beliefs, norms, motivations, attitudes and behavior surrounding this new market phenomenon.

Purpose of Research

The purpose of this research is to initiate inquiry into green consumer behavior for apparel by evaluating consumer knowledge, beliefs, norms, motivations and attitudes on purchase intention and behavior for green apparel. Specifically, the study will examine the impact of consumer knowledge of green industry initiatives and green textile brands, consumer environmental beliefs related to the general environment, subjective norms influencing the purchase of green apparel products, consumer motivation to purchase green apparel, consumer attitudes towards green products, the intention to purchase green apparel products and actual purchase behavior. This research is performed on a convenience sample of college students which represents an important future for market for consumer goods both within and outside the textile industry (Mintel Green Living, 2008).

Research Objectives

1. To determine consumer levels of:
 - a. Textile brand knowledge and knowledge of green initiatives
 - b. Beliefs related to the general environment
 - c. Subjective norms influencing green apparel purchasing
 - d. Motivation to purchase green apparel
 - e. Attitudes towards green products
 - f. Intention to purchase green apparel
 - g. Purchase behavior
2. To examine the relationships between knowledge, beliefs, norms, motivation and attitudes on intention and purchase behavior for green apparel products.

Significance of the Study

This study provides new insight into the emerging behavior surrounding the consumption of green apparel products. The focus upon a college student population provides insight into a substantial future target market for green apparel (Green Living, 2008). The research will identify consumers' levels of textile knowledge, beliefs, subjective norms, motivations, and attitudes and determine the impact of these factors upon purchase intention and actual purchase. Due to the emergent nature of this phenomenon, practitioners need insight into the green apparel consumer to adapt their marketing mix strategies to meet the ends of this evolving market.

The results of this study are also significant to retailers and will help them to better align their green marketing strategies. With a number of green initiatives in the market perceived as false or misleading, this research will give companies the opportunity to clarify these claims, open lines of communication with consumers and effectively target young U.S. consumers who may seek green products.

Limitations of the Study

There are several limitations to this study, both conceptual and methodological. Due to the emerging nature of green consumerism, one limitation is the lack of definitions and clarification of terms for consumers. Studies have shown that consumers are confused and misled by claims in the market. Terms such as environmentally friendly, green, eco-friendly, and natural are all relative and are often interpreted differently by each individual (Kavilanz, 2008).

Methodological and administrative limitations include the small sample of college students studied. Due to the sample size, key themes that could be generalized among the sample were extracted. In addition, only college students from the College of Textiles at North Carolina State University were included in the study; therefore it is difficult to generalize results for all college students in the United States.

Conceptual Definitions

Attitude: An enduring set of beliefs about an object that predispose people to behave in particular ways toward an object (Wiegl 1983, p.257).

Eco-Friendly: Does not induce harm on the environment.

Environmental Knowledge: A general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems (Fryxell and Lo, 2003).

Environmentally Friendly Clothing and Green Clothing: Terms that are used interchangeably in describing clothing that is assembled from materials and processes with little or no harm to the environment.

Green Products: The use of recycled materials, the absence or reduction of harmful chemicals and solvents, the use of organic/pesticide-free farming methods, the use of reduced energy and water, the use of forestry products from sustainable woods and products that create less water/pollution (Green Living, 2008, p.37).

Subjective Norm: “A person’s perception of the social pressures put on him/her to perform or not to perform the behavior in question” (Fishbein & Azjen, 1980, p.57).

Socially Responsible Consumption: “Defined as extending beyond self-interest and the

satisfaction of personal needs to incorporate decisions reflecting concern for the environment and society” (Dickson & Eckman, 2006, p.188).

Sustainability: The preservation and replenishment of natural resources.

CHAPTER II

LITERATURE REVIEW

The review of literature offers an explanation of the framework used to structure the research and considers the current literature available in both industry and academia. Specifically, the literature review includes a presentation of the guiding theoretical framework presented by the Theory of Reasoned Action (TRA) and the consumer literature that examines the relevant components of TRA within the context of general consumer behavior and environmental consumer behavior.

THEORETICAL FRAMEWORK

The Theory of Reasoned Action

The Theory of Reasoned Action (TRA) was initially developed in 1967 as an expansion of the expectancy-value model and is used to predict and understand individuals behavior. Generally speaking, the theory is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them (Ajzen and Fishbein, 1980). Ajzen and Fishbein argue that people consider the implications of their actions before they decide to engage or not engage in a given behavior. Thus, the concept became known as “a theory of reasoned action” (Ajzen and Fishbein, 1980).

The TRA, often referred to as the behavioral intentions model, was constructed to explain the relationships between attitude and behavior. According to the theory, a person’s intention is a function of two basic determinants, one personal in nature and the other

reflecting social influence (Azjen and Fishbein, 1980). Attitude, the personal factor, is the individual's positive or negative evaluation of performing the behavior. The second determinant of intention is "the person's perception of the social pressures put on him/her to perform or not to perform the behavior in question", referred to as the subjective norm (Azjen & Fisbein, 1980, p.57). The subjective norm is an evaluation of the attitudes of other socially important individuals (Azjen and Fishbein, 1980). The variables depicted in the Theory of Reasoned Action are shown presented in Figure 1.

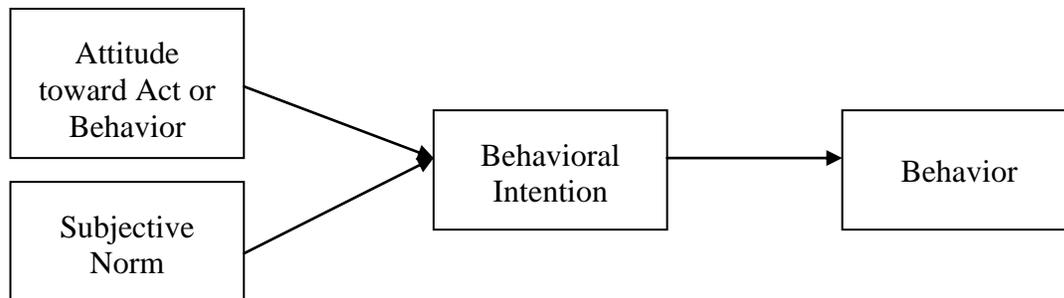


Figure 1. The Theory of Reasoned Action

Source: Fishbein, M., & Azjen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory Research*. Philippines: Addison-Wesley Publishing Company, Inc.

As the name implies, the TRA is based on a cognitive perspective and suggests that the cause of behavior is the intentional decision to act in a particular way (Hustvedt, 2006). Since people may lack the skills, resources or opportunities to translate their intentional behaviors into actual behaviors, specific behaviors may not be possible in a given context (Fishbein & Ajzen, 1975). The difference between behaviors and behavioral intentions is

that behaviors can be predicted from attitudes that are under the control of the individual. According to the TRA, attitudes do not predict habitual behaviors or behaviors performed repeatedly without thought.

Fishbein and Ajzen (1975) propose that beliefs are comprised of behavioral beliefs and normative beliefs. The behavioral beliefs are postulated to be the underlying influence on an individual's attitude toward performing the behavior, whereas the normative beliefs influence on an individual's subjective norm about performing the behavior (Madden et al., 1992). The information or salient beliefs affect intentions and subsequent behavior either through attitude or subjective norms. Variables external to the model are assumed to influence intentions only to the extent that they affect either attitudes or subjective norms (Fishbein and Azjen, 1975).

While commonly used as a predictor of behavior, some researchers have considered the variables included in the TRA to not sufficiently predict behavior in every case. The lack of balance between the predictive ability of attitudinal and normative components was noted by Ajzen (1991) in his overview of the Theory of Planned Behavior (TPB).

Using the Theory of Reasoned Action, the Theory of Planned Behavior was developed through the incorporation of an additional construct called perceived behavioral control. Perceived behavioral control is similar to that of perceived self-efficacy, which, in turn, was found to be a significant determinant of various kinds of eco-friendly behavior (Chan and Lau, 2001). The TPB has been successfully used to predict environmental behavior and implies that environmental buying behavior of consumers is influenced by the

individual's view on the personal opportunity for contributing toward a solution, in addition to awareness, attitudes and social pressure (Birgelen, Semeijn, & Keicher, 2009).

Conceptual Model

Based upon the logic of the Theory of Reasoned Action and previous application of this model to consumer behavior, the study proposes a comprehensive model to understanding green apparel purchasing behaviors. The model specifically looks at consumer knowledge, environmental consumer beliefs and subjective norms on motivation to purchase green products, and consumer attitudes towards green products in the market. It also focuses on motivation to purchase green products and consumer attitudes towards green products influence on the intention to purchase green apparel. Finally, the model also looks at how intention to purchase green apparel translates into actual purchase behavior, as presented in Figure 2. The following review of literature considers the interactions of the model's focal variables/constructs in relevant consumer behavior research.

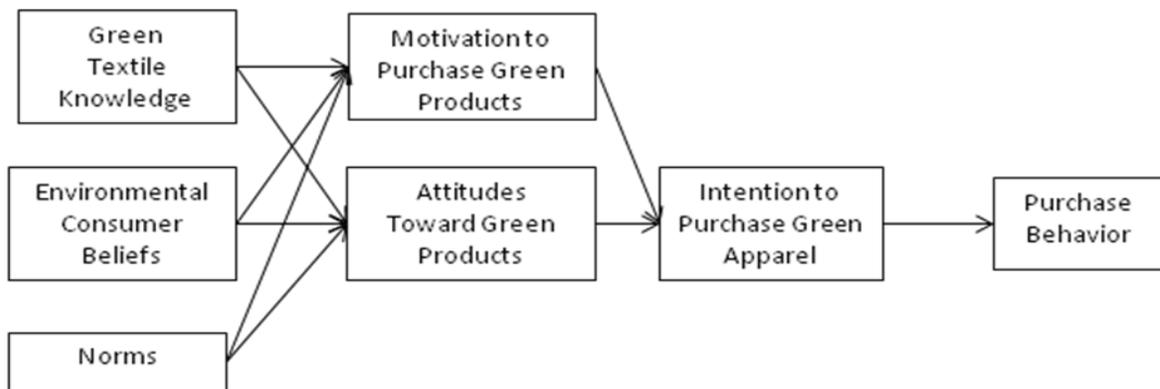


Figure 2. Conceptual Model

Related Literature

Knowledge

Knowledge advocates beliefs and values (D'Souza, et al, 2007). Environmental knowledge can be defined 'as a general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems' (Fryxell and Lo, 2003, p.45). Thus, environmental knowledge includes what people know about the environment and the beliefs that they hold about key environmental aspects or impacts (D'Souza, et al, 2007).

According to the Theory of Reasoned Action (TRA) logic, consumers who are knowledgeable about the problems of the environment will be motivated towards green purchase. While some researchers found that it was not just knowledge of environmental issues that had an impact on consumer behavior but also the action strategies that are available to respond to environmental issues (D'Souza, et al, 2007).

One researcher found that students who were more knowledgeable about textile and apparel environmental issues perceived themselves to have more impact on the problems (King & Workman, 1996). Younger consumers hold more favorable attitudes toward environmental regulation and about conserving the environment with clothing consumption practices (Dickson, 2000).

Knowledge of environmental brands have also led consumers to research the companies and products they currently buy. D'Souza (2007) found in his research that a large portion of consumers report that they would switch brands or stores in order to buy from companies that conduct business in socially responsible ways. If it is determined that college

students have a high level of knowledge, companies will be forced to market the truth about the production practices, manufacturing processes, and fiber content of their products. A Cone poll conducted in Spring 2008 found that 85 percent of Americans said they would consider switching brands due to a company's negative corporate responsibility practices (Dolliver, 2008).

A study conducted in 1992 by Nielson showed that 80% of consumers investigated were expressing "their opinions about the environment through their purchasing behavior" (Schlegelmilch, Bohlen, & Diamantopoulos, 1996, p.37). Birgelen et al. (2009) suggest that consumers who exhibit higher levels of environmental consciousness and awareness make more "green" choices than those exhibiting lower levels. Based upon these findings, one can assume that consumers who contain high levels of pro-environmental knowledge will be more likely to purchase and dispose in proenvironmental ways.

Beliefs

Mainieri et al. (1997) found that subjects with strong pro-environment beliefs (e.g., about banning nonrecyclable packaging or otherwise avoiding damage to the environment) were more likely to "(a) to buy products because of their environmental claims, (b) to consider safety to the environment more strongly when making a purchase, and (c) to engage in other consumer actions (e.g., switching products for environmental reasons or purchasing brands packaged in recyclable or reusable containers) compared to those with weaker beliefs" (Mainieri et al., 1997, p.193).

Research has also found that if consumers believe there is an environmental problem, and they are concerned, they are more likely to adopt consumer behavior practices geared toward alleviating the problem (Dickson, 2000, Mainieri et al. 1997). In a study to evaluate the influence of environmental concern on consumer behavior, (Mainieri et al., 1997) also found that consumer beliefs significantly contribute to the prediction of three attitudinal variables, as identified in the study. Positive beliefs about environmental consumerism were associated with pro-environment attitudes (Mainieri, et al., 1997). Consumer beliefs predicted not only all behavioral measures of environmental concern but all environmental attitudes as well. Participants with specific beliefs about the environmental impact of the purchase and use of consumer products were also likely to hold proenvironment attitudes (Mainieri, et al, 1997). For instance, consumers who attached importance to the purchase of products made with recyclable materials or packaged in reusable containers were more likely to care about the quality of the environment and the wise stewardship of natural resources (Mainieri, et al., 1997).

Norms

The Theory of Reasoned Action also incorporates subjective norms to better understand and predict behavior. Subjective norms regard the individuals' normative beliefs about social pressures to perform a behavior. Subjective norms take into consideration" the opinions of people who are important to the individual and the individuals' motivation to comply with the expectations of others" (Azjen & Fishbein, 1980, p.7).

According to Sillars (1975), parents and other family members serve as channels of information, sources of social pressure, and support for one another. This intimate family norm creates a distinct lifestyle, pattern of decision making and style of interacting. Children who accept this family lifestyle as a norm have continuous opportunities to learn and internalize the beliefs, values and attitudes they have observed (Sears, 1983).

Conceptual and empirical work appears to support social referents as a factor in determining shopping behavior or clothing consumption behavior (Azjen & Fishbein, 1980). Wilson et al. (1975) found that more variance in U.S. consumers' purchase intentions for toothpaste was explained by subjective norms than by attitude toward buying the toothpaste. Heckler et al. (1989) found significant purchase similarities and observed stronger impacts in parent-child intergenerational influence for convenience goods than for shopping goods. Convenience goods are relatively inexpensive goods, purchased frequently with minimal effort. Examples of convenience goods include newspapers, gasoline and most grocery items. Shopping goods are higher risk products where consumers shop around to find the best features and prices. Ardnt (1972) studied the agreement between college students and their parents. The research found that a strong correlation existed between dimensions of innovativeness, opinion leadership, and loyalty proneness. It can be assumed that consumers who have friends and family with strong proenvironmental beliefs, or are members or organizations devoted to environmental causes, would be more likely to engage in environmental purchasing.

However, research has also shown that a small percentage of studies relating to apparel and accessories do not show a strong correlation between subjective norms and

purchase behavior. Shen et al. (2003) measured subjective norm as the sum of normative belief items and motivation to comply. One of the objectives of the survey was to test the Theory of Reasoned Action in the context of apparel purchases made by Chinese consumers. They did not find the subjective norm to significantly predict intention to purchase apparel made in the United States. They concluded that purchasing apparel made in the United States did not develop a subjective normative component.

Motivation

Green consumerism has often been studied as a motivational tendency of an individual consumer. Although there is no agreed upon definition, the term usually refers to the question of why a given behavior occurs (Moisander, 2007). Atkinson (1967) defines motivation ‘as the problem of accounting for direction, vigor and persistence of behavior’.

Consumer motivation often addresses questions of how consumption-related behavior gets started, sustained and directed, and stopped (Moisander, 2007). Thus, one can assume that the reason for the behavior is driven from a particular motive. Wilkie (1990) makes a distinction between primary motives and secondary motives. A primary motive refers ‘to the purposes behind consumers’ decisions to engage or not to engage in entire classes of behavior’ (to engage in ecologically responsible behavior). Selective motives refer ‘to the purposes behind consumers’ decisions as to exactly which particular behaviors they want to engage in (recycling, saving energy, buying eco-products).

Research has centered on the identification of consumer motivation underlying proenvironmental behaviors. More specifically, studies have focused on the relationship

between cognitive or motivational factors and environmentally conscious behavior (Dietz, Stern and Guagnano, 1998). Although research exists, it is still difficult to predict consumer acceptance of proenvironmental behavior. Previous research has identified several key factors motivating environmentally conscious behavior. These factors include: individuals concerns about the environment, their beliefs about their ability to ease the problem, and an overall orientation towards the welfare of others or towards the relationship with others (Kim, 2005).

Research has shown that there are several motivations that may stimulate a brand purchase intention. Fennel (1995) suggested that one may look at consumer responses to particular brands in relation to a brand's ability to fulfill one of a set of either positive or negative motivations. These motivations are seen as a part of an energizing mechanism that helps relate perceived benefits of an advertised brand with the underlying needs of the consumer (Percy, 1992).

Attitude

Some researchers have found controversy in attitude-behavior studies (Tarrant & Cordell, 1997). An analysis of attitudinal components alone may not accurately predict actual behavior. Weak linkages between attitudes and behaviors have been noted in environmental and social marketing literature (Lee & Green, 1991).

Although some studies have shown weak relationships between attitudes and behavior, there is a wealth of research that shows a positive relationship between environmental concern (attitude) and ecologically responsible behavior (Mainieri et al.,

1997). An attitude is “an enduring set of beliefs about an object that predispose people to behave in particular ways toward an object” (Wiegl 1983, p.257). From this definition, one may infer that proenvironment attitudes will result in acts that are consistent with that attitude. For example, people with proenvironmental attitudes would be expected to recycle, support environmental initiatives or purchase environmentally friendly items (Mainieri et al., 1997).

Studies have also focused on general attitudes toward recycling and their effect on intention to purchase green textile and apparel products. The number of materials that people recycled helped to predict their general environmental buying behaviors. The findings suggested that through conscious efforts to recycle, people become more aware of the environmental effects of the materials and packaging they buy (Mainieri et al, 1997).

Using multivariate analysis of variance, Ellen, Wiener and Cobb-Walgreen (1991) found that a general attitude towards improving the environment was a significant predictor of purchasing environmentally safe products, recycling, contributing money to environmental groups, communicating with elected officials, and attending public hearings.

A body of research has shown how improved correlations between attitude and behaviors are achieved with certain measurement conditions and by recognizing differences in attitudes (Dickson, 2000). Azjen and Fishbein (1980) argue that attitudes more specific to a given behavior are better predictors of that behavior than general attitudes. Attitudes are more “specific when they correspond in action, target, time, and context to the behavior of interest” (Azjen and Fishbein, 1980, p.7).

The theory of reasoned action (TRA) is a commonly accepted theory for explaining behavioral intention. The theory of reasoned action states that two factors, attitude and subjective norm, jointly predict some person's behavior (Ajzen and Fishbein, 1975). It can be assumed that consumers who have a more positive attitude toward preserving the environment will be willing to consider environmentally friendly options in their purchase decisions.

For consumer behavior, better prediction is reportedly attained when measuring attitudes about a product or the specific buying decision (Dickson, 2000; Kaiser, Oerke, Bogner, 2007). For this study, attitude is included as a predictor variable, along with several other variables, to determine college students' intention to purchase green apparel products.

Purchase Intention

Behavioral intentions can be used as an indicator for actual future behaviors (Ajzen & Fishbein, 1980). However, Ajzen and Fishbein (1980) state that a measure of intention can not always be used as a good predictor. Intentions often change overtime and a measure of intention taken prior to an observation of the behavior may differ from the intention at the time the behavior is observed. Generally speaking, the longer the time interval, the less accurate the prediction of behavior from intention, that is, the lower the observed relation is between intention and behavior (Ajzen & Fishbein, 1980).

A variety of events can produce changes in individuals' intentions (Ajzen & Fishbein, 1980). Ajzen and Fishbein (1980), state many reasons individuals intentions may vary including: sudden illness, a fortuitous inheritance, injury, natural disasters, loss of job,

unexpected pregnancy, and economic reasons. In relation to this study, intentions to purchase green apparel products may change if the consumer realizes that the price for environmentally friendly products are higher or if the consumer must spend extra time to find these options in the market. Consumers intentions also may change if they have been misled by green advertisements or if a brand they trust is identified as a corporation not acting in a socially responsible way.

Although the Theory of Reasoned Action often does not distinguish between intentions and behavior, this research measures both purchase intention and purchase behavior. The relationship between antecedent factors and purchase behavior is also examined.

Environmentally Friendly Apparel

Companies across the globe are altering their production processes, fiber content, packaging and labeling to fill the needs of environmentally friendly shoppers. Manufacturers and retailers in all product categories are driving initiatives to eliminate unnecessary harm to the environment. The following section outlines several companies' global efforts to become more environmentally friendly.

Patagonia®, a leading manufacturer of clothing and sportswear, incorporates environmental responsibility into its products at the development stage. Its mission statement is: “To make the best product, cause no unnecessary harm and use business to inspire and implement solutions to the environmental crisis” (Patagonia Inc., 2009).

Patagonia pioneered the manufacturing of environmentally friendly outdoor apparel when it

introduced polar fleece® clothing made out of recycled bottles in 1993. In 1996, Patagonia switched to the use of 100% organically grown cotton for its entire sportswear line (Textiles Intelligence, 2008). Most recently, Patagonia introduced “the Footprint Chronicles” as an effort to track environmental issues across the supply chain. The Footprint Chronicles is an interactive mini site that allows consumers to track the impact of ten Patagonia products from design to delivery (Patagonia Inc., 2009).

Denim may be one of the most heavily treated fabrics in the fashion world, requiring vast amounts of water and chemicals for washing, dyeing and finishing (Tran, 2008). However, jean manufacturers are spending significant time researching and developing organic cotton, natural dyes and enzymes, recycled buttons and other alternatives to the methods that have previously been used in the industry. In response to pressure from environmental organizations, Levi’s introduced its first environmentally friendly line, Levi’s Eco®. The denim in Levi’s Eco collection is comprised of organic and recycled cotton, sold in recycled paper packaging and printed with soy based ink (Kim, 2008). Another company making headlines, Habitual Organic®, launched a limited edition collection of organic cotton jeans. Habitual Organic denim featured recycled zippers and paper hangtags embedded with wildflower seeds. In addition to their environmental production, Habitual also donated ten percent of all proceeds to Al Gore’s environmental organization (Kim, 2008).

After a number of critical campaigns by politicians and business publications retail giant, Wal-Mart, committed the company to several environmental goals. In October 2005 the chief executive officer, Lee Scott, announced that Wal-Mart would strive to be (1) supplied by 100% renewable energy, (2) create zero waste, and (3) sell products which

sustain Wal-Mart's resources and the environment (Textiles Intelligence, 2008). In addition to company goals, Wal-Mart also made a five year commitment to purchase only organically grown cotton from farmers.

Los-Angeles based retailer, American Apparel, has incorporated social issues into its brand philosophy. Currently offering a "Sustainable Edition" line of organic cotton T-shirts and baby clothes, American Apparel has become a leader in environmentally friendly apparel (Jana, 2006). Ecological focus areas include: waste reduction, prevention and recycling, energy and water efficiency, renewable energy using solar panels, sourcing ecologically sound materials, and using more organic materials, especially domestically grown cotton (Textiles Intelligence, 2008).

Gap Inc., based in San Francisco, has an environmental strategy to reduce carbon footprint, reduce energy usage and promote sustainable cotton cultivation. Gap is also focusing its efforts on exploring the potential for sustainable design in its products and buildings and minimizing environmental impacts of its activities throughout its supply chain. In 2005, Gap joined companies including: Addidas, H&M, Ikea and Organic Exchange, by becoming a member of the Better Cotton Initiative (BCI) (Textiles Intelligence 2008).

Federal Trade Commission Initiatives

Due to numerous options of environmentally friendly fabrics, apparel companies and consumers need to become educated on the terms associated with apparel contents. As the demand for eco fashion continues to rise, demand for sustainable fibers, such as organic cotton, has also increased. Organic cotton reached \$1 billion in sales in 2006 and is projected

to increase to \$2.6 billion in 2008 (Tucker, 2008). Environmental labeling, also referred to as eco-labeling, has become increasingly important as organic sales have increased over the years. Due to vague terms, the government felt the need to develop guidelines to help consumers filter advertising toward environmental products (Bostic, 2008). In collaboration with the Environmental Protection Agency (EPA), the Federal Trade Commission (FTC) developed six guiding principles for the consumer in 1999. These principles include:

1. **Environmental Claims Should Be Specific** - Specific information should be studied when evaluating environmental claims in advertising and on product labels. Environmental marketing should specify whether it refers to the product, packaging or both, or just to a component of the product or its packaging. Post-consumer material comes from previously used business or consumer products, while pre-consumer waste refers to manufacturing waste from the manufacturing process. Recycled products are made from items recovered or separated from the waste stream that are melted down or group up into raw materials and then used to make new products. The label of a product must specify if it contains rebuilt, reconditioned, or remanufactured parts.
2. **Some Claims Are Too Vague To Be Meaningful** - Vague or general claims may sound warm and fuzzy, but generally offer little information of value. Claims that a product or service is “environmentally friendly,” “environmentally safe,” “environmentally preferable,” or “eco-safe” are unhelpful and should provide an explanation to be relevant.

3. There's Recyclable and Then There's Recycled - Recyclable claims on labels and advertising mean that the manufacturer or seller of the products has proof that the products can be collected and used again. These claims are only relevant if the consumer decides to participate in curbside recycling or drop off programs.
4. Degradable Products Don't Help Save Landfill Space - "Biodegradable" materials, like food and leaves, break down and decompose into elements found in nature when they are exposed to air, moisture, bacteria and other organisms. Regardless of the material, degradation of products occurs very slowly in landfills, often due to lack of sunlight, air and moisture in the area.
5. All Ozone Is Not Alike - If a company claims that its products are "ozone friendly" or "ozone safe" consumers should have reason to believe that the products do not harm the atmosphere, either the upper ozone layer or the air at ground level.
6. Symbols Can Be Useful – Certain symbols placed on consumer products tell you whether a product or package is recyclable or that the product or package is made from recycled materials. The chasing arrow symbol in clock-wise direction indicates that the product or package are capable of being recycled. The Society of the Plastics Industry (SPI) created a symbol that identifies type of plastics; code numbers range from one to seven. However, there is no universal system for collection procedure so consumers should check with their recycling and waste officials (Federal Trade Commission Protecting America's Consumers, 2008).

As mentioned in Chapter One, the Federal Trade Commission is making changes to the environmental marketing guidelines to keep up with the increased demand for sustainable and environmentally friendly clothing and textiles.

HYPOTHESES

Based on this review of literature, hypotheses can be formed for the proposed study.

Hypotheses have been grouped by independent variable.

H1: As consumer knowledge of green industry initiatives and green brands increase, motivation to purchase green apparel increases.

H2: As consumer knowledge of green industry initiatives and green brands increase, positive attitudes toward green apparel increases.

H3: As environmental consumer beliefs increase, motivation to purchase green apparel increases.

H4: As environmental consumer beliefs increase, positive attitudes towards green apparel increases.

H5: As subjective norms increase, motivation to purchase green apparel increases.

H6: As subjective norms increase, positive attitudes toward green apparel increases.

H7: As motivation to purchase green apparel increase, intention to purchase green apparel increases.

H8: As positive attitudes toward green products increase, intention to purchase

green apparel increases.

H9: As intention to purchase green apparel increases, purchase behavior increases.

CHAPTER III

RESEARCH METHODOLOGY

Purpose of Research

The purpose of this research is to evaluate consumer knowledge, beliefs, norms, motivations and attitudes on purchase intention and behavior for green apparel. Specifically, the study will examine the impact of consumer knowledge of green industry initiatives and green textile and apparel brands, consumer beliefs related to the general environment, subjective norms influencing green apparel purchasing, the motivation to purchase green apparel, consumer attitudes towards green products on the intention to purchase green apparel products and actual purchase behavior. This research is performed on a convenience sample of college students which represents an important future market both within and outside the textile and apparel industry (Green Living, 2008).

1. To determine consumer levels of:
 - a. Textile and apparel brand knowledge and knowledge of green initiatives
 - b. Beliefs related to the general environment
 - c. Subjective norms influencing green apparel purchasing
 - d. Motivation to purchase green apparel
 - e. Attitudes towards green products
 - f. Intention to purchase green apparel
 - g. Purchase behavior
2. To determine the relationships between knowledge, beliefs, motivation and attitudes on intention and purchase behavior for green apparel products.

Research Design

The research design for this study is depicted in the operational model presented in the figure below (Figure 3). The independent variables of this research are: textile brand knowledge and knowledge of green initiatives, consumer beliefs related to the general environment, subjective norms influence on green apparel purchasing, the motivation to purchase green apparel, and consumer attitudes towards green products. The two dependent variables include: consumer apparel purchase intention and apparel purchase behavior.

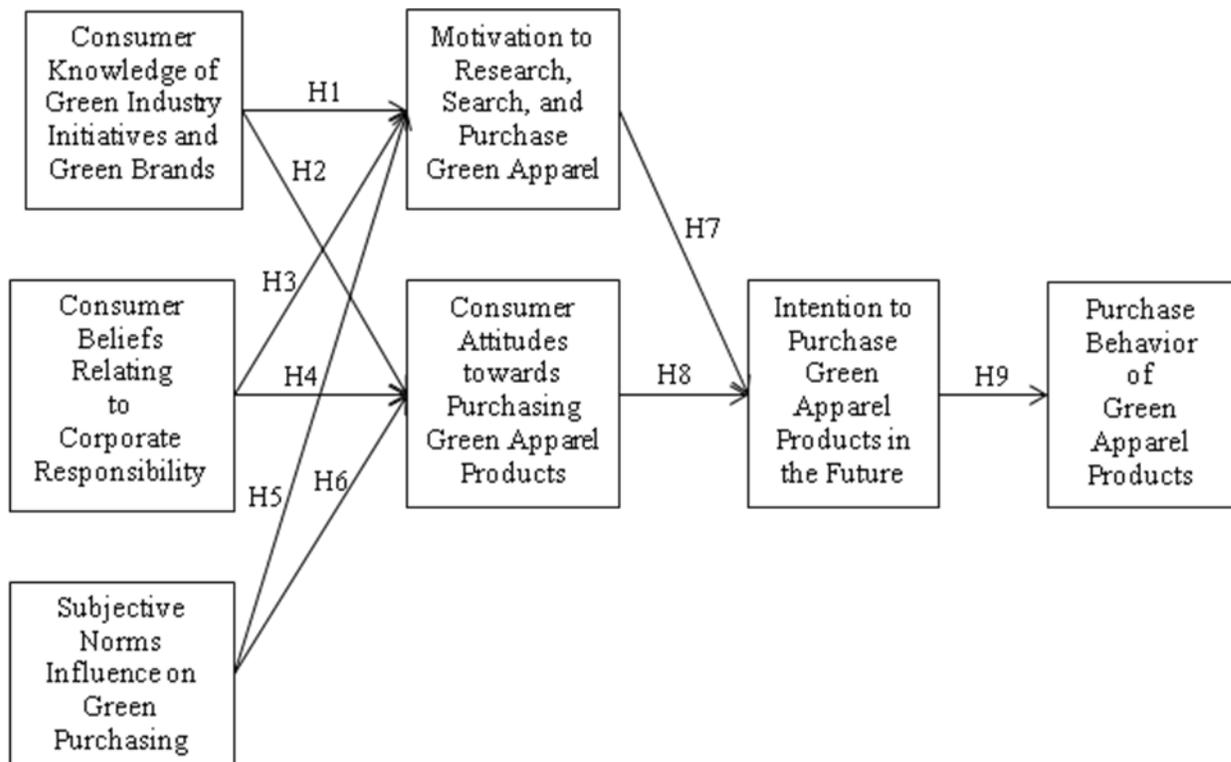


Figure 3. Operational Model

The purpose of this study was to further the understanding of the environmental movement in the apparel industry by determining college students':

1. brand knowledge,
2. beliefs,
3. subjective norms,
4. attitudes,
5. motivations,
6. intention to purchase environmentally friendly apparel, and
7. environmentally friendly purchase behavior.

The research could have been conducted in several ways, involving surveys or focus groups.

The survey method was chosen for this study because it allowed for relatively inexpensive access to a large group of college students. Also, surveys are a good way to obtain information in a systematic way about variables that are not easy to observe, such as attitudes and intentions (Hair et al., 2008). Surveys are accepted as a popular method of obtaining descriptive data, and careful design of the survey instrument reduced these sources of bias (Hustvedt, 2006).

Population and Sample

College students were chosen as the target market for a variety of reasons. Mintel International Group Limited produced two reports on the environmental movement, "Green Living" and "Green Marketing", both focusing on the United States population. These reports found that young adults are key targets for cutting edge green products due to their

internet accessibility (Green Marketing, 2008). Mintel reported four shades of green consumers: “super greens, true greens, light greens and never greens”. The study found students are 30% more likely to be “super greens” and 40% less likely to be “never greens” than the general population (Green Living, 2008). “Super greens” are consumers who report “almost always” purchasing “green” products. “Super greens” are also more likely to be influential, optimistic, politically liberal and interested in a healthy lifestyle. A threefold increase in the ranks of the super greens and true greens in just sixteen months has driven all sectors of the green marketplace (Green Living, 2008).

In September 2008, 13.6 million college students with \$237 billion in spending power made their way to campuses in the United States (Bush, 2008). Research also outlined that a growing number of students (41% up from 37% last year) are looking to spend their money on socially responsible brands (Bush, 2008). Research, conducted by Alloy Media and Marketing, surveyed 1,554 participants in the United States, ages 18 to 30, to determine which companies students perceived as environmentally responsible. The respondents, all undergraduate and graduate students, were questioned on green business practices, fair labor practices, donating money to charities and supporting diversity in the workplace. These respondents ranked Nike the highest for shoes and apparel, Toyota for automotive, Yoplait for food and beverage, Target for retail and Burt’s Bees in the personal care category.

Although research has been done on college students to determine how they rank socially responsible brands, to date no comprehensive research has been conducted to determine their knowledge, beliefs, subjective norms, motivations, attitudes, and intention to purchase environmentally friendly apparel. This study will provide a first step towards

understanding consumer perceptions and behavior related to this emerging market phenomenon and will assist companies in formulating marketing goals and strategies to fit the needs of the developing market for environmentally friendly textiles and apparel.

Questionnaire

A self-administered survey was given to undergraduate/graduate students in an in-class setting in the College of Textiles at North Carolina State University. The criterion for recruiting participants was enrollment in an undergraduate course in the College.

Precautions were taken to eliminate replication in the sample. The questionnaire given to college students measured the following variables: textile brand knowledge and knowledge of green initiatives, beliefs, subjective norms, motivations, attitudes and their influence on intention and purchase behavior of environmentally friendly apparel products. Items to measure these variables were adapted from existing items used in literature.

Independent Variables

Brand Knowledge

The brand knowledge items included in the questionnaire were designed to aid apparel manufacturers in the improvement of marketing strategies for environmentally friendly apparel products. The knowledge items sought to measure if consumers knew which product categories offered environmentally friendly products and if respondents knew where to go to purchase environmental alternatives. Items used to measure knowledge of green brands and green initiatives were developed for the study. The four items, measured with a 1

to 5 Likert type scale (1=strongly disagree, 5 = strongly agree), covered a range of related to environmentally friendly apparel products. Knowledge items can be found in Table 1, illustrated below.

Table 1

Items Used to Measure Brand Knowledge

Number	Item
1.1	I have a lot of knowledge about how to select the best brand that offers environmentally friendly products.
1.2	I have a clear idea about which product categories offer environmental products.
1.3	I have no knowledge on where to go to find environmental apparel items.
1.4	I am very knowledgeable on environmental apparel products.

Students' textile brand knowledge and knowledge of green initiatives were also evaluated using two questions. First students were asked to indicate whether or not five apparel brands offered environmental products. These five companies were selected because they are well known brands with high recognition among consumers. Companies included two performance apparel manufacturers, Patagonia and North Face, a denim manufacturer, Levi Strauss, Banana Republic, a member of Gap Inc., and American Apparel, a Los Angeles based retailer. Secondly, students were asked to identify whether or not five non-textile companies were considered environmentally friendly. Similar to the five apparel companies chosen, these five companies were selected because of their large presence in the

marketplace and well known brand recognition. Options for answers included a nominal scale. Companies used in the survey are shown in Table 2. Non-apparel companies included: Ben & Jerry’s, Coca-Cola, Burt’s Bees, Starbucks and Exxon.

Table 2

Companies Used to Rank Brand Knowledge

Number	Apparel Companies
1.A.1	North Face
1.A.2	Patagonia
1.A.3	Levi's
1.A.4	American Apparel
1.A.5	Banana Republic

Number	Non-Textile Companies
1.B.1	Ben & Jerry's
1.B.2	Coca-Cola
1.B.3	Burt's Bees
1.B.4	Starbucks
1.B.5	Exxon

Beliefs

Beliefs relating to the general environment were also addressed by the study. In a similar study, D’Souza et al. (2007) examined environmental beliefs and its impact on green purchase intention. Their study identified ten measures to address the consumer beliefs about the general environment. For the purpose of our study, five items were adapted and measured with a 1 to 5 Likert type scale (1=strongly disagree, 5 = strongly agree). Belief

item 2.1 related to industry progress, while belief items 2.4 and 2.5 discussed company initiatives and corporate responsibility. Item 2.3, *the price of environmentally friendly products is usually more expensive than other products*, was included to determine consumers perception of environmentally friendly product pricing. The table below addresses the consumer belief items measured in the study.

Table 3

Items Used to Measure Consumer Beliefs

Number	Item
2.1	We should not slow down industry progress because of concern for the environment.
2.2	A well known brand is always a safe product to buy.
2.3	The price of environmentally friendly products is usually more expensive than other products.
2.4	Textile companies are generally doing a good job in helping protect the environment.
2.5	Companies should place a higher priority on reducing pollution than on increasing their own profitability.

Subjective Norms

Several items were used to subjective norms in the questionnaire. Azjen and Fishbein (1980) recommended one item to measure norms, “most people that are important to me think I should perform/not perform the given behavior”. However because of concern with diminished reliability several items were used in this study (Babbie, 2001). The questions used in the survey were adapted from research that studied consumer attitudes and

emotional responses of apparel purchase behavior (Wang, 2006). First, students were asked three questions about how specific people/things influenced their green purchasing. Family (parents, siblings, and extended family), friends/peers and the media (newspaper, internet, television and radio) were used as the influential determinants on green purchasing. The five items were measured with a 1 to 5 Likert type scale (1=not at all, 5=very often). Items used to measure subjective norms are shown below in Table 4.

Table 4

Items Used to Measure Subjective Norm

Number	Item
3.1	Does your family (parents, siblings, extended family) have an influence on your green purchasing?
3.2	Does your friends/peers have an influence on your green purchasing?
3.3	Do the media (newspaper, internet, television, radio) influence your green purchasing?

Next, students were asked if they were frequently exposed to information related to environmental responsibility and green brands. The second items used to measure subjective norms were covered in the demographics section of the questionnaire. If respondents answered yes to the question, that they were exposed to information about environmental responsibility, they were asked to specify where they received this information. Respondents were given a variety of options including: family, friends, class, internet, newspaper, print/media, as well as another column to specify different answers.

Motivation

Motivation to purchase was measured using five items identifying their willingness to search and pay more for environmentally friendly apparel. Two items sought to determine how likely consumers were to switch brands or not purchase from companies who did not offer environmentally friendly alternatives. The five items used to gauge motivation were developed for the study. The variables were measured with a 1 to 5 Likert type scale (1 = strongly disagree, 5 = strongly agree). Motivation items can be found in Table 5.

Table 5

Items Used to Measure Motivation

Number	Item
4.1	I would be willing to pay higher prices for environmentally friendly clothing products.
4.2	I often search for clothing brands that are environmentally friendly.
4.3	I am never motivated to buy environmental products.
4.4	I would be willing to switch brands for one that is more environmentally friendly.
4.5	If a clothing brand does not offer an environmental product, I will not buy that brand.

Attitudes

The general attitudes items included in the questionnaire were designed to aid apparel manufacturers to the improvement of environmentally friendly products. Items focused on feelings about environmental products and their effect on the community, as well as a new trend of recyclable apparel. The five items, measured with a 1 to 5 Likert type scale (1 =

strongly disagree, 5 = strongly agree). Several attitudinal items were adapted from Hustvedt (2006) study on consumer preferences for blended organic cotton apparel. Items used to measure attitude can be found in Table 6.

Table 6

Items Used to Measure Attitudes

Number	Item
5.1	Compared to other apparel products, I prefer green apparel items.
5.2	I think that buying green products is good for me.
5.3	I think that buying green products is good for the community.
5.4	I think recyclable apparel is a good idea.
5.5	I think there is too much hype on environmental products.

Dependent Variables

Purchase Intention

The measure of purchase intention used in this study was adapted from Bello, Pitz, and Etzel (1983). Their measure was very straightforward, with a two item measurement, “I will actively seek out the product” and “I will buy the product for myself or as a gift”. These items were adapted and several other items were also added to increase reliability of the scale. Items relating to searching company websites and looking for environmentally friendly alternatives were added to determine respondents’ willingness to spend additional time learning about environmentally friendly alternatives to products in the market. Purchase intention items of measurement can be found in Table 7.

Table 7

Items Used to Measure Purchase Intention

Number	Item
6.1	For future purchases, I plan to seek out environmental products.
6.2	For future purchases, I plan to buy environmental apparel for myself or as gifts.
6.3	I plan to spend time searching company websites to learn more about environmentally friendly options.
6.4	For future purchases, I will take more time to search environmentally friendly alternatives to products that I typically buy.

Purchase

The dependent variable, purchase, was measured using two different scales. The items used to measure purchase were developed for this study. First, respondents were asked to answer questions relating to their general environmental purchasing and search for environmental options. Scale items were included to measure time spent reading hangtags and labels, which are often used by companies to advertise environmentally friendly products and processes. Consumer effort to purchase environmental products was also measured for companies to better align their marketing strategies with the time spent by consumers to look for these goods. Items were measured with a 1 to 5 Likert type scale (1 = strongly disagree, 5 = strongly agree).

Purchase behavior items are shown in Table 8.

Table 8

Items Used to Measure Purchase

Number	Item
7.1	I frequently purchase environmental brands.
7.2	I frequently search for brands that are known to offer environmental products.
7.3	When shopping for environmentally friendly apparel, I often read the labels or hangtags.
7.4	I normally put a lot of effort into purchasing apparel that is environmentally friendly.
7.5	I always believe that apparel claiming to be environmentally friendly is actually environmentally friendly and good for the environment.

Respondents were also asked to identify their frequency in purchasing environmentally friendly apparel, specific to different product categories. The addition of this item sought to determine if there was a difference in environmental purchasing based on product category. Items were measured using a 1 to 5 Likert type scale (1 = never, 5 = always). Product Categories are listed in Table 9.

Table 9

Product Categories Used to Measure Frequency of Purchase

Number	Item
7.A.1	Bags (purses, travel, tote bags)
7.A.2	Denim
7.A.3	Sweaters and Jackets
7.A.4	Performance Apparel
7.A.5	Bags
7.A.6	T-shirts
7.A.7	Undergarments
7.A.8	Socks/Hosiery

Questionnaire Format

The questionnaire format was a six page, 8.5” x 11” booklet. The cover of the questionnaire included information about the study, subject rights, informed consent and the names of the researcher and faculty for the project. The survey was organized to address the independent and dependent variables, followed by questions relating to demographics of the respondent. Questions using similar scales were grouped together to increase the reliability of the measure.

Survey Procedures

The exploratory research collected for the study was accomplished in spring 2009. Data collection was completed by surveying students in the College of Textiles at North Carolina State University. Students took between five and fifteen minutes to complete the questionnaire. The research design began by developing objectives and reviewing relevant literature.

The sample selection of college students included freshman, sophomores, juniors and seniors in the College of Textiles. Masters and PhD students were also included in the sample selection. Classes were deliberately chosen in order to receive input from all levels of students in the College. Students that were enrolled in more than one of the surveyed classes were asked to only complete the questionnaire one time to avoid a sampling bias.

Data Analysis

The raw data was entered into Statistical Package for the Social Sciences (SPSS). The alpha level was set at .05 to determine the significance level. Descriptive analysis including means and frequencies were used to evaluate the characteristics of the sample. Frequencies were used to examine nominally measured variables and means were used for continuously measured variables. The following variables were captured to evaluate the sample and its overall appropriateness for the research: ethnicity, grade level, age, gender, shopping habits and community service, and environmental activist organization participation.

Linear regression was used to address the research objectives as presented in the hypotheses. The continuously measured interval data for all independent and dependent variables allows use of the general linear modeling approach. Statistics associated with each model were interpreted within the context of the research and the Theory of Reasoned Action.

Statement on the Use of Human Subjects

Before any pre-testing and prior to the actual survey, an application for the use of human subjects was submitted and approved by the International Review Boards (IRB) at North Carolina State University. The IRB determined that participants' rights and welfare were protected, informed consent was obtained from every participant, steps were in place to ensure that the confidentiality of the participants and their responses, and that no part of the study caused any risk or discomfort to the participants.

CHAPTER IV

RESULTS

This chapter details the analyses conducted on the survey data. The purpose of this research was to evaluate consumer knowledge, beliefs, norms, motivations and attitudes on purchase intention and purchase behavior for green apparel. The first objective was to determine the consumer levels of the independent and dependent variables, listed above. The second objective was to determine the interrelationship between knowledge, beliefs, norms, motivation and attitudes on intention and purchase behavior for green apparel products.

The first step of the data analysis following coding was to examine the responses and remove any questionnaires that were not complete enough to include in the analysis. Respondents who failed to complete at least 90% of the survey items were removed from the sample prior to statistical analysis. Finally, descriptive analysis including means and frequencies were used to evaluate the characteristics of the sample. Frequencies were used to examine nominally measured variables and means were used for continuously measured variables. Linear regression was used to address the research objectives as presented in the hypotheses. The continuously measured interval data for all independent and dependent variables allows use of the general linear modeling approach. Statistics associated with each model were interpreted within the context of the research and the Theory of Reasoned Action.

Response Rate

A non-probability sampling method was used with a quota sample of 300 which provides adequate statistical power for testing the study's hypotheses (Hair et al., 2008). The total number of questionnaires given to students in the College of Textiles was 303. All surveys were more than 90% complete and were all used for statistical analysis.

Respondents' Demographics

The demographics of survey respondents are summarized in Table 10. The age of participants ranged from 18 to 44; the average age was 20. When broken down into categories, the majority of students were 19 or 20. While the survey was limited to students in the College of Textiles, there were 12 respondents over the age of 23, mostly consisting of graduate students.

Respondents showed a diverse range of class standings. Freshman contributed to 29.4% of respondents, sophomores made up 24.8%, juniors added another 27.7% and seniors represented 13.2%. Masters and PhD students combined made up 5.0% of the survey responses. The wealth of undergraduates is due to the abundance of undergraduate level courses used for data collection.

Examination of the respondents' demographic characteristics indicates that the majority of respondents were female. A total of 249 females completed the survey (82.2%), while only 54 males (17.8%) completed the questionnaire. This is likely to be contributed to the large percentage of females in the College of Textiles.

Table 10

Sample Demographic Characteristics

Characteristic	<i>f</i>	% Frequency
<i>Age</i>		
18	55	18.2
19	69	22.8
20	83	27.4
21	57	18.8
22	21	6.9
23	6	2.0
Over 23	12	4.0
<i>Grade Level</i>		
Freshman	89	29.4
Sophomore	75	24.8
Junior	74	27.7
Senior	40	13.2
Masters	13	4.3
PhD	2	0.7
<i>Gender</i>		
Male	54	17.8
Female	249	82.2
<i>Ethnicity</i>		
African American/Black	24	7.9
Asian	25	8.3
Caucasian/White	238	78.5
Hispanic	7	2.3
Other	9	3.0

Ethnicity for the college showed a significant majority of respondents were of Caucasian decent (78.5%). African American and Asian respondents were a much smaller

portion with 7.9% and 8.3% respectively. Hispanic and other nationalities made up the smallest group with 3% or less for each different ethnicity

College of Textiles Demographics

A comparison of the demographics of the survey respondents with the demographics of the College of Textiles is helpful for understanding the demographics of the sample. The College of Textiles had 1043 undergraduate and graduate, full time, students enrolled in the fall of 2008. Sample characteristics for the College of Textiles can be found in Table 11.

The large difference between the amount of females (69.3%) and males (30.7%) enrolled in the College was likely the reason our sample was also predominately female (82.2%). The types of classes selected to survey could also have contributed to the large female sample. Brand management and marketing classes were used for data collection, which are often characteristics of females in the college. Engineering and Textile Technology courses could have also been added to the data collection to increase the amount of male respondents.

Ethnicity of the respondents' was very similar to the ethnicity of the college. Due to the fact that 73.9% of the college is Caucasian, a large majority of respondents were also Caucasian. African American and Asian students represent 7.2% and 5.7% of the college, respectively. Similar to the Colleges statistics, 7.9% of survey respondents were African American, and 8.3% of respondents were Asian in the sample.

Table 11

College of Textiles Demographic Characteristics

Characteristic	<i>F</i>	% Frequency
<i>Grade Level</i>		
Freshman	216	20.7
Sophomore	227	21.8
Junior	219	21.0
Senior	221	21.2
Masters	87	8.3
PhD	73	7.0
<i>Gender</i>		
Male	320	30.7
Female	723	69.3
<i>Ethnicity</i>		
African American/Black	75	7.2
Asian	59	5.7
Caucasian/White	771	73.9
Hispanic	22	2.1
Native American	5	0.5
Not Reported	17	1.6

Source: North Carolina State University Planning and Analysis Enrollment Report 2008/2009

The percentage of freshman, sophomore, junior and senior respondents are very similar to the percentage in the College of Textiles. The major differences between the sample selection and students in the College were on the Masters and PhD levels. Of the 1043 students in the College, 8.3% are masters' students and 7.0% are PhD. The masters and PhD students in our sample only contributed to 5.0% of the results, instead of the 15.3% that

they comprise in the College. Similar to gender, more graduate level classes could have been added to data collection to increase the percentage of upper level students used for data collection.

Respondents' Shopping Characteristics

To expand the knowledge of respondents, three questions were asked relating to shopping habits. The responses are summarized in Table 12. First, respondents were asked how often they shop for new apparel. Approximately 30% reported to shopping once a month, 28.4% once a week, and 26.7% shopped two to three times a month. Similar to other research conducted on shopping habits, the fewest amount of people shop several times a week or less than once every three months.

Students were also asked where they buy most of their clothing. Although the instructions asked students to choose just the place they buy most of their clothing, about half of the respondents selected more than one place that they shop. Due to the additional responses, frequencies were used to measure the nominal variable. Chain stores rated the highest with over 40% of respondents reporting that they shopping in retail chain outlets. Amongst many others, examples of chain stores include: Abercrombie and Fitch, Ann Taylor, JCrew, Target and Wal-mart. Specialty stores and department stores were selected by 38% of the respondents. Mass merchants and off price retailers made up the smallest percentage, with 9.9% and 8.9% respectively. Several respondents selected the other category and stating that they typically shop online and do not go to brick and mortar stores.

Students were also asked to identify whether they shopped in store or on the internet. This question was asked to identify the amount of shoppers that visit apparel websites to purchase merchandise. Recently companies have started using their company websites to promote their environmental responsibility messages, however only a small percentage (4.3%) reported using online sites to purchase the majority of their clothing. Approximately 30% of respondents stated that they use both online and brick and mortar stores for apparel purchases. With almost 35% of consumers purchasing at least half of their apparel online, company websites prove to be a valuable way to relate environmental messages to consumers. Approximately 65% of respondents shop in stores suggesting that retailers should also use in store displays as a major form of environmental advertising.

Table 12

Sample Demographic Shopping Characteristics

Characteristic	<i>F</i>	% Frequency
<i>How often do you shop for new apparel?</i>		
Several times a week	12	4.0
Once a week	75	28.4
2-3 times a month	81	26.7
Once a month	92	30.4
Once every 3 months	32	10.6
Less than once every 3 months	11	3.6
<i>Where do you buy most of your clothing?</i>		
Mass Merchants	30	9.9
Chain Stores	132	43.6
Specialty Stores	115	38.0
Department Stores	116	38.3
Off Price Stores	27	8.9
Other	8	2.6
<i>Where do you purchase your clothes most frequently?</i>		
Online	13	4.3
Brick and Mortar	199	65.7
About Half and Half	90	29.7
Other	1	0.3

Respondents' Community Service Characteristics

Students were also asked to identify whether or not they participated in community service or environmental activist groups. Survey results can be found in Table 13. These questions sought to explain how active participants of the study were in their communities. Approximately two thirds of respondents stated that they participated in community service

activities. Specific organizations varied with responses including: Habitat for Humanity®, Meals on Wheels®, church activities, Ronald McDonald House®, Susan G. Komen Breast Cancer Foundation, among many others.

Table 13

Sample Demographic Organization Characteristics

Characteristic	<i>F</i>	% Frequency
<i>Do you participate in any type of community service?</i>		
Does Participate	202	66.7
Does Not Participate	101	33.3
<i>Do you participate in any type of environmental activist group?</i>		
Does Participate	20	6.6
Does not Participate	283	93.4

Only 6.6% of college students reported involvement in environmental activist groups, while 93.4% said that they did not participate. Table 14 lists environmental organizations that respondents were members of across North Carolina State University, North Carolina and the United States.

Table 14

Environmental Organization Participation

<u>Organization Name</u>
Clean Water for North Carolina
Founder Pinecrest Environmental Club
Greenpeace
Habitat for Humanity
Herpetology Club
Morlove
National Energy Education Department
NC Herpetological Society
North Carolina Conservation Network
PETA (People for Ethical Treatment of Animals)
Service Raleigh
Sustainability Committee at NC State University
Wolfpack Environmental Student Association
World Wildlife Fund
Zoology Club

Respondent Exposure to Environmental Responsibility

The final question in the demographics section asked students whether or not they were exposed to information relating to environmental responsibility. If respondents' selected that they were exposed, they were asked to specify where they received this information. Out of 303 completed surveys, 220 students said that they received environmental information in some form. Responses can be found in Table 15.

Students reported that they received information relating to environmental responsibility through print/media (86.8%), the internet (77.3%) and classes (73.2%), as a

part of required curriculum, most frequently. The smallest percentages included newspaper (58.2%), friends (43.6%), and family (30.9%).

Table 15

Sample Demographic Exposure Characteristics

Characteristic	<i>f</i>	% Frequency
<i>Where do you receive information relating to environmental responsibility?</i>		
Family	68	30.9
Friends	96	43.6
Class	161	73.2
Internet	170	77.3
Newspaper	128	58.2
Print/Media	191	86.8
Other	4	1.8

Measure Evaluation

Cronbach's Alpha was used to evaluate the internal consistency of the scale items. Generally, Cronbach's Alpha increases as correlation between items increase. In conducting research, a Cronbach's Alpha score of .70 or higher is considered adequate when determining reliability (Fraenkel & Wallen, 2007).

Knowledge

As shown in Table 16, the items included in the knowledge measure were retained and received a Cronbach's Alpha score of 0.702. The mean score for the knowledge factor was relatively low at 2.92. The low mean score indicates a lack of knowledge and understanding of green industry brands and initiatives among respondents. The low score also shows that companies have a large opportunity to educate consumers on green product alternatives and corporate strategies.

Table 16

Knowledge

Number	Item	Retained
1.1	I have a lot of knowledge about how to select the best brand that offers environmentally friendly products.	Yes
1.2	I have a clear idea about which product categories offer environmental products.	Yes
1.3	I have no knowledge on where to go to find environmental apparel items.	Yes
1.4	I am very knowledgeable on environmental apparel products.	Yes

Beliefs

The original scale used to measure beliefs indicated a Cronbach's Alpha below the acceptable threshold. After evaluating the consistency of the items, two were selected to represent the construct: *we should not slow down industry progress because of concern for*

the environment and companies should place a higher priority on reducing pollution than on increasing their own profitability. Three items, 2.2, 2.3, and 2.4 were eliminated from analysis. Pearson's R was used to evaluate the correlation between these two items which indicated a positive, significant estimate ($R=.331$, $P\text{-value}=0.01$), supporting the use of these items in the measurement model. Beliefs items retained can be found in Table 17.

Table 17

Beliefs

Number	Item	Retained
2.1	We should not slow down industry progress because of concern for the environment.	Yes
2.2	A well known brand is always a safe product to buy.	No
2.3	The price of environmentally friendly products is usually more expensive than other products.	No
2.4	Textile companies are generally doing a good job in helping protect the environment.	No
2.5	Companies should place a higher priority on reducing pollution than on increasing their own profitability.	Yes

Subjective Norms

As shown in Table 18, the three items used to measure subjective norms were retained and used in analysis. The three items scored a Cronbach's Alpha of 0.744.

Subjective norms received the lowest mean score, $M=2.37$, suggesting that relatives, friends and the media do not have much impact on consumer green purchasing.

Table 18

Subjective Norms

Number	Item	Retained
3.1	Does your family (parents, siblings, extended family) have an influence on your green purchasing?	Yes
3.2	Does your friends/peers have an influence on your green purchasing?	Yes
3.3	Do the media (newspaper, internet, television, radio) influence your green purchasing?	Yes

Motivation

Motivation to purchase was measured using five items identifying respondents' willingness to search and pay more for environmentally friendly apparel. As shown in Table 19, all five items used to evaluate motivation were retained and scored a Cronbach's Alpha of 0.713. The mean score for motivation was 2.91. The low score is likely contributed to consumers not wanting to pay more or search for environmentally friendly alternatives.

Table 19

Motivation

Number	Item	Retained
4.1	I would be willing to pay higher prices for environmentally friendly clothing products.	Yes
4.2	I often search for clothing brands that are environmentally friendly.	Yes
4.3	I am never motivated to buy environmental products.	Yes
4.4	I would be willing to switch brands for one that is more environmentally friendly.	Yes
4.5	If a clothing brand does not offer an environmental product, I will not buy that brand.	Yes

Attitude

As shown in Table 20, all five items for attitude were retained and used in analysis. Attitudinal items received a Cronbach's Alpha score of 0.758. Attitudes received the highest mean score, $M=3.66$, suggesting that respondents' had favorable thoughts of the green movement and environmentally friendly apparel.

Table 20

Attitude

Number	Item	Retained
5.1	Compared to other apparel products, I prefer green apparel items.	Yes
5.2	I think that buying green products is good for me.	Yes
5.3	I think that buying green products is good for the community.	Yes
5.4	I think recyclable apparel is a good idea.	Yes
5.5	I think there is too much hype on environmental products.	Yes

Purchase Intention

As shown in Table 21, three out of the four purchase intention items were retained.

Item 6.3, *I plan to spend time searching company websites to learn more about environmentally friendly options*, was eliminated from the results to increase the Cronbach's Alpha score and the reliability of the model. Purchase intention received a Cronbach's Alpha of 0.953, the highest of all the scales used in testing. The mean score for purchase intention was 3.07. The mean score was relatively high suggesting that respondents' were likely to seek out and purchase environmentally friendly products in future purchases.

Table 21

Purchase Intention

Number	Item	Retained
6.1	For future purchases, I plan to seek out environmental products.	Yes
6.2	For future purchases, I plan to buy environmental apparel for myself or as gifts.	Yes
6.3	I plan to spend time searching company websites to learn more about environmentally friendly options.	No
6.4	For future purchases, I will take more time to search environmentally friendly alternatives to products that I typically buy.	Yes

Purchase

Four out of five purchase items were retained for analysis. As shown in Table 22, item 7.5, *I always believe that apparel claiming to be environmentally friendly is actually environmentally friendly and good for the environment*, was removed. The four items retained scored a Cronbach's Alpha of 0.788. The mean score for purchase was low at 2.63. The low mean score suggests that respondents' are not currently purchasing environmentally friendly brands and products.

Table 22

Purchase

Number	Item	Retained
7.1	I frequently purchase environmental brands.	Yes
7.2	I frequently search for brands that are known to offer environmental products.	Yes
7.3	When shopping for environmentally friendly apparel, I often read the labels or hangtags.	Yes
7.4	I normally put a lot of effort into purchasing apparel that is environmentally friendly.	Yes
7.5	I always believe that apparel claiming to be environmentally friendly is actually environmentally friendly and good for the environment.	No

Regression Models

Linear Regression was used to test the proposed hypotheses (1-9). Individual statistics for each regression model fit are presented in Table 23. The F-statistics associated with all nine models indicated significance at a 0.000 alpha level. Therefore, interpretation of the t-statistics and beta estimates proceeded for each hypothesis.

Table 23

Regression Models

Model		R	R ²	Adjusted R Square	Std. Error of Estimate	Sum of Squares	df	Mean Square	F	Sig.
1	<i>Knowledge to Motivation</i>	0.449	0.201	0.199	0.49906					
	Regression					18.886	1	18.886	75.828	.000*
	Residual					74.969	301	0.249		
	Total				93.855	302				
2	<i>Knowledge to Attitude</i>	0.284	0.080	0.077	0.51143					
	Regression					6.882	1	6.882	26.31	.000*
	Residual					78.73	301	0.262		
	Total				85.612	302				
3	<i>Belief to Motivation</i>	0.514	0.264	0.262	0.46897					
	Regression					24.802	1	24.802	108.111	.000*
	Residual					69.053	301	0.229		
	Total				93.855	302				
4	<i>Belief to Attitude</i>	0.511	0.261	0.259	0.45838					
	Regression					22.369	1	22.369	106.464	.000*
	Residual					63.243	301	0.21		
	Total				85.612	302				
5	<i>Norms to Motivation</i>	0.450	0.203	0.200	0.49859					
	Regression					19.029	1	19.029	76.549	.000*
	Residual					74.825	301	0.249		
	Total				93.855	302				

Table 23 Continued

Regression Models

Model		R	R ²	Adjusted R Square	Std. Error of Estimate	Sum of Squares	df	Mean Square	F	Sig.
6	<i>Norms to Attitude</i>	0.441	0.195	0.192	0.47862					
	Regression					16.659	1	16.659	72.722	.000*
	Residual					68.953	301	0.229		
	Total				85.612	302				
7	<i>Motivation to Intention</i>	0.652	0.425	0.423	0.50787					
	Regression					56.921	1	56.921	220.681	.000*
	Residual					77.122	299	0.258		
	Total				134.044	300				
8	<i>Attitude to Intention</i>	0.601	0.361	0.359	0.53526					
	Regression					48.381	1	48.381	168.868	.000*
	Residual					85.663	299	0.286		
	Total				134.044	300				
9	<i>Intention to Purchase</i>	0.576	0.331	0.329	0.56322					
	Regression					46.978	1	46.978	148.097	.000*
	Residual					94.847	299	0.317		
	Total				141.826	300				

Hypothesis Tests

Beta estimates were used to evaluate the direction of each linear relationship (ie. negative or positive). T-tests associated with each model's Beta coefficient were used to evaluate the hypotheses, as shown in Table 24. T-tests and associated Beta estimates indicated significant results in the expected direction for all nine hypotheses.

Table 24

T-Table

Hypothesis	Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	Independent Var.	Dependent Var.	β	Std. Error	Beta		
1	Knowledge	Motivation	0.330	0.038	0.449	8.708	0.000
2	Knowledge	Attitude	0.199	0.039	0.284	5.129	0.000
3	Belief	Motivation	0.376	0.036	0.514	10.398	0.000
4	Belief	Attitude	0.357	0.035	0.511	10.318	0.000
5	Norms	Motivation	0.318	0.036	0.450	8.749	0.000
6	Norms	Attitude	0.298	0.035	0.441	8.528	0.000
7	Motivation	Intention	0.78	0.053	0.652	14.855	0.000
8	Attitude	Intention	0.752	0.058	0.601	12.995	0.000
9	Intention	Purchase	0.592	0.049	0.576	12.170	0.000

The test for Hypothesis One: As consumer knowledge of green industry initiatives and green brands increase, motivation to purchase green apparel increases, indicated a significant estimate ($t=8.708$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.449$). Therefore the test supports the proposed hypothesis that as green knowledge increases, the motivation to purchase green apparel increases.

The test for Hypothesis Two: As consumer knowledge of green industry initiatives and green brands increase, positive attitudes toward green apparel increases, indicated a significant estimate ($t=5.129$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.284$). Therefore the test supports the proposed hypothesis that as green knowledge increases, positive attitudes toward green apparel increases.

The test for Hypothesis Three: As environmental consumer beliefs increase, motivation to purchase green apparel increases, indicated a significant estimate ($t=10.398$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.514$). Therefore, the test supports the proposed hypothesis that as environmental consumer beliefs increase, motivation to purchase green apparel increases.

The test for Hypothesis Four: As environmental consumer beliefs increase, positive attitudes towards green apparel increases, indicated a significant estimate ($t=10.318$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.511$). Therefore, the test supports the proposed hypothesis that as environmental consumer beliefs increase, positive attitudes towards green apparel increases.

The test for Hypothesis Five: As subjective norms increase, motivation to purchase green apparel increases, indicated a significant estimate ($t=8.749$, $p=0.000$). The

corresponding beta coefficient indicated a positive effect ($\beta=0.450$). Therefore, the test supports the proposed hypothesis that as subjective norms increase, motivation to purchase green apparel increases.

The test for Hypothesis Six: As subjective norms increase, positive attitudes toward green apparel increases, indicated a significant estimate ($t=8.528$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.441$). Therefore, the test supports the proposed hypothesis that as subjective norms increases, positive attitudes toward green apparel increases.

The test for Hypothesis Seven: As motivation to purchase green apparel increases, intention to purchase green apparel increases, indicated a significant estimate ($t=14.855$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.652$). Therefore, the test supports the proposed hypothesis that as motivation to purchase green apparel increases the intention to purchase green apparel increases.

The test for Hypothesis Eight: As positive attitudes toward green products increase, intention to purchase green apparel increases, indicated a significant estimate ($t=12.995$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.601$). Therefore, the test supports the proposed hypothesis that as positive attitudes toward green products increase the intention to purchase green apparel increases.

The test for Hypothesis Nine: As intention to purchase green apparel increases, purchase behavior increases, indicated a significant estimate ($t=12.170$, $p=0.000$). The corresponding beta coefficient indicated a positive effect ($\beta=0.576$). Therefore, the test

supports the proposed hypothesis that as intention to purchase green apparel increases, purchase behavior of green apparel increases.

Company Rankings

To determine a level of environmental brand knowledge, respondents were asked if five different apparel brands offered environmentally friendly products. Shown in Table 25, respondents scored Patagonia the highest with 86.3% of respondents believing they offered environmental products. North Face® ranked second with 72.2% and American Apparel ranked third with 66.3%. The two brands with the lowest rankings were Levi, a denim manufacturer, and Banana Republic, a division of GAP Inc., with 36.2% and 32.3%. It should be noted that Patagonia and North Face, both performance apparel brands ranked the highest among respondents.

Table 25

Apparel Brands Ranking

	North Face	Patagonia	Levi	American Apparel	Banana Republic
Environmentally Friendly	216	258	109	200	97
Not Environmentally Friendly	83	41	192	100	203
Number of Respondents	299	299	301	300	300
Percentage of respondents who believes the brand is Environmentally Friendly	72.2%	86.3%	36.2%	66.3%	32.3%

To become more familiar with college students' brand knowledge, respondents were asked whether or not five non-apparel companies were considered environmentally friendly. As shown in Table 26, over 94% of respondents believed that Burt's Bees was environmentally friendly. This statistic is very similar to other studies measuring environmental responsibility, as Burt's Bees is often regarded highly among consumers (Bush, 2008). Starbucks and Ben & Jerry's came in second and third with 63.6% and 58.9% respectively. Coca-Cola ranked fourth with only 28.1% of respondents believing they were environmentally friendly. Exxon, a large petroleum company, came in last with only 14.9%.

Table 26

Non-Apparel Brands Ranking

	Ben & Jerry's	Coca-Cola	Burt's Bees	Starbucks	Exxon
Environmentally Friendly	178	85	283	192	45
Not Environmentally Friendly	124	218	17	110	256
Number of Respondents	302	303	300	302	301
Percentage of respondents who believes the brand is Environmentally Friendly	58.9%	28.1%	94.3%	63.6%	14.9%

Purchasing by Product Category

Beyond the constructs of the model, respondents were asked how frequently they purchased environmentally friendly apparel in several product categories including: t-shirts, sweaters, bags, performance apparel, denim, socks, and undergarments. Using a scale from

never (1) to always (5), respondents ranked whether or not they purchased environmentally friendly products in each category. T-shirts ranked the highest with a mean score of 2.6, followed by sweaters (2.12) and bags (2.07). Performance apparel, denim, socks and undergarments all received mean scores of under 2.0, as shown in Table 27.

Table 27

Environmentally Friendly Purchases by Product Category

<u>Product Category</u>	<u>Mean</u>
T-Shirts	2.60
Sweaters	2.12
Bags	2.07
Performance Apparel	1.98
Denim	1.95
Socks	1.92
Undergarments	1.92
<u>Average</u>	<u>2.08</u>

CHAPTER 5

CONCLUSIONS, IMPLICATIONS, LIMITATIONS, FUTURE RESEARCH

The purpose of this research is to evaluate consumer knowledge, beliefs, norms, motivations and attitudes on purchase intention and behavior for green apparel. Specifically, the study examined the impact of consumer knowledge of green industry initiatives and green textile brands, consumer beliefs related to the general environment and corporate responsibility, subjective norms influencing green apparel purchasing, motivation to purchase green apparel, consumer attitudes towards green products on the intention to purchase green apparel products and actual purchase behavior. The research study involved 303 college students from North Carolina State University enrolled in classes in the College of Textiles. This chapter represents conclusions, implications, limitations and suggestions for future research.

Conclusions

Construct means for the independent variables ranged from a mean score of 2.37 to 3.66. Subjective norms received the lowest mean score, $M=2.37$, suggesting that relatives, friends and the media do not have much impact on consumer green purchasing. As anticipated, knowledge ($M=2.92$) was low demonstrating the lack of knowledge and understanding of green industry initiatives and green brands. Motivation ($M=2.91$) was also low in comparison to attitude and intentions. Attitudes received the highest mean score, $M=3.66$, suggesting that respondents' had favorable thoughts of the green movement and

environmentally friendly apparel. Intention to purchase (M=3.07) also received a higher mean score than purchase behavior (M=2.63). A higher mean score for intention to purchase suggests that respondents' are interested in the movement and are likely to purchase in the future. Although respondents' purchase behavior of green apparel is relatively low, high attitudinal and intention to purchase mean scores suggest that environmentally friendly apparel purchasing will increase in the future.

The statistical results indicated positive effects for all hypotheses, as shown in Table 28 and Figure 4. To evaluate consumer knowledge of green industry initiatives and green brands, items focused on how to select environmentally friendly brands, which product categories offer environmental products, and consumer knowledge of retailers that carry green apparel items. Based on the proposed model, the findings suggest that as consumer knowledge of environmentally friendly products increases, motivation to search and buy environmentally friendly products also increases. Motivation items encompassed consumer willingness to pay higher prices for environmental clothing, time searching brands that are environmental, switching brands for one that is more environmentally friendly, and not buying brands that do not carry green products. Results also proposed that as consumer knowledge of environmentally friendly products increase, positive attitudes toward environmentally friendly products also increase. Attitude items sought to measure consumers' perception of the green movement in the apparel industry. Items included consumer opinion on the benefits of the environmental movement, ideas about recyclable apparel, preferences to purchase green apparel, and the hype surrounding the new phenomenon.

Although five items were used to measure beliefs, only two measures relating to industry and corporate responsibility were used for analysis. Belief items focused on industry progress and companies driving initiatives to reduce pollution. Research found that as beliefs related to the general environment increase, motivations to search and buy environmentally friendly products also increase. Findings also suggest that as beliefs increase, positive attitudes toward environmentally friendly products increase.

Table 28

Summary of Hypotheses and Results of Testing

	Hypothesis	Supported
H1	As consumer knowledge of green industry initiatives and green brands increase, motivation to purchase green apparel increases.	Yes
H2	As consumer knowledge of green industry initiatives and green brands increase, positive attitudes toward green apparel increases.	Yes
H3	As environmental consumer beliefs increase, motivation to purchase green apparel increases.	Yes
H4	As environmental consumer beliefs increase, positive attitudes towards green apparel increase.	Yes
H5	As subjective norms increase, motivation to purchase green apparel increases.	Yes
H6	As subjective norms increase, positive attitudes towards green apparel increase.	Yes
H7	As motivation to purchase green apparel increases, intention to purchase green apparel increases.	Yes
H8	As positive attitudes toward green products increase, intention to purchase green apparel increases.	Yes
H9	As intention to purchase apparel increases, purchase behavior increases.	Yes

Subjective norms focus on the outside individuals influence on a consumers' decision to purchase or not purchase green apparel. Subjective norm items included family, friends and media (newspaper, internet, television, radio) influence on environmentally friendly apparel purchasing. Findings suggest that as subjective norms increase, motivation to search and buy environmentally friendly products also increase. Research also found that as subjective norms increase, positive attitudes toward environmentally friendly products increase.

The influence of motivation to research, search and buy environmentally friendly apparel on intention to purchase green apparel was measured. Intention to purchase items included plans to seek out environmental products, plans to purchase environmental apparel, plans to spend time searching company websites to find out about environmentally friendly options and taking more time to substitute environmental product alternatives. Findings suggest that as motivation to research, search and buy environmentally friendly apparel increases, intention to purchase green apparel increases.

To better understand intention to purchase, attitudes towards environmental apparel was also measured as a determinant. Attitude items focused on the green apparel industry and consumers perception of the emergent phenomenon. Research found that as positive attitudes towards purchasing environmental apparel increase, intention to purchase environmentally friendly products increase.

Lastly, purchase behavior was evaluated by measuring respondents' intention to purchase environmentally friendly apparel. The behavior items sought to assess the consumers' current purchasing activities. Items included how frequently respondents

purchased and searched for environmental brands. Respondents were also asked about their effort in purchasing environmental apparel and if they typically read labels and hangtags on merchandise while shopping. Research found that as the intention to purchase green apparel items increased, purchase behavior of green apparel items increase.

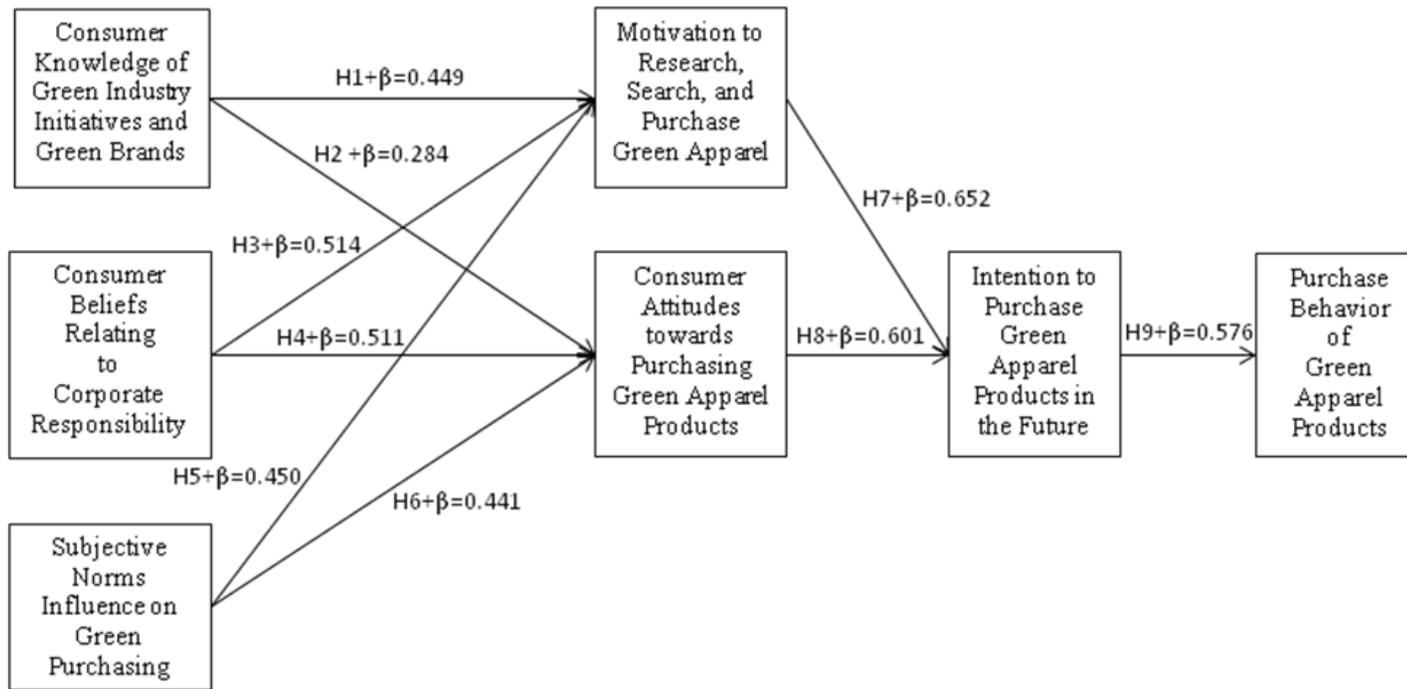


Figure 4. Conceptual Model with Beta Estimates

Implications

Based upon research findings, several implications can be drawn for textile and apparel companies. This research, an exploratory study on the environmental movement, sought to increase understanding of consumer perceptions of environmentally friendly apparel products. This study provides an empirical first step into understanding consumer attitudes and behaviors in relation to green products in the apparel industry.

The research showed that consumer knowledge of environmentally friendly apparel has a major effect on motivation, attitude, intention to purchase and purchase behavior. Companies should focus marketing efforts on educating consumers about the social responsibility practices of the organization. Businesses should also strive to provide consistent sustainability messages on product labels and hangtags, as well as on company websites. Patagonia and Burt's Bees ranked the highest among respondents in terms of environmentally friendly products and social responsibility. The corporate strategy for both of these companies focuses heavily on sustainability and environmentally friendly product options. Other companies who wish to include sustainability as a major corporate goal should focus marketing efforts on portraying these messages to consumers.

Research also suggests that respondents are interested in green apparel and the environmental movement. The majority of respondents held strong attitudes towards environmentally friendly apparel and other green products. Intention to purchase environmentally friendly products was also rated highly. Manufacturers and retailers should continue to incorporate environmental responsibility into their core values and expand

environmentally friendly product lines to capture the growing number of consumers looking for green options.

Companies should also take into account how consumers are learning about the environmental movement. Respondents stated that they received the majority of information about environmentally friendly products through the internet and print/media. These findings continue to show the importance of consistent advertising on products and company websites. Respondents also stated that they receive environmental information through courses in the College of Textiles. Professors and teachers should strive to incorporate sustainability and social responsibility information into the curriculum.

Limitations

1. A survey with a larger, more diverse sample would have been beneficial for the research. Respondents were all registered in classes at the College of Textiles and could potentially be more educated on environmentally friendly apparel. To be more representative, students from other colleges in the University should have also been added to the sample. In addition groups with different demographics should also be examined including different ages, income groups, levels of educational as well as groups with different lifestyle characteristics.
2. While this study focused on the effect of knowledge, beliefs, norms, motivations and attitudes on the intention to purchase green apparel products and actual purchase behavior, studying the full consumption process would have also been beneficial. Surveying respondents on their disposal and recycling practices would have allowed

- us to better profile the sample. Products that are recyclable are often more appealing to consumers and could have an impact on purchase behavior.
3. Social desirability, the tendency by some respondents to provide answers they deem to be socially desirable rather than their own feelings or responses, could have led respondents to answer questions in a more pro-environmental way.
 4. Due to the emerging nature of green consumerism, the lack of definitions and clarification of terms for consumers is a limitation. Studies have shown that consumers are confused and misled by claims in the market. Terms such as environmentally friendly, green, eco-friendly, and natural are all relative and are often interpreted differently by each individual (Kavilanz, 2008).
 5. Students in the College of Textiles have additional knowledge about the apparel industry which could have influenced their attitudes. These concepts should also be measured on other populations and colleges in the University.

Future Research

This research study was a preliminary step to understanding consumer adoption of the environment movement. This emergent phenomenon is likely to expand and become a major strategy for businesses and corporations worldwide. To better understand green purchase behavior, researchers should look at the effect of different types of advertising on green purchasing. Using qualitative research techniques, evaluation of company advertising techniques and initiatives could help marketers learn the best way to portray sustainability messages.

In an effort to learn more about environmental consumers, future research should focus on a larger sample selection. This research used a convenience sample of college students in the College of Textiles at North Carolina State University. The results of this study cannot be inferred for other college students at Universities around the United States or worldwide. Future studies could attempt to survey a wider range of consumers and include respondents from a variety of campuses worldwide.

An additional research study could be performed to look at the knowledge, beliefs, norms, motivations and intention to purchase of professionals throughout the world. Focusing on an older demographic would allow for an interesting study comparing the difference between professionals and college students. The results of the study would also help to identify target markets for companies promoting environmentally friendly products.

It is also recommended that a longitudinal study observe how purchase behavior changes as consumers are educated on green brands and environmental initiatives. A before and after study showing how behavior changes as consumers are informed on sustainability practices would attempt to show the importance of knowledge as a key indicator for purchase behavior. Determining how beliefs, attitudes, motivations and intention to purchase is altered as knowledge increases would help prove or disprove the importance of marketers educating consumers on environmental practices.

Research focusing on the full consumption process is also recommended. Surveying respondents on their disposal and recycling practices would have allowed us to better profile the sample. As recycling becomes accepted by the mainstream population, the motivation

for purchasing products based solely upon this criterion could provide a valuable source of competitive advantage for textile and apparel firms.

Study findings demonstrate that the student sample held positive attitudes towards green apparel and textiles. Results also proved that The Theory of Reasoned Action aids in describing the influence of beliefs, motivations and norms on attitude formation and ultimate behavior. Yet students in the sample have not developed high levels of knowledge or fully formed beliefs in relation to green products in the textile industry. Trade data and the popular press predict that environmentalism and green consumer behaviors will shape markets for the foreseeable future. This study provides a first step towards understanding consumer perceptions and behavior related to green consumption in the industry. The findings also suggest that companies focusing upon green consumers have an opportunity to strongly influence beliefs, motivations and attitudes.

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APPENDIX

Appendix A. Respondent Survey

Dear Respondent,

I am inviting you to participate in a research project to study push and pull strategies used in the green marketing of textile apparel products. Attached to this letter is a short survey with a few questions related to your attitudes about green practices/products in the apparel industry. I ask that you look over the questionnaire, complete it and return it to me. It should take no more than 10-15 minutes.

The goal of this research is to determine college students' awareness of green textile and apparel products. This research will help companies align their green marketing strategies with the beliefs and attitudes of college students. It will also aid college students in their awareness of environmentally friendly apparel options available in the market.

There are no risks to you or your privacy if you complete the survey. Your answers will be completely anonymous. There are no identifying marks/links to you on the questionnaire. Do not identify yourself in any place on the document. Results will be reported in aggregate form.

Your participation in the study is completely voluntary. Participation is not a course requirement and your grade will not be if you choose not to complete the survey. I will gladly provide participants and non-participants with a summary of results. Please e-mail me at lksampso@ncsu.edu for a copy of the results summary.

If you have questions or concerns about participating in this study, please contact me, Laura Sampson, at 2401 Research Drive, Box 8301, Raleigh, NC 27695, lksampso@ncsu.edu, or 336-688-2843. This study has approval from the North Carolina State University Institutional Review Board for the Protection of Human Subjects in Research. You may contact Arnold Bell, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919-515-4420) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148) if you have questions about your rights as a research participant.

Thank you in advance for your participation.

Sincerely,

Laura Sampson
Masters Student / Research Assistant
lksampso@ncsu.edu

Marguerite Moore, Ph.D.
Associate Professor
Marguerite_Moore@ncsu.edu

Consent To Participate

"I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled."

Subject's signature _____ **Date** _____

Investigator's signature _____ **Date** _____

Green Apparel Brands Survey

The following questions ask about your opinions of environmental apparel brands. We are interested in your opinions and awareness of these products. There are no correct/incorrect answers so please select the answer that first 'comes to mind'.

Among the following brands, which offer environmental products? Please check yes or no beside the brand name.

	Yes	No
North Face	[]	[]
Patagonia	[]	[]
Levi's	[]	[]
American Apparel	[]	[]
Banana Republic	[]	[]

Some companies are considered environmentally friendly. Please rate the following companies on how whether you believe they are environmentally friendly or not.

	Yes	No
Ben & Jerry's	[]	[]
Coca-Cola	[]	[]
Burt's Bees	[]	[]
Starbucks	[]	[]
Exxon	[]	[]

Please indicate how strongly you agree or disagree with each by using the scale to the right of the statement.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
I have a lot of knowledge about how to select the best brand that offers environmentally friendly products.	[]	[]	[]	[]	[]
I have a clear idea about which product categories offer environmental products.	[]	[]	[]	[]	[]
I have no knowledge on where to go to find environmental apparel items.	[]	[]	[]	[]	[]
I am very knowledgeable on environmental apparel products.	[]	[]	[]	[]	[]

Please indicate how strongly you agree or disagree with each by using the scale to the right of the statement.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
We should not slow down industry progress because of concern for the environment.	[]	[]	[]	[]	[]
A well known brand is always a safe product to buy.	[]	[]	[]	[]	[]
The price of environmentally friendly products is usually more expensive than other products.	[]	[]	[]	[]	[]
Textile companies are generally doing a good job in helping protect the environment.	[]	[]	[]	[]	[]
Companies should place a higher priority on reducing pollution than on increasing their own profitability.	[]	[]	[]	[]	[]
I would be willing to pay higher prices for environmentally friendly clothing products.	[]	[]	[]	[]	[]
I often search for clothing brands that are environmentally friendly.	[]	[]	[]	[]	[]
I am never motivated to buy environmental products.	[]	[]	[]	[]	[]
I would be willing to switch brands for one that is more environmentally friendly.	[]	[]	[]	[]	[]
If a clothing brand does not offer an environmental product, I will not buy that brand.	[]	[]	[]	[]	[]

Please answer the following questions using the five point scale not at all to very often to the right of the question.

	Not at All	Very Little	Sometimes	Often	Very Often
Does your family (parents, siblings, extended family) have an influence on your green purchasing?	[]	[]	[]	[]	[]
Do your friends/peers have any influence on your green purchasing?	[]	[]	[]	[]	[]
Does the media (newspaper, internet, television, radio) influence your green purchasing?	[]	[]	[]	[]	[]

Please indicate how strongly you agree or disagree with each by using the scale to the right of the statement.

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Compared to other apparel products, I prefer green apparel items.	[]	[]	[]	[]	[]
I think that buying green products is good for me.	[]	[]	[]	[]	[]
I think that buying green products is good for the community.	[]	[]	[]	[]	[]
I think recyclable apparel is a good idea.	[]	[]	[]	[]	[]
I think that there is too much hype on environmental products.	[]	[]	[]	[]	[]
For future purchases, I plan to seek out environmental products.	[]	[]	[]	[]	[]
For future purchases, I plan to buy environmental apparel for myself or as gifts.	[]	[]	[]	[]	[]
I plan to spend time searching company websites to learn more about environmentally friendly options.	[]	[]	[]	[]	[]
For future purchases, I will take more time to search for environmentally friendly alternatives to products that I typically buy.	[]	[]	[]	[]	[]
I frequently purchase environmental brands.	[]	[]	[]	[]	[]
I frequently search for brands that are known to offer environmental products.	[]	[]	[]	[]	[]
When shopping for environmentally friendly apparel, I often read the labels or hangtags.	[]	[]	[]	[]	[]
I normally put a lot of effort into purchasing apparel that is environmentally friendly.	[]	[]	[]	[]	[]
I always believe that apparel claiming to be environmentally friendly are actually environmentally friendly and good for the environment.	[]	[]	[]	[]	[]

How frequently do you purchase environmentally friendly apparel in the following product categories? Please indicate how often you purchase by using the scale to the right of the statement.

	Never	Rarely	Sometimes	Often	Always
Bags (purses, travel, tote bags)	[]	[]	[]	[]	[]
Denim	[]	[]	[]	[]	[]
Performance Apparel (workout clothing)	[]	[]	[]	[]	[]
Socks/hosiery	[]	[]	[]	[]	[]
Sweaters and Jackets	[]	[]	[]	[]	[]
T-Shirts	[]	[]	[]	[]	[]
Undergarments	[]	[]	[]	[]	[]

Demographics

Please answer the following questions for classification purposes.

1. Which of these categories best describes your ethnic background?

African-American or Black	[]
Asian	[]
Caucasian or White	[]
Hispanic	[]
Other (Specify)	_____

2. What is your grade level?

Freshman	[]
Sophomore	[]
Junior	[]
Senior	[]
Masters Student	[]
PhD Student	[]

3. What is your age in years?

18	[]	22	[]
19	[]	23	[]
20	[]	24	[]
21	[]	Other	_____

4. What is your gender?

Male	[]	Female	[]
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5. How often do you shop for new apparel items?

Several times a week	[]
Once a week	[]
2-3 times a month	[]
Once a month	[]
Once every 3 months	[]
Less than once every 3 months	[]

6. Where do you buy MOST of your clothes?

Mass Merchants	[]	Department Stores	[]
Chain Stores	[]	Off Price Stores	[]
Specialty Stores	[]	Other (Specify)	_____

7. Where do you purchase your clothes MOST frequently?

Online	[]
Brick and mortar	[]
About half and half	[]
Other (specify)	_____

8. Do you participate in any community service activities?

Yes []

No []

9. If you answered yes to the previous question, please specify what type of organization.

10. Do you participate in any type of environmental activist group?

Yes []

No []

11. If you answered yes to the previous question, please specify what type of group you are involved with.

12. Are you commonly exposed to information related to environmental responsibility?

Yes []

No []

13. If you answered yes to the previous question, where do you get this information?
(Please check all that apply)

Family [] Newspaper []

Friends/peers [] Print/Media []

Class [] Other (Specify) _____

Internet []

Appendix B. IRB Exemption

From: Joseph Rabiega, IRB Coordinator
North Carolina State University
Institutional Review Board

Date: January 13, 2009

Project Title: Analysis of Push/Pull Strategies Used in Green Marketing of Textile Products

IRB#: 19-09-01

Dear Laura:

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101.b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please provide a copy of this letter to your faculty sponsor.

Sincerely,

Joseph Rabiega
NCSU IRB