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Is Green the New Black? - Assessing Textile & Apparel Undergraduate Students' Environmental Knowledge, Concern and Responsibility

ABSTRACT

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Many textile and apparel manufacturers are attempting to address consumer demand for environmentally friendly products. Concurrently, a number of textile and apparel programs are incorporating environmental responsibility into the curriculum. However, educators do not fully understand the results of these efforts in terms of providing our students with the environmental knowledge necessary to influence concern for the environment and ultimately, environmentally responsible behavior. This exploratory study investigates textile and apparel undergraduate students' environmental knowledge, concern and responsibility. Findings suggest that teaching students about environmental responsibility in school is more effective in promotion responsible behavior as compared to students learning through the mass media. Moreover, the findings suggest that students' knowledge, concern and behavior do not differ based on the grade level when the concept of environmental responsibility is first introduced. In addition, students majoring in production-oriented areas of apparel and textiles tend to exhibit greater levels of concern and behavior as compared to their counterparts majoring in distribution-oriented areas. Lastly, relatively few students believe they are learning enough about environmental responsibility in apparel and textile courses.

Keywords: Textiles and apparel, Environmental Responsibility, Environmentally-friendly, Green

Introduction

Although it may seem as if environmentalism has appeared only recently, sustainability and the "green" movement started in the 1960s along with other social causes that the Baby Boomer generation brought to our attention. However, it was not until the United Nations World Summit on Sustainable Development

in Johannesburg held in 2002 (UN, 2002), punctuated by Al Gore's Nobel Peace Prize in 2007 for his environmental activism work in *An Inconvenient Truth*, that environmentalism has taken on a new sense of urgency. This seemingly new attention to the environment has caused an explosion of industries touting environment-friendly products in response to consumer demand (Cone, 2008).

So could green be the fashion industry's new black? For many, green consciousness in the apparel and textile industry is taking the place of chic black as manufacturers and retailers are attempting to satisfy consumer demand (Carey, 2009; Williams, 2008) for products that use environment-friendly processes, fibers, dyes and finishes. Perhaps none are more demanding for eco-friendly products and processes than the offspring of the Baby Boomers—that group of individuals known as Generation Y, also referred to as Millennial or N generation (those born between 1977-1994) (Cone, 2006; Lamstein, 1999; Phillips, 1999). This group, estimated to be almost 80 million in number, has become known as one of the most informed age groups in terms of environmental issues (IBM, 2009). This is the group of consumers that has been graduating from college since the late 1990s/early 2000's as well as those who are presently in today's textile and apparel classrooms. Understanding this group of consumers should be especially important to educators interested in the environmental movement as it is these students who will be tomorrow's future leaders in the apparel and textile industry and making decisions how fiber-based resources are used, designed, and managed for consumers. These students are in a very unique position to help determine how social, cultural, and environmental resources are used in the future (Sibbel, 2007).

In order to understand how consumers will behave environmentally in the future, research has shown it is necessary to investigate consumers' environmental knowledge, how they feel about the environment, and the kinds of intention and behavior they have toward the environment (Maloney & Ward, 1973; Maloney, Ward, & Braucht, 1975; Butler & Francis, 1997; Kim & Damhorst, 1998; Brosdahl & Carpenter, 2010). The findings of the most recent study, conducted by Brosdahl & Carpenter (2010), suggest that environmental knowledge leads to environmental concern, which in turn can lead to environmentally responsible consumption behavior. Therefore, as textile and apparel educators, we must assess how we are doing in terms of providing our students with knowledge of the impacts of textile and apparel production and consumption on the environment. In order to provide a better understanding of our efforts to educate our students, we pose several research questions to guide the current, exploratory study:

RQ1: From what source do our students first learn about environmentally responsible behavior? And, are there any differences in students' knowledge, concern and behavior based on the source?

RQ2: At what grade level in school was environmentally responsible behavior first introduced? And, are there any differences in students' knowledge, concern and behavior based on the grade level?

RQ3: Are there differences in students' knowledge, concern and/or behavior based on their major area of study?

RQ4: Do our students believe they are learning enough about environmental responsibility? And, what subject areas do students believe are important to explore?

This exploratory research will provide textile and apparel educators with a timely and comprehensive understanding of students' knowledge, concern and behavior with regard to environmentally responsibility. Additionally, producers, marketers and retailers of textile and apparel

products will benefit from understanding what their future employees know about environmental responsibility.

Literature Review

Today's Textile & Apparel Undergraduate Students – A Picture of Generation Y

The majority of current textile and apparel undergraduate students are part of Generation Y, which has also been called the Millennial Generation or the N Generation. This generation consists of 26% of the total U.S. population, or 80 million citizens. Encompassing all births between the years 1978 – 1997, this is the most racially diverse generation ever with approximately one-third of the group of minority descent (Cone, 2006). According to Dunne & Lusch (2007), three out of four Generation Y consumers come from families with working mothers and have already demonstrated more liberal spending patterns than any previous generation accounting for more than 4% of annual household spending. This cohort exhibits traditional values and appears to be the most optimistic group in U.S. history. They respond to learning, and place high value on education (Dunne & Lusch, 2007; Keating, 2000). Said Martin (2002) "Y-ers . . . believe education is a key to success, technology is as transparent as the air, diversity is a given, and social responsibility is a business imperative" (p. 39).

Generation Y is the first generation composed of true Earth-Day (started in 1970) children, those who learned about being eco-friendly beginning in pre-kindergarten and kindergarten (Phillips, 1999). Perhaps more than any other generational cohort, Gen Y's formative years were punctuated by numerous government acts aimed at improving the environment such as the National Environmental Policy Act, the Clean Air Act, the Water Pollution Control Act (United States Environmental Protection Agency, n.d.) as well as some of the worst environmental disasters on record, including the Union Carbide gas leak in Bhopal (1984), Chernobyl: Russian nuclear power plant explosion (1986), the Exxon Valdez oil spill (1989) (Enzler, 2006) as well as the most recent, the BP oil spill off the US Gulf coast (2010).

As Generation Y moves into adulthood they could be taking their environmental values with them into the workplace as well as the consumer marketplace. With spending power of roughly $172 billion, Generation Y has enormous influence and buying power behind them (Wells, 2008). In a recent study published by *Chain Store Age*, 54% of 1,062 Generation Y shoppers said that a retailer's green policies and practices would influence them to shop at that store (Gen Y's Eco-Attitude, 2007). With only 47% saying they would pay more for environmentally friendly services, products and brands, this large section of the Generation Y cohort group is worth exploring, especially with regard to their environmental knowledge, attitudes, and behavior.

Environmental Knowledge

Knowledge is a characteristic that can have a powerful influence on almost every aspect of consumer behavior (Blackwell, Miniard, & Engel, 2006). Knowledge affects how consumers gather and organize information (Alba & Hutchinson, 1987), how they use information to make decisions (Brucks, 1985), and how consumers then evaluate and choose products (Murray & Schlacter, 1990). D'Souza, Taghian, and Lamb (2006) suggest that "if a consumer has knowledge about the environment and pollution promulgation, the causes and influence on the environment, then their awareness levels would increase and thus would, potentially, promote a favorable attitude towards green products" (p. 164).

The general consensus among consumer behavior researchers is that knowledge can impact behavior (Hock & Deighton, 1989; Park, Mothersbaugh & Feick, 1994). However, there are mixed results when looking at *environmental* knowledge being a precursor to

environmental behavior. Several studies report that an increase in environmental knowledge has been a precursor to increased environment-friendly behavior (Chan, 1999; Hines, Hungerford, & Tomera, 1986/1987; Vining and Ebreo, 1990). However, in a meta-analysis of 128 studies, Hines *et al.* (1987) found only a moderate (.30) but significant correlation between knowledge and behavior. In contrast, other studies report no significance to the relationship between environmental knowledge and behavior (Arbuthnot and Lingg, 1975; Geller, 1981; Schahn and Holzer, 1990).

Two studies specifically examine environmental knowledge within the context of textiles and apparel (Kim & Damhorst, 1998; Brosdahl & Carpenter, 2010). The results of Kim & Damhorst's (1998) study suggest that environmental knowledge is not predictive of environmentally responsible behavior. In contrast, Brosdahl & Carpenter (2010) report that environmental knowledge does impact behavior, but that environmental concern serves as a mediator between knowledge and behavior. Therefore, it appears that within the context of textiles and apparel, knowledge alone is not enough to encourage environmentally responsible behavior. Instead, concern must develop from knowledge. Despite the important role of knowledge in predicting environmentally responsible behavior, knowledge is far less frequently investigated than concern.

Environmental Concern

Benton (1994) has termed the existence of ecological affect as ecological concern which "represents an individual's degree of emotional attachment to ecological issues" (Chan, 2001, p. 391). The findings of several studies suggest that environmental concern leads to environmentally responsible behaviors (Dispoto, 1977; Li, 1997; Maloney & Ward, 1973; Takacs-Santa, 2007). Gill, Crosby, and Taylor (1986) found that general environmental concern translated positively into recycling behavior. Minton and Rose (1997) also concluded that overall, possessing an environmental disposition, affected the intention to act in four pro-environmentally behaviors including recycling, purchasing environmentally-safe goods, searching for environmental-related information, and buying recycled goods, although they also found that consumers possessing a personal moral obligation were more likely to perform environmentally-friendly behaviors than merely having a concern for the environment itself. Andras Takacs-Santa (2007) found that having a high level of environmental concern is "likely to be an important prerequisite of long-lasting pro-environmental behavior" (p. 26).

However, several studies have shown that consumers' attitudes or concern for the environment will not always turn into positive environmental change (Troy, 2007). Shapiro & Associates, at a Scholarly Publishing and Academic Resources Coalition seminar, shared that their research of 800 consumers found that "being 'green' is more of an aspiration than a reality at this point" (Troy, 2007, p.24) and that although there appears to be concern by consumers to care about the environment, this has yet to translate into any substantial behavior especially when it comes to the products they shop for and which retailers they choose, mirroring the findings of the 2009 IBM study of UK's Millennial cohort group.

Since the 1980s researchers have been investigating the disposal of textile and related products and how environmental attitudes have influenced disposal activities. The earliest study found was conducted by Stephens (1985) who reports that although general pro-environmental attitudes led to environment-friendly recycling behavior for products, such as soft drink cans and newspapers, the link between pro-environmental attitudes and clothing were not necessarily as strong. Shim (1995) found that a person's environmental attitude was more influential for clothing disposal than for a person's "self-reported actual recycling behavior of waste" (p. 46). Shim also concluded that consumers need to be educated to develop sensitivity toward the

environment. In Morgan and Birtwistle's 2009 investigation of the disposal habits of young fashion consumers, there was a "there was a significant positive relationship between consumer awareness of the environment and sustainable textile disposal behavior" (p. 196). However, they cautioned that the results show that "young female consumers are unaware of the need for clothing recycling . . ." and they also "lack the knowledge of how and where clothing is disposed of, or even how it is made, such as the environmental consequences of artificial fibers and intensive cotton production" (p. 196).

Recognizing that one aspect of sustainable consumption is the process of discarding clothing, Bianchi and Birtwistle (2010) examine how disposal behavior in two countries compare and contrast. Although environmental attitudes are not specifically examined in this study, the variable entitled "awareness of the environment" is measured. Overall, it was found that no significant relationship between awareness of the environment and selling clothing to dispose of it existed in either Australia or Scotland. However, awareness of the environment was found to positively affect giving clothing to family and friends in Australia, but not in Scotland, whereas the opposite was found in the disposal behavior related to donating clothing to charity.

However, in comparison, little research has been accomplished in regarding environmental attitudes and intentions to purchase and knowledge. In a 1995 study conducted by Butler and Francis, although it was found that overall, consumers were somewhat neutral in their attitudes when questioned about clothing purchase activities that have impacted the environment and they rarely considered the environmental impact of their own decisions. This was the case although these same consumers generally had a fairly favorable environmental attitude. Butler and Francis (1995) reported that "although consumers indicated their general concern for the environment, believed that we should work to improve environmental conditions, and thought that people should take environmental issues into account when purchasing clothing, they themselves did not report doing so" (p. 80). Butler and Francis (1995) concluded that it was perhaps other intrinsic and extrinsic apparel characteristics, such as price and fit, that may be more important than the environment when consumers make apparel decisions. Shim also found that, in certain cases, possessing a positive environmental attitude influenced several environmentally-concerned disposal patterns.

Kim and Damhorst (1998) also found that pro-environmental attitudes did not translate into pro-environmental apparel consumption behavior. However, the authors did note that perhaps it was hard in the pre-1995 apparel market for consumers to find "green" clothing choices, thus influencing direct pro-environmental clothing consumption practices. Although no figures could be found as to the number of green designers producing eco-friendly clothing in 2010, it was found that in 2006 it was estimated that there were about 500 eco-designers worldwide, whereby in 2000-2001 there were only 10-20 designers (Johnson, 2006) making their mark as pro-environmentalists promoting clothing using greener manufacturing practices including organic fibers, natural dyes, petrochemical-free finishes, and environment-friendly processes. With the increase of eco-friendly apparel designers and manufacturers, there may be more of an opportunity for consumers to choose pro-environmental clothing products.

Methodology

Sampling, Instrumentation & Data Collection

The goal of this study was to explore how we as textile and apparel educators are doing in terms of providing our students with knowledge of the environmental aspects of textile and apparel production and consumption. To gather a sample of students enrolled in textile and apparel programs across the United States,

institutions belonging to the International Textile and Apparel Association (ITAA) and found in the annual directory were used as the sampling frame using a proportional stratified random sample of all institutions listed in the membership roster. Schools were divided according to their self-reported status as to whether they offered 4-year only or 4-year plus graduate programs. The number of institutions in each section was then compiled and divided by the total number institutions in the institutional membership roster.

A graduate assistant then pre-contacted the department head of the institutions culled from the institutional membership list. The graduate assistant read a pre-crafted explanation of the purpose of the study to the department heads and then asked for their help in distributing the questionnaire. The department head responded affirmatively and told the graduate assistant the number of questionnaires that would be needed to administer them to a broad cross-section of their students, or redirected the assistant to speak with a faculty member to repeat the process. In no case was there anyone unwilling to lend their help in distributing the questionnaires. The number of questionnaires requested was then sent to the identified institution/faculty member along with a self-addressed, stamped envelope to mail back the group of completed instrument along with an instruction sheet to be read before distributing the questionnaires to the students. There were no incentives offered for participation and participation was completely voluntary.

Prior to data collection, the authors conducted a pre-test of the instrument given to a similar group of respondents (*N*=34) after which unclear items were revised for clarification. Final data were collected from a total of 359 undergraduate students from 22 institutions in four regions of the country (Northeast, Southeast, Midwest, and West) via a self-administered survey. Concern for the environment, knowledge of the influence of textile and apparel production on the environment, and consumption behavior related to the purchase, use and discarding of apparel and textile products was gathered. In addition, information such as school type (4-year only or 4-year plus graduate programs), major area of study (apparel design/product development/textiles or apparel marketing/merchandising/retailing), and class rank were also requested.

Measures

The measures used in the study were drawn from the environmental responsibility literature. Knowledge of the environmental impact of textile and apparel production was measured using the scale developed by Kim and Damhorst in a previous study published in 1998 and tested with the help of four experts from the areas of textile science, consumer behavior and social psychology. To measure concern for the environment, the New Environmental Paradigm scale by Dunlap, Van Liere, Mertig, and Jones (2000) was used. The New Environmental Paradigm was developed by Dunlap and Van Liere in 1978 and has been used "as a measure of endorsement of a fundamental paradigm or worldview, as well as of environmental attitudes, beliefs, and even values (Dunlap, Van Liere, Mertig, and Jones, 2000, p. 427). This updated scale has become an increasingly popular measure of environmental concern and a pro-environmental orientation used in studies investigating the general population as well as specific sectors (Albrecht, Bultena, Hoiberg, & Nowak, 1982) and interest groups (Edgell & Nowell, 1989; Pierce, Steger, Steel, & Lovrich, 1992). In the current study, this scale produced a Cronbach's *alpha* of .75.

Environmentally responsible behavior of textile and apparel products was captured using the eight-item Kim and Damhorst (1998) scale which produced a Cronbach's *alpha* of.84. The scales measuring environmental concern and behavior were five-point, Likert-type and were anchored by 'strongly disagree' and 'strongly agree' responses. The environmental knowledge scale consisted of ten true/false items as developed by Kim

and Damhorst (1998). A copy of the scale items is provided in the Appendix.

Data Analysis

A combination of descriptive and inferential statistical analysis was employed to address the research questions posed for the study. *RQ1* addresses the source where students first learned about environmental responsibility and whether students' knowledge, concern and/or behavior differ based on the source. As such, frequencies were used to examine the source and ANOVA was used to detect differences based on the source. *RQ2* addresses the grade level in school when environmental responsibility was first introduced and whether students' knowledge, concern and/or behavior differ based on grade level. As in *RQ1,* for *RQ2* frequencies were used to examine the grade level and ANOVA was used to detect differences based on grade level. For both research questions, Tukey's Honestly Significant Difference statistics were used to facilitate multiple comparisons when significant ANOVA models emerged.

RQ3 investigated differences in students' knowledge, concern and behavior based on students' major area of study (apparel design/product development/textiles or apparel marketing/merchandising/retailing). As such, t-tests were used to compare knowledge, concern and behavior between apparel design/product development/textiles majors and apparel marketing/merchandising/retailing majors. *RQ4* addresses whether students believe they are learning enough about environmentally responsible behavior and investigates subject areas about which students would like to learn more. Therefore, frequencies were used to examine *RQ4.* For all inferential analyses, raw scores for knowledge, concern and behavior were summed to produce scores for each respondent on each focal variable (knowledge, concern, behavior).

Results

Sample Characteristics

Approximately 20% of respondents attended institutions in the Northeastern U.S., while 25% attended in Southeast, 37% in the Midwest, and 18% in the Western U.S. The majority of respondents were attending colleges or universities offering only an undergraduate program (57%), while the remaining 43% were attending colleges or universities that offer both an undergraduate and graduate program. Approximately 58% of respondents were majoring in apparel marketing, merchandising, or retailing, while 42% were majoring in apparel design, product development, or textiles. Approximately 12% of respondents were classified as freshmen, 10% were sophomores, 19% were juniors, and 59% were seniors.

***RQ1* – Source Where Students First Learned about Environmental Responsibility**

The results for our first research question suggest that the majority of respondents (approximately 58%) first learned about the concept of environmental responsibility through the mass media (Table 1). In contrast, approximately 31% of respondents report first learning about environmental responsibility in school. Far fewer respondents first learned through an organization or club (5%), parents (3%) or friends (3%).

Table 1: *RQ 1* Frequencies

		Frequency	Percent	Valid Percent	Cumulative Percent
	Mass media	202	56.3	58.2	58.2
	Parents	10	2.8	2.9	61.1
	Friends	9	2.5	2.6	63.7
	Organization	17	4.7	4.9	68.6
	School	109	30.4	31.4	100.0
	Total	347	96.7	100.0	
Missing		12	3.3		
Total		359	100.0		

The ANOVA model for environmentally responsible behavior generated a significant estimate (F=4.500, p<.001), while the models for environmental knowledge and environmental concern generated non-significant estimates (Table 2). Tukey HSD tests were used to investigate specific differences in each source of first learning about environmental responsibility and environmentally responsible behavior. Tukey HSD (Table 3) indicated a specific difference between respondents who first learned about environmental responsibility in school and those who first learned through the mass media (mean difference 1.970, p<.010).

Table 2: *RQ 1* ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Environmental Knowledge	Between Groups	23.266	4	5.817	1.079	.367
	Within Groups	1843.016	342	5.389		
	Total	1866.282	346			
Environmental Concern	Between Groups	189.219	4	47.305	1.553	.186
	Within Groups	10415.080	342	30.453		
	Total	10604.300	346			
Environmentally Responsible Behavior	Between Groups	457.752	4	114.438	4.500	.001*
	Within Groups	8696.795	342	25.429		
	Total	9154.548	346			

**p<.01*

Table 3: *RQ 1* Tukey HSD

Dependent Variable	(I) Source	(J) Source	Mean Difference (I-J)	Std. Error	Sig.
Environmentally Responsible Behavior	Mass media	Parents	-2.994	1.634	.356
		Friends	-4.150	1.718	.114
		Organization	-2.241	1.273	.399
		School	-1.970	.599	.010
	Parents	Mass media	2.994	1.634	.356
		Friends	-1.156	2.317	.987
		Organization	.753	2.010	.996
		School	1.024	1.666	.973
	Friends	Mass media	4.150	1.718	.114
		Parents	1.156	2.317	.987
		Organization	1.908	2.079	.890
		School	2.179	1.749	.724
	Organization	Mass media	2.241	1.273	.399
		Parents	-.753	2.010	.996
		Friends	-1.908	2.079	.890
		School	.271	1.315	1.000
	School	Mass media	1.970	.599	.010*
		Parents	-1.024	1.666	.973
		Friends	-2.179	1.749	.724
		Organization	-.271	1.315	1.000

**p<.01*

***RQ2* – Grade Level in School When Students First Learned about Environmental Responsibility**

The results for our second research question suggest that the majority of respondents first learned about the concept of environmental responsibility in middle school (42%) or high school (43%) (Table 4). In contrast, only 2% learned in elementary school. Finally, approximately 12% of respondents first learned in college.

Table 4: *RQ 2* Frequencies

		Frequency	Percent	Valid Percent	Cumulative Percent
	College	42	11.7	12.4	12.4
	High	146	40.7	42.9	55.3
	Middle	144	40.1	42.4	97.6
	Elementary	8	2.2	2.4	100.0
	Total	340	94.7	100.0	
Missing	System	19	5.3		
Total		359	100.0		

The ANOVA model for the effect of grade level when first learned about environmental responsibility generated a non-significant estimate (Table 5). Likewise, the ANOVA models for environmental concern and environmentally responsible behavior generated non-significant estimates. Therefore, our results suggest no relationship between grade level and any of the focal constructs.

Table 5: *RQ 2* ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Environmental Knowledge	Between Groups	33.314	3	11.105	2.083	.102
	Within Groups	1791.333	336	5.331		
	Total	1824.647	339			
Environmental Concern	Between Groups	41.184	3	13.728	.431	.731
	Within Groups	10699.592	336	31.844		
	Total	10740.776	339			
Environmentally Responsible Behavior	Between Groups	108.379	3	36.126	1.356	.256
	Within Groups	8951.795	336	26.642		
	Total	9060.174	339			

***RQ3* – Differences in Knowledge, Concern and/or Behavior Based on Students' Major**

The results for our third research question (Table 6) suggest no significant differences in environmental knowledge based on students' major. However, the results suggest that apparel design/product development/textiles majors display higher levels of environmental concern (t=-2.162, p<.031, mean difference, -1.284) and environmentally responsible behavior (t=-4.139, p.=.000, mean difference, -2.233).

Table 6: *RQ 3* T-test

	Levene's test for Equality of Variances		t-tests for Equality of Means			
	F	Sig.	t	df	Significance (2-tailed)	Mean difference
Environmental Knowledge	.178	.674[1]	-1.590	357	.113	-.396
Environmental Concern	.674	.412[1]	-2.162	357	.031*	-1.284
Environmentally Responsible Behavior	.074	.786[1]	-4.139	357	.000**	-2.233

[1] Non-significant Levene statistic assumes equal variances between groups.
**p<.05; **p<.001*

***RQ4* – Students' Beliefs about Learning**

The results for our final research question suggest that approximately 47% of respondents believe they are leaning enough about environmental responsibility in apparel and textile classes, while 34% were neutral, and the remaining 19% believe they should be learning more (Table 7). Across the board, more than three-quarters of respondents agreed that it is important for them to learn more about working conditions and responsible labor practices, consumerism, economic issues and environmental issues as they related to environmentally responsible behavior. Less than 1% of respondents disagreed with the importance of learning more about any of the aspects related to environmentally responsible behavior.

Table 7: *RQ 4* Frequencies

	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree(%)	Strongly agree (%)
I am learning enough about environmental responsibility in my apparel/textile classes.	2.2	16.9	33.7	31.5	15.7
It is important for me to learn about working conditions and responsible labor practices (fair pay, sweatshop labor, child labor, etc.) in the industry.	0	1.7	13.8	43.5	41.0
It is important for me to learn about consumerism (how to protect and inform consumers by requiring such practices as honest packaging and advertising, product guarantees, and improved safety standards) in the industry.	0	.8	8.4	47.8	43.0
It is important for me to learn about economic issues related to environmentally responsible behavior (fair and excessive profit, costs of production, etc.)	0	.8	8.5	45.4	45.4
It is important for me to learn about environmental issues (impacts of different fibers, ecological production methods) in the industry.	0	.8	10.1	43.5	45.5

Conclusions and Discussion

The findings of a recent study by Brosdahl & Carpenter (2010) suggest that environmental knowledge leads to environmental concern, which in turn can lead to environmentally responsible consumption behavior. These findings demonstrate that knowledge is an important precursor to environmentally responsible behavior. As such, the current exploratory study sought to assess how we as textile and apparel educators are performing in terms of educating our students with regard to the impacts of textile and apparel production and consumption on the environment.

Our results suggest that a majority of our students first learned about environmental responsibility through the mass media, or to a lesser degree, in school. Interestingly, the results also suggest that respondents who first learned about environmental responsibility in school were likely to engage in a significantly higher level of environmentally responsible behavior as compared to those who first learned through the mass media. Taken together, these findings suggest that while the mass media is useful in terms of getting the word out with regard to environmental responsibility, incorporating environmental responsibility into the curriculum is more likely to result in translation to responsible behavior. As such, textile and apparel educators should be mindful that the inclusion of environmental responsibility within the curriculum is important for encouraging responsible behavior.

The results also indicate that most of the respondents first learned about environmental responsibility while in middle school or high school. However, the results do not suggest that students' knowledge, concern or behavior differs based on the grade level when environmental responsibility was first introduced. This finding is encouraging in that it reinforces the idea that one is 'never too old to learn'. Our results suggest that students who first learned about environmental responsibility at an early age do not differ from those who learned later in life. Therefore, educators should take advantage of every opportunity to teach students about the importance of environment- responsible consumption behavior regardless of the grade level of the student.

Our results suggest that students majoring in apparel design, product development or textiles exhibit significantly higher levels of concern for the environment as well as environmentally responsible behavior as compared to their counterparts majoring in apparel merchandising, marketing or retailing. No difference was found between students in the two majors in terms of environmental knowledge. This was an interesting yet unanticipated result, however one which might be supported in the broader business education literature. In a study by Synodinos (1990), who investigated the differences between business students and environmental psychology students, results showed that business students were not only less knowledgeable about the environment, but also had less environmentally-oriented attitudes than environmental psychology students. In a similar study, Benton (1994), investigated the differences between business and non-business students' environmental attitudes and knowledge. The author found that although business students knew as much about the environmental as did the non-business students, the business majors appeared to care less, indicated less willingness to act in a pro-environmental manner, and reported less pro-environmental behavior than the non-business students.

Overall, it could be that students with a more business-oriented mindset may be less predisposed to possess pro-environmental attitudes although no explanation for this was explored in either study. Another possibility may be that as design/product development/textile students work at the beginning of the product development process, often making decisions that incorporate sustainable materials, their exposure, continued education about, and concern with sustainability may be reinforced more so than marketing and merchandising students who are more involved with getting the

product to the consumer, rather than the materials used in their production.

The results for our final research question suggest that while slightly less than half of the respondents feel they are learning enough about environmental responsibility in their apparel and textile courses, approximately one-third of respondents are neutral on the issue. Only 19% believe they should be learning *more*. This finding suggests that while educators are not failing in terms of conveying the importance of environmental responsibility, they can do better. Moreover, the results suggest that students recognize the importance of learning about working conditions, responsible labor practices, consumerism, economic and environmental issues related to environmentally responsible behavior.

Generation Y has embraced the environmental and sustainability movement like no generation before them, feeling a "personal responsibility for making a difference in the world" (Cone, 2006, p. 3). Their voices are being heard in many ways, made even more powerful by technology. Textile and apparel educators must understand what motivates this generation and how their collective social consciousness is being expressed in and outside of the classroom. It is apparent from the present research that textile and apparel undergraduates do have concern for the environment, as well as a basic understanding of how processes and products from the apparel industry influence the environment. As future leaders in the industry, these students will be in positions to design, develop and manage products that will influence how social, cultural, and environmental resources are being used.

Davis, Edmister, Sullivan and West (2003) stated that "The knowledge attained by an educated person carries with it the responsibility to ensure that knowledge is well used by society" (p. 1). As educators, it is our responsibility to ensure that students are given the knowledge, skills, and abilities to become an educated person and to leave the world a better place to live for future generations. Therefore, the ball is in the educators' court. It is up to us to deliver the knowledge which will impact our students' concern for the environment and will hopefully result in responsible behavior.

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