The consumer's perspective: Care and maintenance in 'use phase' of clothing apparel life cycle

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Background: Growing world population and increased living standards have driven the global apparel and textile (AT) industry to become one of the largest industrial complexes on the planet. The global web of AT production, lack of industry standards, and rampant consumerism have all contributed to increased levels of greenhouse gases (GHG) and the generation of large quantities of waste within the AT industry. This waste includes energy and natural resource use from care (laundering, ironing, and dry cleaning) and maintenance (mending and disposal). Furthermore, the 'use phase' has the largest overall negative impact on the environment (Claudio, 2007; BSR, 2009). Limited research exists on consumer practices of care and maintenance of clothing as well as significant understanding as to how these practices impact the environment for promoting sustainability. By increasing consumers' awareness of the impact on the clothing lifecycle there is opportunity improved sustainability practices within the fashion industry. This research sought to provide an understanding of consumer's current practices, as well as perceptions, connected to the 'use phase' of clothing in relation to environmental outlook.

Methods: Pretests were administered to 80 students in a Textiles course to refine and develop questions for national survey distribution and data collection. A national survey was delivered to Generation X and Y female consumers (Gen X = 38-53 years of age; Gen-Y = 24-37 years of age) via Qualtrics. For this study, 19 survey questions focusing on the care/laundering of clothing items were presented for participant response. The scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree).

Participants		n	%
Gender	Female	312	100%
Age	30-34	58	19%
Education	Highschool	104	36%
Current Living Area	Rural	158	58%
	>$10K	54	17%
Income	$20K-$29K	52	17%

Quantitative data from national survey responses (n=312) were analyzed in SPSS using descriptive statistics and one-way ANOVA to compare mean differences amongst consumers categorized as Altruistic, Ecoistic, or Egoistic. Table 1 outlines select survey items with statistical significance ($p<0.05$) organized by laundering focus (belief or behavior).

Table 1: ANOVA Results by Group

Item	Egoists (N=77)	Ecoist (N=115)	Altruist (N=120)	Total (N=312)	p-value
I use a machine washer and dryer to launder my clothing because it is easy.	4.00	4.23	4.28	4.19	0.11
Air drying clothing can eliminate energy waste and its impact on the environment.	3.48 [a]	4.16 [b]	3.88 [b]	3.88	0.00
More information about ways to sustainably dispose of clothes should be made available.	3.42	4.08 [b]	3.77 [c]	3.79	0.00
I understand the impact that harsh chemicals and soaps have on the environment.	3.56	3.86	3.58	3.68	0.07
I wish that more education would have been put in place during my childhood to better understand environmental issues related to my clothing.	3.34	3.71	3.38	3.49	0.04
How we launder and care for our clothing contributes to the sustainability issues we presently face.	3.39	3.55	3.33	3.42	0.23
I often air dry clothing to eliminate creases, wrinkles, or shrinkage.	3.47 [a]	3.29 [b]	3.16 [b]	3.28	0.28
I often air dry clothing to eliminate energy waste.	3.10	3.30	2.94	3.11	0.13
The temperature in which I launder my clothing does not impact the environment.	3.52 [a]	2.80 [b]	3.02 [b]	3.06	0.00
When laundering clothing I use detergents based on its environmental impact.	3.26 [a]	3.24 [a]	2.74 [b]	3.05	0.00
I feel that my laundering practices negatively affect the environment.	3.29 [a]	3.03 [ab]	2.77 [b]	2.99	0.00
My actions regarding laundering or care of clothing has no impact on the environment.	3.47 [a]	2.75 [b]	2.86 [b]	2.97	0.00
I am knowledgeable of the impact that laundering has on the environment due to childhood learning.	3.25 [a]	3.01 [a]	2.58 [b]	2.90	0.00
I am familiar with programs dedicated towards teaching customers how to care for clothes and promote and encourage sustainability.	3.36 [a]	2.76 [b]	2.44 [b]	2.79	0.00
Machine drying clothing has no environment impact.	3.31 [a]	2.58 [b]	2.63 [b]	2.78	0.00
I often hand-wash clothing to eliminate negative environmental impact involved with energy and water.	3.06 [a]	2.58 [b]	2.27 [b]	2.58	0.00

Note: letter groupings indincate significant difference between group means based on a Tukey's b post-test

Key Findings and Contributions:

All participants agree that they use a washer and dryer to launder clothing because it's easy (M = 4.19) and that they understand the impact that harsh chemicals and soaps have on the environment *(M = 3.68)*. While all participants agree that air drying clothing can eliminate energy waste and its impact on the environment *(M = 3.88)*, egoists had significantly lower agreement than the other two groups (M=3.48). Participants neither agreed nor disagreed that "how we launder and care for our clothing contributes to the sustainability issues we presently face" (M = 3.42) or that they themselves "air dry clothing to eliminate energy waste" (M=3.11), indicating a gap between beliefs and behaviors driven by lower perceived effectiveness of behavior related to laundry to address sustainability issues. Egoists had signficantly higher agreement with the pessimistic statement that "the temperature in which I launder my clothing does not impact the environment" (M=3.52) compared to the other two groups.
In terms of how educational programs can be used to improve sustainability of laundering, however, participants neither agree nor disagree that more secondary education should be put in

place to better educate the consumer on the environment and sustainability (M = 3.49). Ecoist had significantly stronger agreement that more information about how to sustainably dispose of clothes should be made available (M =4.08) compared with the other two groups but it was Egoists who had significantly higher agreement that they were "familiar with programs dedicated towards teaching consumers to care for clothes and promote and encourage sustainability" (M=3.36). Finally, Altruists were significantly less likely to agree that they are knowledgeable of the impact that laundering has on the environment due to childhood learning" (M=2.58).

Results from this survey can be used to develop a **universal** model to educate consumers on sustainable care and quality practices with their apparel items. These results show the consumers believe there is a need, are interested in more information to better understand how to sustainably care for and dispose of apparel items and have somewhat of an understanding of the negative impact caused by harsh chemicals and soap products. Furthermore, the retail industry can use this model to develop messaging content for consumers to increase longevity of products they purchase.

Future Studies/Implications: Future studies should include a higher percentage of urban and millennial participants to determine if there is a significant difference in laundry beliefs and behavior between urban and rural populations. Furthermore, little is known about the male population's beliefs on behaviors on laundering and clothing in both rural and urban areas. Lastly, an analysis of household laundering practices based on various demographics such as multi-generational households, income levels, and ethnicity should be closely examined.

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