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Creativity and sustainable apparel retail models: does consumers' tendency for creative choice counter-conformity matter in sustainability?

Chunmin Lang[1*], Cosette M. Armstrong[2] and Chuanlan Liu[3]

*Correspondence: cmlang@lsu.edu
[1] Department of Textiles, Apparel Design, & Merchandising, Louisiana State University, 143 Human Ecology, Baton Rouge, LA 70803, USA
Full list of author information is available at the end of the article

Abstract

The purpose of this study is to identify the relationships between consumer's tendency for creative choice counter-conformity (TCCC) with the acceptance of new sustainable apparel retail models, including sale of redesigned clothing, clothing repair/alteration, renting, swapping, and style consultancy services, in addition to determining the role of demographics in the relationships. Three major hypotheses were developed to address these relationships. An online survey was conducted with 431 females in the United States. A series of multiple regression analyses and multi-group Chi square difference tests were employed to test the proposed hypotheses. The results indicate TCCC has a positive influence on the intention to adopt all five of the sustainable retail models, and the demographics, including age, income and education significantly moderate the relationships between TCCC and the adoption of new sustainable retail models. The study emphasizes the role of creative expression in potential sustainable apparel purchasing behavior and provides strategies used to promote retailing models that are requisite to sustainability.

Keywords: Sustainability, Creative choice counter-conformity, Redesigned clothing, Repair/alteration, Clothing renting, Clothing swapping, Style consultancy services

Introduction

The consumer's need for novelty and newness has a great impact on the economic vigor of the fashion industry (Kawamura 2005). These needs are facilitated in the fast fashion system by providing affordable apparel poised for a short life. Consequently, style and fashion considerations have increased, resulting in an upswing in consumption. Although the fast fashion strategy makes it easy for consumers to purchase apparel products with a higher rate of frequency, it also brings pressure to follow fast-changing trends. New styles quickly replace the old, and are introduced into the market, stimulating continually emerging desires of consumers for novelty and change (Joy et al. 2012). These goods are purchased frequently and disposed of or forgotten quickly by the consumer, providing only a short-term experience of novelty and newness (Birtwistle and Moore 2007). More concerning, many consumers continuously purchase the latest

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fashions in excess of real needs and even their financial capacity. Finally, this affordability is made possible only via lower manufacturing and labor costs, which embodies much risk for human welfare (Joy et al. 2012). Although increased sales are good for the economy, fast fashion has bolstered a type of social syndrome as much as an environmental threat. Not only does this system perpetuate a race to bottom for the global work force, it also prompts a consumer culture of product detachment, satisfaction only being experienced in short-term and fleeting spikes that is inevitably followed by the unsatisfied drive to consume again (Armstrong et al. 2016a). To align with sustainable development, the industry must develop new business models that better facilitate human needs without the environmental chaos (Armstrong et al. 2015).

The desire for novelty and newness is inherently embodied in the human need for creation (Max-Neef 1985). Qualities such as inventiveness, boldness, and imagination (Max-Neef 1985) that are associated with creativity can be observed in the fashion context as the consumer continually updates, revises, and reinvents the self with the use of fashion goods. In the meantime, fashion marketers keep creating and supplying new products, driving consumers to want and consume and dispose of more fashion products to satisfy their needs for distinction, creating barriers to sustainable consumption (Workman and Kidd 2000). Notably, consumers' desire for novelty drives them to purchase more affordable fashion products with higher frequency, which has increased premature apparel disposal. More natural resources are needed in order to fuel consumers' need for changes, which contributes to serious environmental consequences (Schor 2005). On the other hand, the potential of creativity has been identified to stimulate more sustainable patterns of consumption (Ruppert-Stroescu et al. 2015), such as reuse or redesign of old clothing and seeking innovative ways to wear existing clothing. Finding more effective ways to satisfy these needs for uniqueness with less fashion products consumed and disposed could resolve the environmental issues associated with the excess production, consumption, and disposal as well as the social ills perpetuated by detached and unsatisfying fashion consumption. One of the approaches is to provide fashion products through different potential sustainable retail models to satisfy individual consumers' needs for uniqueness via creative choice counter-conformity (Tian et al. 2001). In the fashion consumption context, creative choice counter-conformity refers to consumers buying original, novel, or unique fashion clothing, or putting clothing and accessories into different ensembles to reflect their unique identity and personal styles. Therefore, there is a critical need to examine how the industry may become more responsive to this dimension of personality. This study proposes and explores a variety of new potential sustainable retail models and how individual consumers' tendency for creative choice counter-conformity (TCCC), may be satisfied with less material throughput facilitated by sustainable retail models.

The purpose of this study is to identify the relationships between consumer's TCCC with the intention to accept new sustainable apparel retail models and to determine the roles of demographics, including age, income and education in the relationships. The findings of this study will provide a better understanding of the role of creative expression in potential sustainable apparel purchasing behavior. This understanding will contribute to future strategies used to promote retailing models that are requisite to sustainability.

Literature review

Sustainable consumption

One problem facing sustainable apparel consumption is artificial obsolescence (Ertekin and Atik 2015). A great deal of clothing is discarded because it is considered out of style or no longer trendy. Consumers continuously purchase fashion products which exceed their financial capacity, all in an effort to merely ensure that they are fulfilling their need to be unique, novel, and trendy (Joy et al. 2012). To approach a sustainable state, it will be required of consumers to reduce their level of consumption or modify the kinds of goods or the ways they consume (Pogutz and Micale 2011). Sustainable consumption refers not only to sustainability in purchasing, but also to activities in the post-purchase system, which involves using, re-using, recycling and discarding (Ha-Brookshire and Hodges 2009; Liu et al. 2012). In the apparel industry, reducing the frequency of fashion consumption or modifying consumption patterns, such as renting clothing instead of buying clothing for a one-time event, might be a viable approach in an attempt to achieve a sustainable consumption state. A previous study has also identified several key opportunities for the apparel industry and consumers to save money, as well as becoming more sustainable. These opportunities include reducing the environmental impacts of laundry, extending the lifespan of clothing, increasing market supply and demand for used apparel items, and reducing waste and landfill disposal (WRAP 2011).

Implementation strategies toward the realization of sustainable consumption have become a top priority in the past two decades. A high importance has been placed on the aspects of using habits and recycling behaviors by researchers in an attempt to increase product lifespans and reduce waste (Bianchi and Birtwistle 2010; Birtwistle and Moore 2007). Sustainable apparel usage may include behaviors such as reducing laundry frequency, wearing old clothing in new ways, using clothing products longer (Tilikidou and Delistavrou 2004), or swapping clothes (Mont 2004). WRAP (2011) has also put forward a number of revenue generation opportunities for the apparel industry, such as sale of re-designed clothing items, services of teaching consumers to use old clothing to generate different looks, affordable services of clothing repair/alteration, as well as collection of pre-owned apparel items for new uses. Recycling calls for extending the life of products by reusing or redesigning, instead of disposing of them. However, the fast fashion strategy makes it possible for more apparel products to be produced, which make their way onto store shelves and are then disposed of by consumers in a much shorter period of time resulting in increased material output and waste volumes (Birtwistle and Moore 2007). Therefore, extending the lifespan of apparel goods becomes one of the most important ways to reduce apparel waste.

The new sustainable apparel retail models

Sustainable purchasing behaviors refer not only to buying environmentally friendly products, but also to pursuing the purchasing pattern of buying less (Tilikidou and Delistavrou 2004). One of the goals of sustainable consumption is reducing the consumption of resources while maintaining a certain quality of life. This goal can be achieved by switching consumers' consumption focus from the premature disposal of tangible products to taking advantage of available product-service systems, which specialize in promoting sustainable consumption practices (Heiskanen and Pantzar 1997).

A number of opportunities have been put forth for the apparel industry to develop alternative revenue streams while reducing the volume of new production and flow of merchandising to be more sustainable (WRAP 2011). Such alternative revenue streams can be generated from the sale of pre-owned apparel, services that offer the consumer different ways to gain greater use of items already owned, accessible and affordable alteration and repair services, and collection of used clothing for recycle and reuse. An alternative sustainable concept for business named product-service system (PSS) has been under investigation and practices (Tukker 2004). PSS is defined as the combination of tangible products and intangible services, which jointly satisfy consumer needs with more emphasis placed on intangible services (Tukker 2004). PSS utilizes the concepts such as product renting or leasing, redesigning, maintaining, or sharing to reduce reliance on natural resources as well as increasing product longevity (Heiskanen and Jalas 2003; Tukker 2004). PSS offers a variety of benefits, such as reducing the material flows in production and consumption by creating product-service combinations that provide consumers with the same level of performance, but with a lower impact on the environment (Catulli 2012; Mont 2002).

A variety of PSS models have been implicated in some product categories, such as car-sharing services (Yoon et al. 2012), transportation services and car rentals (Rexfelt and Ornäs 2009), washing services and sharing of power tools (Mont 2004). In addition, recent research has examined motivations and barriers to each PSS model (Armstrong et al. 2015; Edbring et al. 2016); consumers' perception of use-oriented PSS models (Armstrong et al. 2016b). Environmental concerns, social influence and emotional value were identified as the major factors that may increase consumer interest in PSS models related to apparel (Niinimäki and Hassi 2011). But empirical study is needed to investigate the role of creativity in the acceptance of new potential sustainable retail models for apparel products, and to identify how the need for creativity motivates consumer interest in the new sustainable retail models, as well as what effect demographics have on the relationship.

According to the concept and the features of PSS, five new potential sustainable retail models can be conceptualized in the context of fashion consumption (see Table 1). The new retail models aim to meet consumers' need for newness and novelty, as well as to lower material consuming levels, and to increase the lifespan of existing clothing products. The new retail models have the potential to minimize the negative impacts from consumers' overconsumption driven by needs and wants (Mont 2002). The sale of redesigned clothing model (M1) sell clothing redesigned or repurposed from old clothing items to consumers; the clothing repair/alteration service model (M2) provides

Table 1 The new sustainable apparel retail models

Models	Description	Sustainability objectives
M1	Sale of redesigned clothing	Increase product longevity and interest in reuse; reduce landfill and material waste
M2	Clothing repair/alteration services	
M3	Clothing renting	Increase use intensity; reduce landfill waste
M4	Clothing swapping	
M5	Style consultancy services	Increase interest in reuse; reduce landfill waste

consumers with repair and/or tailoring and alteration services to maintain clothing products over time. M1 and M2 are based on product-oriented PSS services (Armstrong et al. 2015; Tukker 2004). The objectives of M1 and M2 are to increase product longevity, interest in reuse, and to reduce landfill and material waste at the end of consumer interest. From clothing renting model (M3), consumers can rent a certain number of fashionable clothing items for a short time period. Clothing swapping model (M4) organizes clothing swap events by selling tickets to consumers for events, where they can bring un-wanted clothing items that are in good condition to swap with others. The purposes of M3 and M4 are to increase dematerialization with the decrease in personal ownership and the increase in products' use intensity with multiple users involved. Finally, style consultancy service model (M5) provide style consulting, in-store and online, where consumers may receive advice from professional stylists about how to continue to wear their existing wardrobe in new and different ways. The goal of M5 is to increase interest in reuse of old clothing items thereby reducing landfill waste. M3, M4 and M5 are based on use-oriented PSS services (Armstrong et al. 2015; Tukker 2004).

Tendency for creative choice counter-conformity (TCCC) and sustainable consumption

The tendency of individuals to pursue dissimilarity from others in a market through purchase of original, novel, or unique consumer goods for the establishment, and enhancement of the individual's self-identity and social image is referred to as consumer need for uniqueness (Goldsmith et al. 2006; Tian et al. 2001). Fletcher (2012) argues that clothing is a symbol utilized for expressing creativity, innovation, and experimentation and that people who are involved with this type of symbolic consumption of clothing are also very motivated by fashion (change/newness). Therefore, meeting the need for uniqueness is one of the dominant motivations for fashion clothing consumption. Although consumer need for uniqueness is identified as a multidimensional construct consisting of three dimensions including creative choice counter-conformity, unpopular choice counter-conformity, and avoidance of similarity (Tian et al. 2001), only the tendency for creative choice counter-conformity has been identified as having significant relationship with consumers' market related behavior (Gentina et al. 2014; Goldsmith et al. 2006). Therefore, the current study focuses on the dimension of tendency for creative choice counter-conformity (TCCC).

Further, an individual who prefers creative choices would likely act in a way that would allow the person to stand out from others. Dressing in a different way is often considered to be a non-verbal but visible way to show individual differences (Workman and Kidd 2000). In fact, fashion clothing consumption has been considered as a significant consumption component for individuals to establish, maintain, or improve their identities (Roach-Higgins and Eicher 1992). Apparel consumption converges strongly with the construction of one's own ideas and individuality. To deeply express one's own personality, the clothing style of the individual is often of great importance. Being creative is considered to be an important factor for the consumer who prefers to be different from others (Tian et al. 2001). In the fashion market, TCCC refers to creating, maintaining, or improving a personal style with unique identity through the purchase of original, novel, or unique fashion clothing items (Kron 1983; Roach-Higgins and Eicher 1992), or creating unique clothing ensembles using available items. Such motivational tendency might

drive the person to make use of available resources creatively in every step of the consumer decision-making process, including product information search, product selection, buying channel selection, post-purchase usage with the ultimate objective to make him or her stand out from others.

Consumers' need for novelty and change leads to the increased rate of purchase frequency and apparel products being used for shorter periods of time (Ritch and Schroder 2012). Recently, however, creativity has been identified as being linked to increasing reuse of existing clothing and reducing consumption of new apparel products (Ruppert-Stroescu et al. 2015). When developing sustainable retail strategies, these human needs should be considered prominently. This is especially relevant for consumers who already have the need for creativity and currently use or over-use fashion to accomplish these desires. In fact, creative approaches to meet high frequency of fashion demand do not necessarily require more resources. On the contrary, resource constraints may inspire and activate individuals' latent creativity to realize a better solution. For instance, Sellier and Dahl (2011) research in the knitting and crafting settings found that restricting the choice of creative inputs actually enhances creativity for experienced consumers. Consequently, one can assume that pursuing unique fashion clothing styles does not necessarily rely on continual purchases of new items. When promoting sustainable fashion clothing consumption while not sacrificing retail profits, developing new, innovative model of retailing need to focus on better way to satisfy individuals' need for novelty other than continuously selling new products. Hence, this study put forth innovative retailing strategies and examines what can make consumers accept these new retail business models to engage in sustainability while enjoying and increasing creativity.

In the current study, five sustainable retailing concepts are explored: sale of redesigned clothing (M1), repair/alteration services (M2), renting (M3), swapping (M4), and style consultancy services (M5). Research has found that consumers' TCCC affect their fashion clothing-related market behaviors (Gentina et al. 2014; Goldsmith et al. 2006); need for creativity motivates consumers' tendency to value new and innovative products and appreciate uniqueness. Therefore, it is reasonable to assume that this personal psychological characteristic will also affect individual acceptance of the new sustainable retail models. Redesigned clothing could result in the creation of one-of-a-kind new products produced from old materials, which may provide unique products to consumers who prefer creative choices. However, some other retail models, such as repair/alteration services and renting, may not be able to attract consumers who prefer creative choices in their apparel selection. Although repair/alteration services may extend the lifespan of old clothing, but consumers who need for novelty would become bored with and lose interest in what they already own for some time. Clothing renting may provide more opportunities for consumers to be able to access fashion trends with relatively low cost, but consumers who prefer to look different from others by dressing might hesitate to rent clothing due to the increased likelihood of wearing same garments to others. Similarly, the retail models that encourage consumers to swap used clothing products, may be problematic for people who seek ways to be different from others. Nevertheless, the retail model, style consultancy service, may provide consumers with creative ideas on how to wear their clothing in different ways, which might be attractive for consumers who prefer creative choices.

Demographic variables are associated with personality characteristics and also play an important role in market segmentation, especially with regard to sustainable consumption (Balderjahn 1988). For instance, younger consumers generally have positive attitudes towards new fashion trends, and are more fashion innovative than are older consumers (Law et al. 2001; Birtwistle and Moore 2007). In general, younger consumers are more innovative and likely to adopt new concepts, products, and trends. They prefer to buy a higher quantity of lower-priced but fashionable clothing to stay current with the latest trends as opposed to older adults who would prefer to buy higher quality clothing products with less concern for quantity (Bhardwaj and Fairhurst 2010).

Consumers' needs for uniqueness are reflected by their innovativeness-the tendency to buy new products more often and more quickly (Fromkin 1971; Roehrich 2004). Consumers at different ages, with different incomes, and education levels show different levels of innovativeness (Tellis et al. 2009). Younger consumers, higher income earners, and individuals with higher education show higher innovativeness, which reflects higher TCCC. Consequently, the degree to which TCCC may affect the acceptance of the specified new retail models may be different across consumer groups at different ages, incomes, and education levels. Therefore, demographic variables, including age, income, and education are considered in the present study, examining the role of demographic variables in predicting consumers' willingness to accept the new potential sustainable retail models. Therefore, the following hypotheses were proposed:

H1 Consumers' intention to accept the new sustainable apparel retail models: (a) M1-sale of redesigned clothing, (b) M2-clothing repair/alteration service, (c) M3-clothing renting, (d) M4-clothing swapping, and (e) M5-style consultancy service is significantly influenced by consumers' TCCC.

H2 Consumers' intention to accept the new sustainable apparel retail models: (a) M1-sale of redesigned clothing, (b) M2-clothing repair/alteration service, (c) M3-clothing renting, (d) M4-clothing swapping, and (e) M5-style consultancy service is significantly influenced by demographic variables (a) age (b) income (c) education.

H3 The salience of effects between consumers' TCCC and intention to accept the new sustainable apparel retail models will be different across groups (a) at different ages; (b) with different income; or (c) with different level of education.

Methods

Sample and data collection

A convenience sampling approach was utilized; and data were collected through online survey in the US Data cleaning generated a sample with 431 usable responses out of 552 returned responses, with overall completion rate of 78.08 %. To obtain a representative sample, a consumer panel of the target population was purchased from an online research firm. Female consumers are generally more involved in fashion products (O' Cass 2004), so women who are living in the United States were recruited for this study. To maintain a balance of each age group, a stratified sampling was used to recruit participants from each age group. Each respondent was given a brief description of the study, explaining Institutional Review Board approval and the implications of her participation.

Instrument development

The questionnaire included three parts concerning TCCC, willingness to accept the new sustainable apparel retail models, and demographics. Multi-item scales were developed to measure TCCC. Five hypothetical scenario statements were developed for the new sustainable apparel retail models (see Table 2), and participants were requested to rate the level of willingness to accept each of them by responding to the question, "I intend to purchase or consider purchasing (the new sustainable apparel retail models) during the next 12 months?" Purposely, to avoid neutral option, all items were measured utilizing a 6-point Likert scale 1 = "strongly disagree" to 6 = "strongly agree."

Items measuring tendency for creative choice counter-conformity (TCCC)

Five statements related to creative choices adopted from (Tian et al. 2001; Tian and McKenzie 2001) were utilized to measure consumers' TCCC in this study. The participants were requested to respond to statements such as "I often look for one-of-a kind products or brands so that I create a style that is all my own"; "I often combine possessions in such a way that I create a personal image for myself that cannot be duplicated"; and "I often try to find a more interesting version of ordinary products because I enjoy being original".

Data analysis

The scale of TCCC exhibited a high reliability coefficient with alpha = 0.944, which exceeded the recommended 0.70 cut off point (Cortina 1993), confirming the reliability of measurement. To predict the intention toward each sustainable retail model in response to changes in tendency for creative choice counter-conformity (TCCC) and demographics, a series of multiple regression analyses were performed in this research to test H1 and H2 (Forza 2002). Further, to test the moderating effects of age, income and education on the relationships between TCCC and the intention toward each sustainable apparel retail model (H3), Chi square (χ^2) difference test was employed (Forza 2002).

Table 2 Scenario descriptions for the new sustainable retail models

Models	Description	Hypothetical scenario
M1	Sale of redesigned clothing	A clothing store provides one-of-kind products that are created from used clothing items
M2	Clothing repair/alteration services	A clothing store provides repair and/or tailoring, alterations services to maintain your garment products over time
M3	Clothing renting	A clothing store provides a rental service for consumers to rent certain number of garments for a short time
M4	Clothing swapping	Tickets are sold for a clothing swap event, where consumers can bring some unwanted clothing items that are in good condition to swap with others
M5	Style consultancy services	A clothing store offers a style consultancy service in-store and online, where consumers may receive advice about how to continue to wear their existing wardrobe in new and different ways

Based on the literature, age, income and education are all related to TCCC; therefore, the three demographic factors were also collected in this study. Table 3 presents the characteristics of the respondents.

Results

For the sale of redesigned clothing, the regression model was significant [$R^2 = 0.176$, F (4, 428) = 22.599, $p < 0.000$] and explained 17.6 % of the variance. Education ($\beta = -0.209$, $p < 0.013$) was negatively related to redesigned clothing, while TCCC ($\beta = 0.424$, $p < 0.000$) was significantly related to the intention to accept redesigned clothing in a positive way. For clothing repair/alteration service, the model was significant [$R^2 = 0.073$, F (4, 428) = 8.407, $p < 0.000$] and explained 7.3 % of the variance. Both income ($\beta = 0.205$, $p < 0.021$) and TCCC ($\beta = 0.283$, $p < 0.000$) were significantly associated with of the intention to accept repair/alteration service in a positive way. For clothing renting, the model was found to be significant [$R^2 = 0.031$, F (4, 428) = 3.348, $p < 0.01$] and explained 3.1 % of the variance. Age ($\beta = -0.178$, $p < 0.034$) was negatively related to renting clothing, but TCCC ($\beta = 0.136$, $p < 0.014$) was positively associated with the intention to rent clothing. The model for clothing swapping [$R^2 = 0.040$, F (4, 428) = 4.473, $p < 0.002$] and style consultancy services [$R^2 = 0.078$, F (4, 428) = 9.029, $p < 0.000$] were both significant, and explained 4 and 7.8 % of the variance respectively. However, only TCCC was found to be significantly positive related to clothing swapping ($\beta = 0.175$, $p < 0.003$) and style consultancy services ($\beta = 0.298$, $p < 0.000$); the demographic variables were not related to clothing swapping and style consultancy services. Therefore, H1 was supported, but H2 was partly supported.

In order to test the moderating role of demographics, three multi-group Chi square difference tests were conducted. The results showed that age ($\chi^2_{diff} = 41.842$, $df_{\text{diff}} = 14$, $p < 0.000$), income ($\chi^2_{diff} = 44.078$, $df_{\text{diff}} = 14$, $p < 0.000$), and education ($\chi^2_{diff} = 39.125$, $df_{\text{diff}} = 14$, $p < 0.000$) all have significant moderating effect on the relationships between

Table 3 Demographic summary of participants (N = 431)

Demographics	Frequency	Percentage
Age		
18–34	134	31.1
35–49	146	33.9
50–68	151	35.0
Highest education		
High school graduate or lower	45	10.4
Some college	130	30.2
College graduate	161	37.4
Masters/MBA	72	16.7
Ph.D.	23	5.3
Annual household income		
Less than US $39,999	101	23.4
US $40,000–US $59,999	86	20.0
US $60,000–US $79,999	64	14.8
US $80,000–US $99,999	54	12.5
More than US $100,000	126	29.2

consumers' TCCC with their intention to accept each sustainable apparel retail model. In sum, the multiple-group analysis results indicate that age, income and education play a moderating role in the relationships between TCCC with the intention to accept each sustainable apparel retail model. Therefore, H3a, b, and c were all supported. Table 4 presents the results of hypotheses test, only significant relationships are presented.

Further, a series of one-way multivariate analysis of variance (MANOVA) were employed, respectively, to compare the differences among difference age, income and education groups on the intention in patronage of the five new sustainable apparel retail models. The Box's M value of 89.796 was associated with a p value of 0.042, which was interpreted as non-significant based on Huberty and Petoskey (2000) guideline. Thus, the covariance matrices between the education groups were assumed to be equal for the purposes of the MANOVA. Results indicated that there was a statistically significant difference on the intention in patronage of the five new sustainable apparel retail models between the education groups [F (20, 1700) = 1.914, p < 0.009; Wilks'Λ = 0.914, partial η2 = 0.022]. Further, Tukey post hoc analysis indicated that participants who got Master/MBA education are less likely to accept redesigned clothing when compared with those who get high school graduate (p < 0.009), some college education (p < 0.001), college graduate (p < 0.042). However, no significant differences were found on the intention to accept the five new sustainable retail models between either income or age groups.

In addition, a further SEM analysis was conducted to test the relationships between demographic factors and intention to the overall sustainable retail concept. Given the acceptable model fit ($\chi^2_{(df=25)} = 53.829$, p = 0.0001; RMSEA = 0.060; CFI = 0.949; TLI = 0.927; SRMR = 0.036), the individual paths of the model were evaluated. The

Table 4 Results of hypotheses

Hypotheses	β	p value	Hypotheses testing results
H1 Consumers' intention to accept the new sustainable apparel retail models:			
(*a*) Sale of redesigned clothing	0.424	<0.000***	Supported
(*b*) Clothing repair/alteration service	0.283	<0.000***	Supported
(*c*) Clothing renting	0.136	<0.014*	Supported
(*d*) Clothing swapping	0.175	<0.003**	Supported
(*e*) Style consultancy service is significantly influenced by consumers' tendency for creative choice counter-conformity (TCCC)	0.298	<0.000***	Supported
H2ac Consumers' intention to accept the new sustainable retail model (*a*) sale of redesigned clothing is significantly influenced by (*c*) education.	−0.209	p < 0.013*	Supported
H2bb Consumers' intention to accept the new sustainable retail model (*b*) clothing repair/alteration service is significantly influenced by (*b*) income.	0.205	p < 0.021*	Supported
H2ca Consumers' intention to accept the new sustainable retail model (c) clothing renting is significantly influence by (*a*) age.	−0.178	p < 0.034*	Supported
H3 The salience of effects between consumers' TCCC and intention to accept the new sustainable apparel retail models will be different across groups			
(*a*) At different ages	$\chi^2_{diff} = 41.842$	<0.000***	Supported
(*b*) With different income	$\chi^2_{diff} = 44.078$	<0.000***	Supported
(*c*) With different level of education	$\chi^2_{diff} = 39.125$	<0.000***	Supported

* p < 0.05, ** p < 0.01, *** p < 0.001

analysis results indicated that age ($\beta = -0.125$, $p < 0.020$) was negatively related to the intention to overall sustainable retail concept, which indicates that younger women are more likely to adopt the new sustainable retail models compared with older women. However, there are no significant relationships between education and income with the new sustainable retail models.

Discussion

According to the findings, tendency for creative choice counter-conformity (TCCC) has a positive influence on the intention to adopt all five sustainable apparel retail models. Consumers who prefer creative choices would likely act in a way that would allow them to stand out from the crowd by making creative choices and dressing in a different way from most (Workman and Kidd 2000). Sale of redesigned clothing (M1) could provide one-of-a-kind new products redesigned from old materials, therefore, it is attractive to consumers who prefer creative choices. Surprisingly, participants who have higher TCCC indicated interests in repair/alteration services (M2) and renting clothing (M3), which is not as predicted. The clothing repair/alteration services seek to extend the lifespan of clothing by providing consumers with repair services of old apparel items, thus, we assumed that consumers with higher TCCC, who are always most attracted to newness, might be resistant to this service, because they would become bored with and lose interest in what they already own for some time. A possible explanation may lie in the complexity of the factors, which determine the intentions toward a new sustainable behavior. There may be other factors that encourage consumers' intentions of trying this service. For example, compared with purchasing new fashionable clothing, repair/alteration may cost less. Emotional attachment to some clothing items may also drive consumers to take advantage of repair/alteration services in order to keep those clothing items active for a longer period of time (Armstrong et al. 2016a). Although renting clothing may increase the likelihood of wearing similar garments to others, this service provides more opportunities for consumers to keep up with fashion trends at relatively low cost. Though, obtaining clothing via swapping (M4) may result in wearing old clothing swapped with others, this retail system is an innovative and a novel idea to many people. Participating in this creative retail model would provide an ideal way to express one's individuality. As predicted, TCCC is positively associated with the adoption of style consultancy services (M5). Style consultancy can provide consumers with new ideas about how to wear clothing in different ways. Adopting this business model may also be a good means to express uniqueness and creativity, which may encourage consumers' curiosity in this retail model. Those who have higher TCCC may also desire a more active role in their clothing choice to find different ways to use their existing clothing items.

People who have higher TCCC would likely to show their individuality. Dressing in a different way is often considered to be a way of being different from others (Workman and Kidd 2000). To appeal to consumers who have higher TCCC, marketers should focus on the new and creative sustainable retail models. For the retail model of redesigned clothing, emphasizing one-of-a-kind new products redesigned from old materials would be ideal. Marketers who provide repair/alteration services could point out the emotional value of this service. For instance, repair/alteration can help consumers to repair or alterate the old clothing that are important to them, so that they can keep

their special clothing for longer. For the retail model of clothing renting, highlighting that renting can provide latest fashion items and satisfy a need for newness would be a positive strategy. To target the niche market that has higher TCCC, marketing for clothing swaps could highlight the novelty and innovation of the acquisition process. Retailers providing style consultancy services can persuade consumers with new ideas about how to wear their clothing in different ways, furthering encouraging the expression of their uniqueness. But, people who embody creative choice may prefer a more active role in their clothing choices and may not want anyone else telling them what to do. If a marketer promotes style consultancy service to consumers who have higher TCCC, such as younger consumers, higher income earners, and individuals with higher education (Tellis et al. 2009), they will need to sell the creative features and emphasize the freedom to choose one's own style.

This study further indicates that demographics, including age, education and income moderate the influence of TCCC on adoption of each retail model. For consumers who are aged 35–49, and with relatively higher annual income, the influence of TCCC on the intention of adopting each retail model is more evident. It would be ideal for some retail models, such as sale of redesigned clothing, clothing repair/alteration and clothing swapping, to target those consumers as a priority. To attract these consumers, retailers who sell redesigned clothing and provide repair/alteration service can highlight the benefits of providing one-of-a-kind redesigned or altered clothing items from old clothing. Furthermore, for younger women aged 18–34, TCCC plays a positive role in their intention to adopt redesigned clothing. These consumers have relatively lower income but desire to stand out from others by wearing different clothing. To target these consumers, underlining the economic benefits would be a good strategy.

Interestingly, TCCC positively influences the intention to purchase redesigned clothing for participants who have less education. On the other hand, TCCC only significantly impacts the intention to repair/alteration service for participants who have college education. This indicates that education is an important consideration for the relationship between TCCC and sale of redesigned clothing and repair/alteration services. Usually people who have higher TCCC would like to display their differentiation from others. Purchasing redesigned clothing may provide an ideal way for them to get one-of-a-kind clothing at relatively low cost. For those who have higher education, price might not be their concern. Tendency for creative choice counter-conformity influences their intention to purchase redesigned clothing because this particular behavior is different from usual consumption behavior.

In addition, the statistical results revealed that age was negatively associated with the overall intention to adopt sustainable apparel retail models, which is not consistent with a previous study (Samdahl and Robertson 1989). Although education and income are both identified to be important factors in consumers' decision-making processes, as it pertains to socially responsible behavior (Arcury 1990), no significant impact was found in this study. In the current study, the new sustainable apparel retail models were not necessarily framed with an environmental or social reference point. But instead, this study separated the pro-environmental marketing from the model itself and simply presented the business models. Though the new sustainable apparel retail models aim to minimize the environmental and social impact of consumption by lowering material

consumption levels, not many people relate these retail concepts with sustainable behaviors. This might be the reason that the relationships between age, education and income with the overall intention to adoption of the new sustainable retail models were not as expected.

The negative relationship between age and the new sustainable apparel retail models indicates that older adults would less likely to be interested in the new sustainable retail models. A possible explanation might be that younger individuals are more open-minded toward new ideas when compared with older adults (Foster 2013). Although some retailing patterns, such as renting and repair/alteration are emerging and available, the overall concept of sustainable retail models are still new to the market. The sale of redesigned clothing, style consultancy services, and clothing swapping are still in their infancy. Also, older adults who prefer to buy higher quality clothing products have less concern for quantity (Bhardwaj and Fairhurst 2010), which might reduce the demand for repair/alteration services. Another explanation would be, when compared to younger people, older women may possess sewing skills and are able to repair or alter their old clothing themselves, which may also reduce their interest in purchasing a repair/alteration service from retailers.

Conclusions

This research adds a unique contribution to the body of knowledge on sustainable consumption in terms of the potential sustainable apparel product-service retail models. The new sustainable retail models advocate less material intensive consumption by increasing product longevity, and many of the models encourage consumers to focus on services instead of tangible products. These new models may prove beneficial by decreasing natural resource use in the apparel industry and by providing an innovative way to meet consumers' fashion needs, and also by better satisfying these needs through unique and personalized utilization options.

Most importantly, the findings of this study confirmed the effect of consumer's TCCC and demographics on the acceptance of new sustainable apparel retail models. The results indicate that individuals who have a higher tendency for creative choice would be more likely to accept the new sustainable retail models. The new sustainable retail models provide marketers and retailers new directions to support sustainable development and simultaneously offer a new innovative strategy. Developing novel and innovative ideas to help consumers reformat their wardrobe through restyling, reusing and redesigning could maintain fashion interest, generate business revenue as well as reduce material consumption.

This study has several limitations that may need more study in future research. Firstly, only women who are living in the United States were recruited for this study, using a convenience sample and online survey methods. That might limit the generalizability of the results. Further study might examine a broader sample size across both genders. Although we controlled the proportion within each age group to maintain a balance the age groups; but because quota was only set up for age groups, we were not able to ensure with confidence that the participants were a fair representation of all of the levels of income and education. The majority of participants had some college experience or had graduated college. Future research might consider balancing the proportion of each

ethnic, income and education groups, to gain further insight into the influence of other demographics.

Authors' contributions

CML designed and conducted the research, collected and analyzed the data and drafted the manuscript. CMA supervised research design and conduction, drafted the introduction, revised and improved the manuscript. CLL drafted literature review of TCCC part, and contributed on the improvement and revision of the manuscript. All authors read and approved the final manuscript.

Author details

[1] Department of Textiles, Apparel Design, & Merchandising, Louisiana State University, 143 Human Ecology, Baton Rouge, LA 70803, USA. [2] Department of Design, Housing, & Merchandising, Oklahoma State University, 434A Human Sciences, Stillwater, OK 74078-6142, USA. [3] Department of Textiles, Apparel Design, & Merchandising, Louisiana State University, 145 Human Ecology, Baton Rouge, LA 70803, USA.

Competing interests

The authors declare that they have no competing interests.

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