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Clothing disposal behavior of Taiwanese consumers with respect to environmental protection and sustainability

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Abstract

Large quantities of clothing are routinely discarded, ending up in landfills that contribute to the environmental crisis; hence, it is worthwhile investigating how to dispose of this waste in a sustainable way. This study considered environmental values and prosocial behavior from a behaviorism theory. The aim was to set up an environmental protection model for the sustainable disposal of consumer clothing. A structural equation modeling analysis of 407 undergraduate and postgraduate consumer data in Taiwan revealed that consumers' choice to donate clothing was influenced by environmental values and prosocial behaviors. Clothing resale was influenced by the factor of prosocial behavior. However, prosocial consumers used other disposal patterns instead of resale. Clothing reuse was not influenced by either environmental values or prosocial behavior. The results indicated that environmental values and prosocial behavior did in fact influence consumers' choices regarding clothing donation. However, prosocial consumers used other disposal patterns instead of resale. Behaviorism theory model is effective in analyzing the factors influencing sustainable clothing disposal. To face clothing waste issues, one can intensify traditional values of industriousness and thriftiness, of compassion and sympathy to others, to accelerate the promotion of the sustainable disposal of clothing.

Keywords: Environmental values, prosocial behavior, sustainable, clothing disposal behavior

Introduction

In more difficult times, people continually reused their unwanted clothes; nowadays in Taiwan, people's unwanted clothes are mostly placed in their closet or into recycle bins or recycled by recycle truck (Peng, 2018). Clothes which are in good condition after recycling and classifying can enter into second-hand clothing markets. However, consumers prefer newly manufactured clothes to secondhand clothes. This has inhibited the growth of secondhand clothing markets up to now. Concerning disposition, consumers who directly recycle their unwanted clothes regard it as not only the easiest, environmentally-friendly option but also as reflecting compassion.

According to Article 19 regulations in the Environmental Education Act in 2011, all teachers and students in high schools and secondary schools shall attend an environmental education program for more than four hours every year. For students who have received

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environmental education, it is worthwhile to discuss whether they build environmental values. It is important to know whether students learn to avoid excessive unwanted clothing and dispose of clothing appropriately, due to considerate and service-minded attitudes. Now, consumers' clothing disposal habits can be predicted using behaviorism theory. The theory claims that particular stimuli can lead an individual to have a specific reaction (Watson, 1913). An example of a stimulus is a belief in environmental values; care for the environment and a desire to helping others can promote responsible behaviors regarding the environment. Previous research indicates that these stimuli do actually influence behavior (Cheunga & To, 2019; Putri & Srimulyo, 2020). The emphasis of sustainable clothing disposal is to reduce the purchase of newly manufactured clothes so people can co-exist in and share the environment. The purpose is to dispose of clothes sustainably in ways that both can express care of society and the environment and can promote mutual benefits, such as resale, donation and reuse.

Furthermore, it is important to develop and integrate environmental values into one's life during university, as undergraduates have sufficient cognitive abilities to make decisions and execute prosocial behaviors (Fu, 2015). Consequently, this study discusses the casual relationships between environmental values, prosocial behaviors and clothing disposal on the basis of behaviorism theory, with an emphasis on the undergraduate and postgraduate consumer. Its sets up a hypothetical model of consumer clothing disposal behavior that promotes sustainability by reducing clothing discarded for reference.

Literature review

The environmental crisis of the clothing industry. "Fast fashion" as a trend has been widely criticized for depleting environmental resources and contributing to the destruction of our environment (Jung & Jin, 2016). Given quick turn-around products and including online shopping, clothing has become a "discard-style product," cheaply made out of poor materials. According to a 2016 investigation by Greenpeace concerning consumer shopping habits in Taiwan, 9.9 pieces of clothing every minute are discarded per year by people aged 20–45 (Peng, 2018). Some of this clothing is placed in recycling bins and the rest is dumped into garbage cans. Further, the amount of greenhouse gas emission is continuously increasing; excessive emission of greenhouse gas causes pollution and worsens the environment (Rana et al., 2015). Moreover, discard-style products have further exacerbated environmental damage. Clothing sustainability has increasingly received attention.

Sustainable clothing disposal behavior. In order to promote economic and social advancement in ways that avoid environmental degradation, over-exploitation or pollution, the World Commission on Environment and Development highlighted sustainability in 1987 (UN WCED, 1987). It is important for consumers to be introspective and to carry out sustainable waste-disposal of clothing in the face of the environmental crisis. Regarding sustainable clothing disposal, a survey of 232 consumers found that family norms, the environment and the economy influenced consumers' resale, donation or reuse of clothing

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(Joung & Park-Poaps, 2011). Further research found that out of 488 consumers, those who recycled clothing mainly donated it to charity (Bianchi & Birtwistle's, 2012). A different study of 410 consumers found that donation, resale, swap and take back programs were the main disposal methods (Weber et al., 2016). This study integrates and discusses multiple commonly-used disposal methods – including resale, donation and reuse – from the customer perspective.

Behaviorism theory. Behaviorism theory originates from the early 20th century. It claims that behavior is determined by the environment. According to behaviorism, behavior is provoked by a stimulus, which can be any object or event that elicits a sensory or behavioral response in an individual, including some outcomes, values or feeling in an individual's life history (Suar & Khuntia, 2010). Watson's "reductionism" hypothesized that individuals react to outside influences (Watson, 1913) and respond with a behavior; however, most behaviors are introspective, and behavior can also be influenced by consideration of possible future results (Skinner, 1974). Hence, to face the environmental crisis related clothing consumption, consumer's belief in environmental protection, past experiences in helping others, environmental care experiences, in connection with introspection, association, and beliefs in minimizing waste of objects, environmental quality, and relationship with others, together affect their clothing disposal behaviors. Research indicates that individual values and prosocial behavior promote sustainable environmental protection behavior (Dominicis et al., 2017; Suar & Khuntia, 2010).

Environmental values. Concerning values, "A value is a belief that something is good and worthwhile. It defines what is worth having and worth striving for (Haralambos & Holborn, 1995)." According to sociology, values provide behavioral goals for members of societies, ensuring consistent human interaction. Values further help people to adjust their behavior in different situations (Schwartz & Bilsky, 1987). They lend stability to the social order, which is critical to public welfare, and provide general norms for social behavior. They also influence one's attitude about one's surroundings and behavioral tendencies.

However, the prosperity of developed countries around the world has threatened the living environment of human beings in that natural resources are being depleted and large amounts of waste are being returned to the environment (Speth, 2008). These circumstances cannot help but remind one of traditional Chinese philosophy, which emphasizes the "oneness of heaven and humanity." This reveals that nature is definitely the origin of life for human beings. The Chinese philosopher Cheng Hao (1032-1085) put forward a thought that humans possess a kindheartedness that can be extended from "love the people" to "love all things." Thus, humanity and nature are a closely linked and organic whole that is constituted on the basis of Confucianism's directive of "love the people." Applying this thought to the contemporary environment, people should accommodate themselves to the laws of nature, respect and care for nature, and strive for harmonious co-existence between humans and

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nature (Li, 2018). A research study of 468 undergraduates revealed that environmental attitudes had a strong influence on the disposal patterns of clothing (Shim, 1995). Hence, it is worth striving to foster attitudes supportive of protecting the environment, because it will influence consumers to dispose of their unwanted items sustainably.

A 5-person qualitative study found that secondhand clothes can be kept not just for longevity but also to raise product value through swaps, repair, upgrade, redesign or craft skills such as embroidery or dyeing (Paras et al., 2018). This gives old products a longer life cycle and prevents the further consumption of environmental resources from the production of new clothes (Bukhari et al., 2018). Research has found that undergraduate resale behaviors were related to economic issues (Joung & Park-Poaps, 2011); the results were the same as previous studies, finding that undergraduates also resell their clothing because of the economy (Shim, 1995). However, whether resale leads to other new influence factors after a number of years is a question worthy studying. A subsequent study on clothing donation found that consumers' environmental consciousness significantly influenced their behavior of donating excess clothes (Morgan & Birtwistle, 2009). A study of 232 undergraduates found that undergraduate donation behaviors were relative to environmental issues (Joung & Park-Poaps, 2011). Today, environmental protection is a common human value that can be implemented in daily life. Individuals could practice environmental awareness and values through the sustainable disposal on clothes, thereby promoting overall environmental well-being. Thus, this study proposes the following hypotheses:

H1: Environmental values significantly influence clothing resale.

H2: Environmental values significantly influence clothing donation.

H3: Environmental values significantly influence clothing reuse.

Prosocial behavior. Regarding prosocial behavior in Chinese society, Confucianism advocated that kindheartedness is the root of humanity, human nature is basically good, and humans have basic and innate natural characteristics from birth, especially compassion or sympathy for others. Furthermore, one should love oneself first, then love one's own flesh and blood, and then love all people. In addition, Confucianism also advocated, "do not do to others what you don't want to be done to you," which is a guiding principle, and for conducting oneself with "responsibility" for others as one of the basic thoughts. Consequently, the prosocial behavior of Confucianism is an extensive love for others.

As for western society, from the perspective of social psychology, prosocial behavior of an individual eventually becomes an internalized value along with the realization of social norms and the progress of ageing. Moreover, prosocial behavior is aimed at promoting the common good and is a part of daily life as well. It can help and improve the situation of people and finally improve the coexistent and shared environment (Sears et al., 1988). From the perspective of social cognition, the individual is based on sympathy, comprehending his own social role and sense of responsibility, which can initiate a positive response, reduce

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personal concerns, increase understanding of others in need and transform prosocial cognition into prosocial behaviors (William & Eisenberg, 1997). In short, a prosocial individual will "deny himself and be zealous in helping others (Fu, 2015)," engaging in behaviors such as care, help and understanding.

Sustainable disposal of clothing – such as resale, donation and reuse – displays care and a responsible attitude towards society and the environment, and it is relevant to everyone. Many studies have shown that an awareness of the need for environmental protection is constantly growing among consumers and reflected in their daily activities (Midgett et al., 2017; Shah & Pillai, 2012). Instead of being immediately discarded, everyday items should be reused after usage. Traditional Chinese society emphasized diligence and thriftiness and advocated cultivating virtues that would enable one to maintain a moral character, manage a household and run a country. A survey of 425 adults revealed that prosocial behavior is associated with the tendency to reuse clothing (Cruz-Cárdenas et al., 2019). The study found that 64.3% of consumers used traditional services such as tailoring (Gwozdz et al., 2017). Another pattern of reuse is to upgrade one's clothing, or to disassemble parts of clothes and use different materials, colors, shapes or silhouettes to replace damaged parts therefore renew the garments (Morais & Montagna, 2015). Clothing redesign is another one of the common disposal patterns: many purchasers prefer redesigning old clothing to buying new clothing (Domina & Koch, 1999).

Concerning resale, a survey study (n = 981) in Germany found that compassion was positively correlated with the purchase intention on sustainable clothes (Geiger & Keller, 2018). Norum (2015) tested U.S. female consumers and found that the most popular pattern of clothing disposal, at 64.54%, was charitable donation, followed by resale to secondhand stores at 49.17% (Norum, 2015). Koch and Domina's (2009) study revealed that the common reason of making a donation was to help someone who was in need (Koch & Domina, 2009). Further, a study of 315 female consumers in South Africa indicated that their main method of disposal for unwanted apparel was donation, followed by reuse and lastly resale (Sonnenebrg et al., 2019). It is obvious that the disposal of unwanted clothes is related to prosocial behaviors, such as help and compassion. Consumer's caring behaviors, willingness to help others, and empathy influence their clothing disposal. Thus, the hypotheses are as follows:

H4: Prosocial behavior significantly influences clothing resale.

H5: Prosocial behavior significantly influences clothing donation.

H6: Prosocial behavior significantly influences clothing reuse.

To face the environmental crisis, the only way to live sustainably is to change one's own consumption habits and to choose a lifestyle that minimizes impact on the environment and society (Peng, 2018). This study was aimed at discarded clothes to discuss the influence of environmental values and prosocial behavior on methods for the disposal of clothing.

Research methods

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Research procedure. This study discusses consumer sustainable clothing disposal through the lens of behaviorism theory and related literature. It aimed to analyze multiple methods for the disposal of clothing. Consumer opinions were gathered using an online survey, and the influence of environmental values and prosocial behaviors on sustainable clothing disposal was analyzed based on the results. Finally, conclusions were drawn.

Research framework. Clothing disposal influences the environment and is relevant to every person; this study aimed to discuss the factors that influence consumers' choices regarding sustainable clothing disposal. According to behaviorism theory, which holds that stimuli induce reaction through introspection (Skinner, 1974), sustainable clothing disposal behavior will not only be influenced by values (such as attitudes toward surroundings or behavioral tendencies) but also by prosocial behavior, such as reducing concern for oneself and demonstrating more understanding of others' needs. This study was based on behaviorism theory and linked both environmental values and prosocial behavior, attempting to predict their influence on consumer clothing disposal.

Instruments development. In this study, survey data included environmental values, prosocial behavior, sustainable clothing disposal behavior of consumers and demographic data. To help the participants understand the survey questions, researchers supplied them with a description taken from the literature review of environmental values, prosocial behavior and sustainable clothing disposal behavior. Environmental values imply that an individual makes sustainable clothing disposal choices based on his conviction of their benefit to the natural ecological environment. Prosocial behavior is any action intended for the good of others – an action that most often takes place at some cost to oneself – such as care, help and understanding. Sustainable clothing disposal behavior means that consumer's methods of disposal concerning unwanted clothing are things such as resale, donation and reuse.

Furthermore, the final questionnaire consisted of 35 questions modified or designed from other studies to better meet the research purposes of the current study. The questionnaire was composed as follows: 9 questions modified or designed from Fu's (2015) study pertained to environmental values, i.e. the "Value of Saving Energy and Reducing Carbon Emissions Scale"; 9 questions modified or designed from Carlo and Randall's (2002) study addressed prosocial behavior, i.e. the "Prosocial Behavior Scale"; and 14 questions modified or designed from other studies pertained to sustainable clothing disposal behavior such as resale, donation, and reuse. Among the last 14 questions, 3 questions modified or designed from Weber, Lynes and Young's (2016) study focused on resale, i.e. the "Channels to Manage Unwanted Garments Scale"; 4 questions modified or designed from Bianchi and Birtwistle's (2012) study focused on donation, i.e. the "Donating to Charity Disposal Behavior Scale"; and 7 questions modified or designed from Niinimäki and Hassi's (2011) study focused on reuse, i.e. the "Consumers' Interest in Design Strategies Scale."

Reliability and validity. This study analyzed data using structural equation modeling

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to examine the relationship between observed variables and latent variables and the causal relationships among variables. It examined the validity of the measure of the model through confirmatory factor analysis.

This study tested the degree of fit of the whole model to the observed data. In terms of environmental values, Table 1 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.958, 0.922, 0.946, 0.918 and 0.946, respectively, which are all considered a good fit. The RMSEA value is 0.078, which is acceptable (Browne & Cudeck, 1992). Further, Bagozzi and Yi (1988) maintained that the chi-square value should be less than 3 and that that less than 5 was acceptable. The value of the chi-square/ df ratio is 3.463; the result as acceptable. Consequently, Table 1 shows that the model fit of environmental values is acceptable. In terms of prosocial behavior, Table 1 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.965, 0.935, 0.971, 0.956 and 0.971, respectively, which are all considered a good fit. The RMSEA value is 0.066, which is acceptable. The value of the chi-square/ df ratio is 2.787, which conforms to the standard. Consequently, Table 1 shows that the model fit of prosocial behavior is good. In terms of sustainable clothing disposal behavior, Table 1 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.907, 0.867, 0.942, 0.928 and 0.942, respectively, which are considered acceptable. The RMSEA value is 0.084, which is slightly greater than 0.8. The value of the chi-square/ df ratio is 3.856, which is acceptable. Consequently, Table 1 shows that the model fit of sustainable disposal behavior is acceptable.

Table 1 Summary of model fit for environmental values, prosocial behavior and sustainable clothing disposal

Variables	χ^2/df	GFI	AGFI	IFI	NNFI	CFI	RMSEA
Environmental values	3.463	0.958	0.922	0.946	0.918	0.946	0.078
Prosocial behavior	2.787	0.965	0.935	0.971	0.956	0.971	0.066
Sustainable behavior	3.856	0.907	0.867	0.942	0.928	0.942	0.084

According to Fornell and Larcker's (1981) approach, the CR value should be greater than 0.6, and Hair et al. (1997) indicated that 0.7 was acceptable. Table 2 shows that the factor loading of 32 items are all greater than 0.5. The CR value of each latent variable – less-polluting and help – are slightly less than 0.7, and the rest are greater than 0.7. These results are acceptable. Fornell and Larcker (1981) suggested that AVE should be greater than 0.5. The AVE values of the latent variables – less-polluting and help – in this study are slightly less than 0.5, and the rest all greater than 0.5. The results of the whole model test shows that the internal consistency and validity of dimensions in the model are acceptable.

Table 2 Summary of convergent validity results

Latent variables	Observational	Convergent validity

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	variables	Loading	CR	AVE
Environmental values				
Recyclable	A1	0.730	0.768	0.528
	A2	0.813		
	A3	0.624		
Less-polluting	A4	0.661	0.626	0.360
	A5	0.611		
	A6	0.520		
Resource-saving	A7	0.733	0.764	0.519
	A8	0.748		
	A9	0.679		
Prosocial behaviors				
Care	A10	0.767	0.795	0.564
	A11	0.731		
	A12	0.755		
Help	A13	0.581	0.675	0.411
	A14	0.617		
	A15	0.717		
Understanding	A16	0.795	0.790	0.557
	A17	0.723		
	A18	0.718		
Sustainable behaviors				
Resale	A19	0.508	0.854	0.676
	A20	0.967		
	A21	0.913		
Donation	A22	0.829	0.890	0.670
	A23	0.866		
	A24	0.811		
	A25	0.763		
Reuse	A26	0.751	0.919	0.615
	A27	0.784		
	A28	0.806		
	A29	0.822		
	A30	0.826		
	A31	0.801		
	A32	0.691		

Participants. This study employed data from undergraduate and postgraduate students nationwide from April 2 to May 21, 2020, and data were gathered using a random online

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survey distributed through clothing-related groups on Facebook. Regarding sample size, according to Kerlinger & Lee (2000) and Nunnally & Berstein (1994) factor analysis requires a sample five to ten times the number of items on a scale. There are 35 questionnaire items in this study, so the effective sample must be at least 175 in order to conform to the requirement. The survey yielded 431 complete questionnaires, a 94.43% valid response rate. Basic demographic data about participants included gender, age and education. The majority of the participants were females due to the use of social media for recruitment.

Data analysis. The participants in this study answered each question using a five-point Likert-type scale, ranging from 5 (strongly agree) to 1 (strongly disagree). The data collected were entered into a database and analyzed using the AMOS 22 statistical software package. In order to explore causal relationships among variables, this study executed a structural equation modeling and confirmatory factor analysis to examine the influence and predictability of each variable – the environmental values and prosocial behavior – to the sustainable clothing disposal behavior of consumers.

Results and Discussion

Results. There were a total of 407 participants in this study. 33.7% of the participants were male and 66.3% female; 51.6% were undergraduates and 48.4% postgraduates. The average age was 25.18 years, and ages ranged from 18 to 58 years.

Hypotheses 1, 4: Regarding the influence of environmental values and prosocial behavior on resale, this study ran a residual correlation according to the modification index. Table 3 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.972, 0.94, 0.982, 0.969 and 0.982, respectively, and those are considered a good fit. The RMSEA value is 0.062, which is acceptable. The value of the chi-square/ df ratio is 2.574, which conforms to the standard. Consequently, the model fit of resale is acceptable. The results of the t-test reveal that the influence of environmental values on resale are insignificantly different from zero (β= 0.139, $p > 0.05$). This means that environmental values are not a significant factor influencing consumers' choices regarding clothing resale. The results of the t-test reveal that the influence of prosocial behavior on resale is significantly different from zero (β= -2.031, $p < 0.05$), with a negative parameter. This means that prosocial behavior is a significant factor influencing consumers' resale of clothing; however, the greater an individual's alignment with prosocial behavior, the less willing she will be to sustainably resell clothing. Consequently, hypothesis 1 is not supported and hypothesis 5 is supported. Table 4 provides a summary of these items.

Hypotheses 2, 5: Regarding the influence of environmental values and prosocial behavior on clothing donation, this study ran a residual correlation according to the modification index. Table 3 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.929, 0.869, 0.952, 0.928 and 0.952, respectively, and those are considered to be acceptable. The RMSEA value is 0.096, which shows a slightly greater than good fit. The value of the

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chi-square/ df ratio is 4.728, which is acceptable. Consequently, the model fit of donation is acceptable. The results of the t-test reveal that the influence of environmental values on donation are significantly different from zero (β= 0.263, $p < 0.01$), with a positive parameter. This means that environmental values are a significant factor influencing consumers' donation of clothing. The results of the t-test reveal that the influence of prosocial behavior on donation is significantly different from zero (β= 0.521, $p < 0.01$), with a positive parameter. This means that prosocial behavior is a significant factor influencing consumers' choices regarding clothing donation. The results show that the more environmental values and prosocial behavior a consumer displays, the more he will be willing to sustainably donate his clothing. Consequently, both hypothesis 2 and hypothesis 5 are supported. Table 4 provides a summary of these items.

Hypotheses 3, 6: Regarding the influence of environmental values and prosocial behavior on clothing reuse, this study ran a residual correlation according to the modification index. Table 3 shows that the GFI, AGFI, IFI, NNFI and CFI values are 0.93, 0.892, 0.955, 0.941 and 0.955, respectively, and those are considered to be acceptable. The RMSEA value is 0.075, and that is considered acceptable. The value of chi-square/ df ratio is 3.29, which is acceptable. Consequently, the model fit of reuse is acceptable. The results of the t-test reveal that the influence of environmental values on reuse are insignificantly different from zero (β= 0.129, $p > 0.05$). This means that environmental values are not a significant factor influencing consumers' reuse of clothing. The results of the t-test reveal that the influence of prosocial behavior on reuse is insignificantly different from zero (β= -0.083, $p > 0.05$). This means that prosocial behavior is not a significant factor in consumers' choices to reuse clothing. Consequently, both hypothesis 3 and hypothesis 6 are not supported. Table 4 provides a summary of these items.

Table 3 Summary of model fit for sustainable clothing disposal

Models	χ^2/df	GFI	AGFI	IFI	NNFI	CFI	RMSEA
Resale	2.574	0.972	0.94	0.982	0.969	0.982	0.062
Donation	4.728	0.929	0.869	0.952	0.928	0.952	0.096
Reuse	3.29	0.93	0.892	0.955	0.941	0.955	0.075

Table 4 Summary of parameter estimation from the influential factors – environmental values and prosocial behavior – on consumers' sustainable clothing disposal behavior

Paths	Unstandardized coefficients		β	*t*-value	*p*-value
	B	S.E.			
Resale <---Environmental values	0.319	0.272	0.139	1.175	0.24
Resale <---Prosocial behavior	-0.507	0.25	-0.234	-2.031*	0.042
Donation <---Environmental values	0.425	0.162	0.263	2.624**	0.009

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Donation <--Prosocial behavior	0.788	0.152	0.521	5.178***	0.000
Reuse <---Environmental values	0.323	0.403	0.129	0.8	0.423
Reuse <---Prosocial behavior	-0.184	0.347	-0.083	-0.532	0.595

*$p < .05$, **$p < .01$, ***$p < .001$

Discussion. For hypotheses 1 and 4, environmental values did not influence consumers' willingness to resell clothing. The results related to environmental values were not consistent with previous research in which undergraduate resale behaviors were related to environmental issues (Joung & Park-Poaps, 2011). However, prosocial behavior was associated with the tendency to resell clothing, but negatively. The more alignment with prosocial behavior, the more consumers are unwilling to resell clothing; in other words, prosocial consumers will use other patterns to dispose of their clothing. The results regarding prosocial behavior were similar to previous research – female consumers in South Africa indicated that their least selected method for the disposal of unwanted apparel is resale (Sonnenebrg et al., 2019). Traditionally, Chinese society emphasized diligence and thriftiness and advocated cultivating virtues that would enable one to maintain a moral character. To resell clothes can not only display thriftiness but can also display respect for the environment and society, yet this study found that few participants resell clothes. Perhaps prosocial consumers think other patterns would demonstrate more care, help and understanding than resale. Additionally, perhaps other factors such as resale price, secondhand shop availability or access to online markets were more influential than environmental values – the actual problems were more important than the values.

Regarding hypotheses 2 and 5, environmental values and prosocial behavior influenced consumers' willingness to donate clothes. The results were consistent with previous research – consumers' environmental consciousness was related to donation behavior (Joung & Park-Poaps, 2011; Morgan & Birtwistle, 2009). Additionally, the results were consistent with another survey study, which found that compassion was related to sustainable purchase criteria (Geiger & Keller, 2018). The same study also found that donation was the most used method, which was consistent with another study from overseas (Norum, 2015). In sum, waste reduction and concern for others are related to clothing donation. Perhaps consumers generally accept donating clothes; sharing clothes with people may reflect Chinese values to treasure the sources and prosocial experiences such as love for people or helping others.

For hypotheses 3 and 6, both environmental values and prosocial behavior did not influence consumers' willingness to reuse clothing. The results of this study were not consistent with interview results in previous research, which found that consumers repurposed old clothes with their crafting skills in consideration of environmental protection (Paras et al., 2018). Furthermore, the results were not consistent with prior research, which

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revealed that prosocial behavior was associated with the tendency to reuse clothing (Cruz-Cárdenas et al., 2019). For consumers who are willing to reuse instead of discarding clothing, there may be other more influential factors than environmental values and prosocial behavior. These consumers may consider practical aspects for consideration, such as their interest in cloth alternation, craft skills or thrifting. The Chinese tradition is to manage household affairs by being industrious and thrifty; in the past, old clothes were used over and over again, especially in hard times. Emulation of such behavior in modern times could stop environmental pollution in the garment production process and display care toward society.

Figure 1.1 reveals that the influence of prosocial behavior on clothing resale is consistent with the hypothesis of behaviorism theory. Figure 1.2 shows that both environmental values' and prosocial behavior's influence on consumers' willingness to donate their clothing is consistent with behaviorism as well. Figure 1.3 indicates that the non-influence of the two factors on consumers' reusing behavior is not consistent with the hypothesis. The study results represent a test application of the behaviorism theory model, which can be used to analyze the influence factors of sustainable clothing disposal. To face clothing waste issues, one can intensify traditional values of industriousness and thriftiness, of compassion and sympathy to others, to accelerate the promotion of the sustainable disposal of clothing.

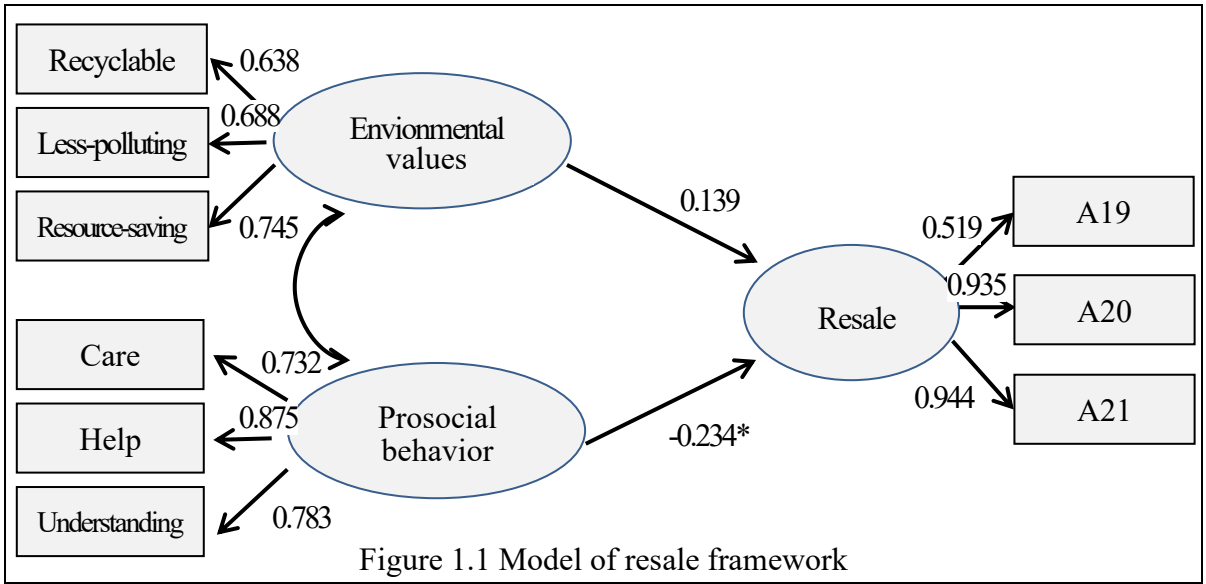
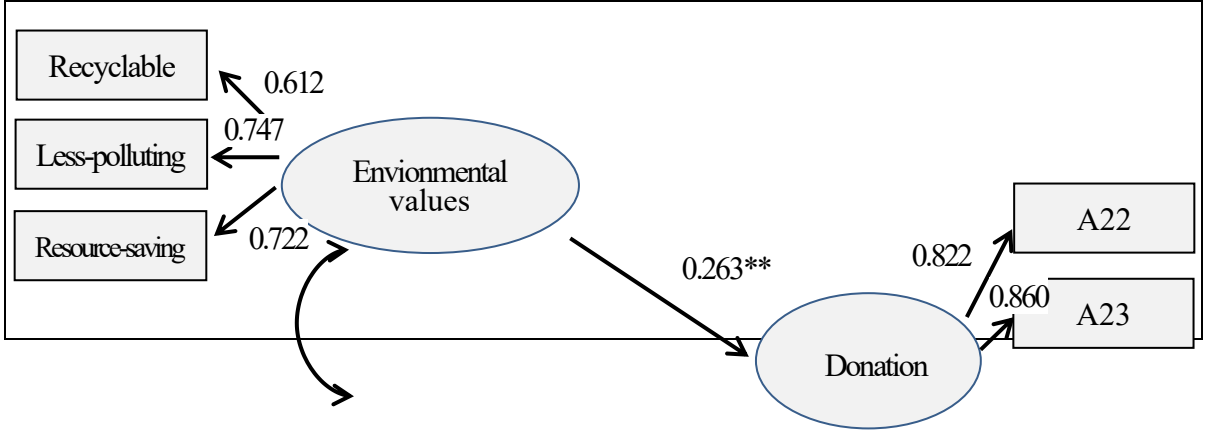


Figure 1.1 Model of resale framework



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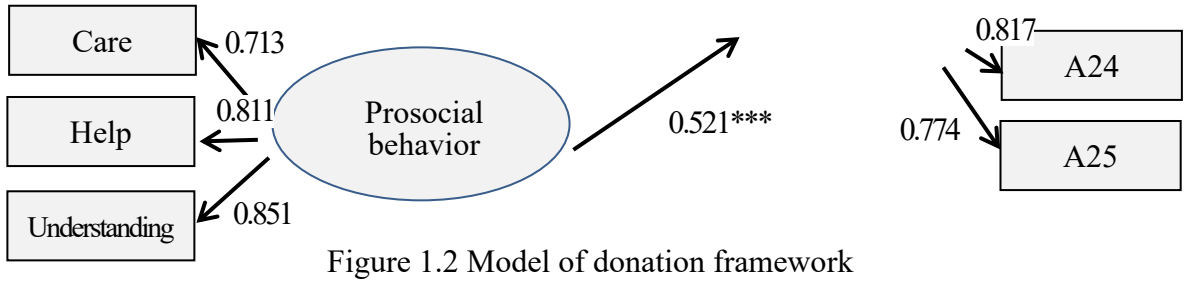

Figure 1.2 Model of donation framework

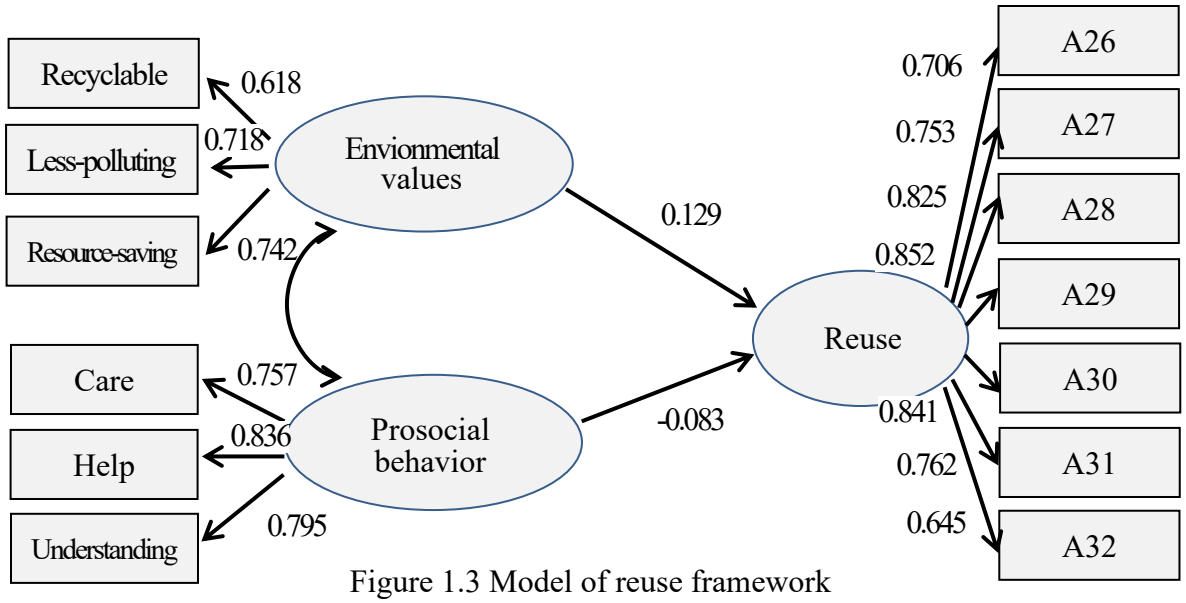

Figure 1.3 Model of reuse framework

Conclusion

Consumers' clothing donation behavior was influenced by the factors of environmental values and prosocial behavior. Clothing resale was influenced by the factor of prosocial behavior. Clothing reuse was not influenced by either environmental values or prosocial behavior. Further discussion concerning resale is necessary. The results indicated that environmental values and prosocial behavior did in fact influence consumers' choices regarding clothing donation. However, prosocial consumers used other disposal patterns instead of resale. Behaviorism theory model is effective in analyzing the factors influencing sustainable clothing disposal. This study suggests that consumers could choose to purchase high quality and value-added products that are more durable and more sustainable, so that they do not need to make frequent repurchases, save expenses, and reduce wastes. To face today's environmental requirements, the values of "love the people", "love all things", "respect for nature", and "thriftiness" from traditional instruction play a decisive role. On the other hand, in terms of government and private enterprises, such as clothing companies or clothes recycling companies, strategies such as cooperation (Norum, 2015), expanding and enhancing environmental education program, systematic construction of multiple channels, expanding the clothes recycling market, offering clothing rental and consultation services, organizing DIY classes, promoting clothes exchange and alternation (Niinimäki & Hassi,

2011). Further, prolonging the clothing durability, incorporating design aesthetics, improving after-sales services and advocating garment recycling could enhance the general acceptance of sustainable clothing disposal and maximize the effectiveness of the after-sales management of clothes, which is the most important goal.

This study discussed the factors influencing consumers' sustainable clothing disposal behaviors, including environmental values and prosocial behavior, and found that both values and behavior have causal relationships with sustainable disposal. However, there may still be other influential factors concerning consumers' clothing disposal; hence, the topic could be discussed from other points of view in future research. Additionally, this study used a quantitative survey, but it could understand more about the potential reasons and influential factors behind sustainable disposal if it integrated qualitative methodology and selected some of the participants to participate in in-depth interviews. Based on the results, the public sector can plan and manage efficient methods for clothing disposal, such as universal regional offices to receive different types of used clothing, simple processes and a simple online platform. The most important thing is to reduce resource consumption and prevent discarded clothes from going into a landfill or incinerator.

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