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An exploratory study on up-cycling as the sustainable clothing life at home

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Abstract

The textile and fashion industries are difficult to achieve sustainability because they are made up of long supply chains. Also, it cannot rely only on the industries for sustainable. Thus, it is important that consumers have to practice at home. Therefore, it is necessary to give the ideas that can be done at home, promote the importance of practice, and present a variety of practical ways. We executed focus-group interview to understand sustainable clothing and the attitude and status of up-cycling in families. Situation analysis for the attitude and up-cycling of sustainable clothing is available with various participants in each group upon fluency of up-cycling method, information share ability, and the degree of understanding in clothing-fiber production process. It showed that they make selective purchase of sustainable fashion products in families, washing and control for minimizing of environmental impact and energy consumption, and recycling and used articles trade, a way of life for sustainable clothing.

Keywords: Sustainability, Methods at home, Sustainable clothing, Up-cycling

Introduction

Sustainability has become recognized as an important issue for clothing retailers during the last decade, with increasing demand from consumers for products which are environmentally and socially sustainable (Joergens 2006). Sustainable consumption will require consumers to buy less, use products longer and produce less waste (Tilikidou and Delistavrou 2004). Interest in sustainable clothing production and consumption is growing and the rapid increase in the size of the sustainable clothing market implies that consumers are concerned about sustainability (Shaw et al. 2006). The clothing sector has responded to this type of publicity and to consumer demand, with the introduction of small-scale ethical clothing retailers and the launch of sustainable ranges by larger retailers, mainly based on organic cotton products or Fair Trade production (Goworek et al. 2012). Now the preoccupation of fast fashion in clothing industry represents the trend of current society which is sensitive to fashion, rather than quality and physical life of product. Producers built up mass production system by outsourcing so as to be competitive by lowering the price, and consumers, with the decreased burden, become intemperate in spending. Repetition of intemperate production and consumption has led to various problems and resource waste, and clothing wastes became a social issue.

The issue of clothing wastes requires urgent reconsideration as 3% of wastes discharged from each household is clothing (Fletcher 2008). As clothing wastes weigh

significant impact not only on environment but also on economic loss, fundamental solution is required and sustainable clothing life draws attention. In order to maximize sustainability in the clothing industry, the producers as well as the role of consumers and especially the role of households are now important. Previously, households were regarded as a passive position to purchase and consume manufactured goods, but now consumers must actively implement sustainability as a productive consumer for sustainable living as a final determinant of their lifestyle.

Various studies are vigorously being carried out on the topic of sustainability. However, most of these studies are about sustainability focused on the producers (Chi 2015; Brito et al. 2008; Na and Na 2015), and the ones about family-focused sustainable clothing life are insufficient. Whereas the role of families are important since they are the final consumer and the subject of product use and waste in clothing life, there are insufficient amount of studies focusing on this topic. And most of the studies focusing on consumers are the ones about consumer attitude and consumption behavior (Maineri et al. 1997; Follows and Jobber 2002; Joergens 2006), with a narrow focus only on the eco-friendly and ethical characteristics, providing it difficult to understand the broad sense of sustainability encompassing the environment · economy · society · cultural elements.

Up-cycling is effective in expressing our own personality without unnecessary spending, and satisfying the desire for pursuing creative and novel material. This study examined the attitude and practice for sustainable clothing life in families, and focused on up-cycling among the practice of sustainable clothing life in families for proliferation of sustainable clothing life.

Literature review

Sustainability and clothing

'Our Common Future' of Brundtland Committee defined sustainability as 'Satisfying the need of current generation while not impeding what future generation requires (Merchant 1989).' Like this, sustainability prepares guidelines in a long term view, considering the impact of present behavior weighing on future generation.

Although many studies narrowly view sustainability by limiting it only on environmentalism, sustainability encompasses the entire area of society and culture. We have to take into consideration the sustainability in economic, social and cultural areas of the world, while trying to recognize and minimize the impact of uncontrolled human behavior on environment. Recognizing that one-sided economic growth upon limited resource cannot be continued, sustainability preserves environment and is based on stable and long term profit-making and qualitative growth. Also it pursues harmonized development of community and does not overlook social responsibility. And it expands environmental protection or qualitative growth of economy, places importance on mental value and ethics, and fosters cultural diversity (Na 2011).

Sustainable clothing is thought of mainly in eco-friendly context, but the evaluation territory of sustainability is enormous, encompassing areas such as fair production structure, economic vitality and qualitative growth, and consumers rational spending pattern and pursue of variety. When destroying sustainable fashion, we can safely return to the globe, and it should be made so that it can be used again. And we should produce according to sustainable processes, without causing environmental damage, and

products should be done, not focusing on producer, but focusing on users. In particular, we need to pay attention to inter-supplementary relation between consumers and producers, and subjective attitude, which can realize and finish the value of clothing in families after production (Fletcher 2008). Where slow fashion is a sustainable approach to fashion production and consumption, it focuses greater attention on 'valuing and knowing the object' (Clark 2008). This means understanding the process of raw material to finished product as part of the experience of consumption. This form of sustainable consumption is centred in a consumer value system that engages with experience values over self-enhancement values (Manchiraju and Sadachar 2014).

Up-cycling and clothing

The term up-cycling was first used by Reiner Pilz in 1994, when he gave the meaning 'to grant more value to old product'. Up-cycling is compared with down-cycling, which is recycled in manner of losing significant part of existing characteristics or merits mainly while passing through mechanical and chemical processing. On the other hand, up-cycling is defined as the type of 'recycling in rise in value' (Choi et al. 2014).

The 1st target of up-cycling is to reduce wastes, and it repeats and circulates the life cycle of products by changing its use in the final stage of product life cycle, without going through the entire process of planning, production, and consumption of product. This corresponds to the sustainability where re-designing refines environmental impact and recovers natural ecosystem. It also is, in principle of sustainable design, to re-think the design for realization of re-cycle of material circulation and symbiosis of human and nature, and up-cycling minimizes the process by maximum use of original functions, based on re-cycle of wastes. This leads to the refining of environmental impact, and we can see that up-cycling is based on sustainability rooted in re-design and re-think of symbiosis.

The fast fashion phenomenon has revolutionized the clothing industry over the past decade. Changing consumer attitudes to apparel consumption, linked with low-cost production and sourcing of materials from overseas industrial markets has led to a culture of impulse buying in the fashion industry, where new styles of clothing are available to the average consumer every week. Consumers are practicing up-cycling, which is important in the era of fast fashion at home (Turker and Altuntas 2014).

Methods

This study executed Focus Group Interview in order to understand the attitude and status of up-cycling in families in respect to sustainability upcycling potency at home. A qualitative research method was used in order to gather and analyze trend from the interview data. Focus Group Interview as a research method is not to make generalized deductions as in a mass survey, but to comprehend various persons' recognition of specific circumstances and experiences by targeting a various range of participants. A total of 30 participants participated in an event on sustainable clothing were grouped into 8 groups for the Focus Group Interview. Situation analysis for the attitude and up-cycling of sustainable clothing was performed in each group for the following criteria: fluency of up-cycling method, ability to share information, the degree of understanding in the clothing-fiber production process (i.e. positive practices of sustainable clothing), and proficiency with the sewing machine in the upcycling process (Table 1).

Table 1 Focus group interview participants

	Group	Participants	Sex	Age	Job	Features
A	40–50s	1	Female	53	Doctor	Comparison by age
		2	Female	51	Teacher	
		3	Female	51	Housewife	
		4	Female	48	Housewife	
B	20s	5	Female	24	College student	
		6	Female	24	College student	
		7	Female	26	Office worker	
C	Gwanghwamun hope sharing market participant	8	Female	65	Housewife	Sustainable clothing life practice—used market
		9	Female	43	Housewife	
		10	Female	25	College student	
D	Beautiful marketplace volunteers	11	Female	33	Housewife	
		12	Female	32	Social worker	
		13	Female	21	College student	
		14	Male	21	College student	
E	Female student of department of clothing & textiles	15	Female	23	College student	Can be used sewing machine
		16	Female	26	College student	
		17	Female	23	College student	
		18	Female	23	College student	
	Male student of department of clothing & textiles	19	Male	25	College student	
		20	Male	23	College student	
		21	Male	26	College student	
		22	Male	26	College student	
		23	Male	26	College student	
		24	Male	27	College student	
F	Blog user	25	Female	46	Housewife	Information sharing on SNS
		26	Female	42	Housewife	
		27	Female	37	Housewife	
G	Apparel worker	28	Female	26	Office worker	Understanding clothing and textiles production process
		29	Female	25	Office worker	
		30	Male	32	Office worker	

In this study, interviews of 30–50 min were performed for each group, spanning a period of 2 months (February to March of 2015). Verbal agreements from participants were obtained following the explanation of the purpose and method of the study and the general content of interview. Interviews were recorded under the agreement of the participants. The main content corresponding to the subject, unexpected answers, atmosphere of the interview, and individual lifestyles and background of the participants during the interview were noted and recorded. Questions were open-ended and given in an order that induced natural transition from one topic to another as it would in a casual group discussion. The recorded details of the Focus Group Interview were documented and analyzed, focusing on the content corresponding to the study purpose. The analysis and details of each group were taken into account when asking follow-up questions.

The format of the interview (Krueger and Casey 2000) included these types of questions in the following order: opening question, introductory questions, transition questions, key questions, and ending questions.

Table 2 Contents by question type

Types of questions	Content of a question
Opening question	Have you ever heard of 'sustainability'?
Introductory questions	Please speak freely when you hear the term 'sustainability'
Transition questions	How much do you know about sustainability at home, especially sustainability in clothing?
Key questions	<p>What is the sustainable clothing life I have experienced in person?</p> <p>Why did you practice? What are some of the factors that drove sustainable consumption behavior?</p> <p>Are you satisfied with the experience? Are you continuing?</p> <p>What is the way we practice sustainable clothing in our homes?</p> <p>What has changed in our homes as a result of the practice of sustainable clothing at home? Will it affect society beyond home?</p> <p>Have you ever practiced up-cycling?</p> <p>Are you satisfied with the experience? Are you continuing?</p> <p>(Present photo) What about this case? Do you want to practice?</p>
Ending questions	<p>Was the summary appropriate?</p> <p>Any other comments?</p>

1. Opening questions: The purpose of the opening question was to encourage all the participants to be acquainted with the group discussion, and instead of focusing on the personal experiences, general questions regarding the factual side of the topic were asked.
2. Introductory questions: These questions introduced each of the study topics to the participants, as well as being open-ended enough for the individuals to respond freely while engaging them to brainstorm about the topic of sustainable clothing in their personal homes.
3. Transition questions: These questions were designed to slowly shift the focus into key questions for the study. Participants were encouraged to make connections with their personal experiences and the study topic.
4. Key questions: Questions directly pertaining to the individual knowledge and experience of the participants in their home practices of upcycling were asked. More time for response was given to each individual in order to for the participant to give a full, detailed account of their background status, methods practiced, upcycling knowledge and tips, along with other relevant personal accounts.
5. Ending questions: As a conclusive question, the participants were asked to reflect upon whether their knowledge on upcycling and their practices at home were in sync. The interviewer summarized the discussion at the end, and asked the participants if anything else need to be added to the discussion summary, giving more time for the participants to review the group discussion (Table 2).

Results and discussion

Sustainable clothing in families

Attitude for sustainable clothing

Participants who believed that family-focused sustainable clothing practices should be done mentioned the role and importance of upcycling in families. They think that families have discretion for the practice of sustainable clothing, and told that they tried to practice this on purpose.

'At the end, it is my family who determines whether to use the product, although it is the producers that make it. (Participant 3)'

'When families recognize such effect (on sustainability), companies will practice sustainable measures eventually. There is no effect when only producers practice it. (Participant 6)'

'I think behaviors among families are more important, because if we do not execute sustainable behaviors ourselves, the intention of producers will never be realized, even if sellers do produce sustainable products. (Participant 23)'

On the other hand, participants who focus on the role of producers in sustainable clothing said that the role of producers is more critical, as many environmental and social problems arise in the course of production.

They thought in receptive position, without subjectively thinking about the role of families in clothing sustainability. They also answered that families practice sustainable clothing according to the intention of producers. This behavior was considered to be a more passive behavior than the former, since families are not productive consumers, but passive followers in this case.

'Producer has great responsibility. We are in a receptive position as we choose products, and we can only do it when they produce them. I think we have no options to select when the producers just make products to be discarded after one-time use. (Participant 2)'

Practice of sustainable clothing in families

Selection of sustainable fashion products Participants, as the result of interview, were interested in sustainable fashion products, and told the interviewer that they were cooperative in buying sustainable products. Many products purchased by the study participants were eco-friendly products: products practicing social responsibility, up-cycled products, and durable products for long-time wear.

Also participants were much interested in social enterprises in textile industry, and they positively thought of the impact that social enterprises weigh on society, considering that social enterprises are based on sustainability.

'I enjoy shoes brand 'T'. They say that if I buy one pair of those shoes, I would be donating another pair to the refugees in the world. Along with satisfaction that I did a good thing over the fact that I bought what I need, I am interested in what things are there beyond the fact that I simply bought things. (Participant 12)'

And it appeared that the participants chose the product that could be used for a long time for the practice of sustainable clothing in families while aiming for fast fashion. Although they purchased SPA brand product because of competitive low price of fast fashion, it showed that the sustainability factors besides price apply to buying decision as consuming consciousness gets increased, and they chose and bought the clothes to wear for a long time, without being swayed by temporal fashion.

'I bought brand "oo" because of its low price. But, now I rarely buy SPA brand. Because they are really for one season, being much too sloppy with one time washing.... Sometimes I think about why I buy clothes that I will discard soon. (Participant 26)'

Sustainable washing and control The participants also thought much of the impact on environment during washing and control process. They consider the amount of detergent and washing temperature, and told that they purchase the clothes where contamination could easily be removed by partial washing or cleanness could be maintained without frequent washing. Checking the material when buying and recognizing that the frequency of washing gets different depending on materials were important considerations. And they answered that they prefer the clothes which do not require ironing; this can be a clothing behavior, considering sustainability beyond the simple convenience of control.

Recycling and used articles trade As a result of interviews, most of the study participants do not destroy clothing products whose psychological lifespan expired, but seek ways to use them again. Participants told that they do not scrap clothes, but practice sustainable clothing in families by extending the lifespan of those clothes, for subjective sustainable clothing in families. They recycle the clothes in various ways, from mending the size through re-form to mending the men's clothes to fit to the body of women, or correcting the silhouette past with fashion, or changing the usage completely. It has shown that this recycling not only weighs positive impact on environment, by reducing the clothes wastes, but also gives economic saving effect and usage of the article for a long time with affection after recycling. Also they get emotional satisfaction with a way of life in recycling hobbies.

It has shown that they donate them to acquaintances, beside Beautiful Store, Citizen Marketplace and used articles trade. Most of the study participants think much positively about 'donation' of unused articles to acquaintances as gifts or 'Passing on', and think that it is the most non-obligative and effective way.

'I use Beautiful Store whenever I arrange my closet. At first I thought donating to Beautiful Store would be cumbersome, but with continuation of such donation, now

I don't think it's so difficult. (Participant 5)

I open marketplace for used articles like this each week. Now neighbors bring their unnecessary articles by themselves (knowing that I sell at used articles marketplace). It is also exciting to watch and meet new people at the marketplace. (Participant 9)

There are many clothes we don't wear because we are tired of it, or they don't fit anymore. My mother gathers such clothes and gives them to my cousins. We don't have time to re-form these clothes for ourselves again. Giving them to those who need them is the best. (Participant 28)

Up-cycling in families based on sustainability

Attitude towards up-cycling in families

The study participants voiced recycling as one of the methods for sustainable clothing in families, and thought of up-cycling as a kind of recycling. They explained up-cycling as 'recycling, re-use, re-modeling,' and said that up-cycling newly commercializes used articles or changes their usages, and has aspect of raising the value and quality of commodity in used articles. They thought up-cycling in families weigh positive impact on environment, and there was a participant who said that he got interested in up-cycling by the up-cycling brand products of 'S', 'F', 'U' and brand story. The common thought of the up-cycling participants is that up-cycling is the recent trend topic.

Degree of understanding participants' Degree of understanding of up-cycling was classified into three types: (i) the type that distinguishes up-cycling and down-cycling, (ii) the type who heard about up-cycling or encountered the books, lecture, and articles with subject of up-cycling, and infer about up-cycling as similar in meaning with recycling, but there were also some who could not distinguish up-cycling from down-cycling or recycling. Finally, there was participant type (iii) who never heard of up-cycling or encountered relevant media about it.

The younger in age of the participant, the higher the degree of understanding about up-cycling, and they answered that they had opportunity to encounter up-cycling. When explaining the meaning of up-cycling, they compared it with down-cycling, and said it is recycling of raised value.

I think up-cycling is to make an A product into an A+ product. I think that, with recycling, they make more value in the products. (Participant 17)

Simple recycling could deteriorate the quality, and isn't up-cycling adding a new value to the quality which existing product has? (Participant 5)

Participants in higher ages were unfamiliar with the word 'up-cycling,' and they could not relate it with the concept, thinking that the practice of their own is simple recycling, despite the fact that they already practice up-cycling unknowingly. They were ashamed of not knowing the meaning of up-cycling, as it is English, and felt uncomfortable when asked about the word 'up-cycling.' On the other hand, they smoothly talked about it in relation with their own experiences, when asked by correcting the word 'up-cycling' to 'recycling of raised value.'

And the participants in low degree of understanding also said they naturally understood the difference between up-cycling and down-cycling as they shared various stories. Participants who never distinguished between the two, heard their various experiences with up-cycling and down-cycling also understood up-cycling upon talking about their own experiences, while actively participating in discussion, which showed that they are indeed interested in up-cycling with routine activities, though they did not establish the meaning of up-cycling in real life.

Path for acquiring information Participants said that the path they get information was through 'the brand that sells up-cycling products,' 'newspaper or magazine,' and 'internet blog posts.'

Participants said that how they could distinguish up-cycling from recycling was because they understood the meaning of up-cycling by seeing the method of up-cycling. In particular, they said they were attracted to up-cycling by viewing various up-cycling methods and their results on internet blogs, and realized that there are many relatively simple up-cycling methods that they can practice in families.

'Clicking on a unusual lug photo on the main of web-site 'N', I saw an article which introduced a method to make by twisting old T-shirt, saying that it's up-cycling. It was interesting and amazing. And seeing that it was simpler than I thought, I thought I could give it a try. (Participant 7)'

Participants who got information about up-cycling through its brand were much interested in up-cycling product itself, rather than the method and value of it, and said they got interested in up-cycling due to up-cycling product in that brand. And they recognized up-cycling brands as social enterprises. Though they think they contribute to society by purchasing up-cycling product, they felt attraction to the up-cycling product itself, and said they bought it thinking it is more excellent in design compared with existing product.

'In newspaper I saw an article introducing up-cycling brands as social enterprises. It was the first time I encountered up-cycling. (Participant 13)'

'While searching for the bag of 'F' on internet, I realized that they made it with old banner. After that I got to know the word up-cycling when searching for the photos. (Participant 24)'

However, not all participants who recognize up-cycling method, up-cycling brand, and up-cycling product could understand the meaning of up-cycling's 'recycling of raised value' and distinguish it from down-cycling. It shows that in families they get more interested in the result, the product, rather than the meaning of up-cycling.

Relation between knowledge and practice of up-cycling As an important factor on the course of decision-making and information process, many studies (Howard and Schwartz 1980; Laroche et al. 2001) conducted research of knowledge as major influence factor which leads behavior. The knowledge about up-cycling can be defined as understanding of individual's various experiences and the concept and method for up-cycling, and personal idea of up-cycling (Kim and Kim 1999). But, this study about up-cycling practices in families showed that the degree of knowledge for up-cycling and practice of up-cycling have no direct relation.

On the other hand, it showed that the information of recycling materials and information about up-cycling weigh impact on practice of up-cycling. The knowledge about specific method could induce up-cycling, and when recognizing the information about securing of materials, skills for sewing machine, method to effectively use up-cycling product, the practice of up-cycling is positive. Most of participants telling the difficulty in up-cycling practice said 'because of poorness in handling the instrument like a sewing machine,' and it matches with advanced study of Vining and Ebreo (1990) which compared the knowledge, motive, and demographic characteristics between recycling persons and non-recycling persons, saying that the more information and knowledge one has about recycling materials, method, recycling products, the more one is familiarized with recycling and frequent practice.

Dickson (2000) said about purchase behavior of up-cycling product that the more in understanding of up-cycling, the higher the interest in up-cycling product and the will to purchase, and the more they understand the ethical characteristics of product, the higher the trend to purchase that product. But this study showed that they purchase thinking that up-cycling product itself has better level than other existing product, design, and quality. Rather, they said that they became interested in up-cycling when purchasing up-cycling product and listening to the background story and materials of such product, even though they had no information about up-cycling.

Case of satisfaction/dissatisfaction of up-cycling in families

Satisfaction

Scarcity Participants in the study mentioned the scarcity as the biggest value of up-cycling product. In particular, telling about the scarcity of materials, they said that it is the product made by recycling of wastes has scarcity, and it is attractive that it was uniquely made with unexpected materials. They said up-cycling product is fresh in standardized clothing, and it was an effective way to express their personalities.

Like this, up-cycling in families fostered productive spending upon necessity and subjectivity, not following the image made by others or society. And up-cycling product in families can express the originality of producers escaping from standardized ready-made product with analogue manufacturing style, and participants evaluated this as valuable with due to its handicraft characteristics and its scarcity.

'It was really pretty to see what's made of unused jeans or bags, as it's unique and original. It seems attractive to mend them according to the purpose we want. (Participant 12)'

'Frankly, the clothes these days are really similar. They sell fashion product here and there all the same.... They all again make it when entertainers wear it. But, if I make mine as I want, it would be one and only, and it will cost less than the ones sold in the market. Participant 18)'

Emotional satisfaction It showed that up-cycling is a hobby and they get emotional satisfaction when searching for and being familiarized with new up-cycling method. They said that, as a hobby, up-cycling is relatively less in monetary burden and has merit to take it easy in daily life.

The course of searching for and planning up-cycling method could be the time to find ego and the relation with old articles and this led to emotional satisfaction. It is contrary to today's spending action which depends on fashion without identity, thus it could prevent abnormal hedonic spending.

'First, I feel happy when I make this. Being idle at home, I get depressed, but when I do this I receive praise.... And it's like I'm pleased to see people liking what I made. (Participant 8)'

'When there's a lot of stress on my mind, I try to focus on making new articles while looking around my home, without minding anything. I can then forget worries, feeling myself as useful. It's a really good hobby for me. (Participant 26)'

'Whenever I make up my mind at home, up-cycling is just doing it with things to be discarded. It's less in burden without big money. While unused things get accumulated at home... (Participant 25)'

Formation of affection Modern people had no reason to have affection to what they possess, as they easily buy things and discard them. But, participants said they got affection for clothes with up-cycling. They said they cannot easily discard up-cycling product they made and use them for a long time with affection.

'As it is a necessary article that I made by myself, I get more attached to it. It's different from the articles I bought without thinking much. (Participant 27)'

Economic effect Practice of up-cycling brought economic effect. First, unnecessary spending is reduced as they can adjust spending desire through up-cycling, and it showed that there's economic saving effect because up-cycling re-uses articles to be discarded, such as using remaining cloth or clothes from past season.

'Recycling at home, I feel like I'm a smart housewife. Reducing waste and not discarding things.... (Participant 27)'

And up-cycling makes people share product with others, and further sell articles in citizen marketplace or open market with a much lower price, producing profits. Part of the proceeds from this sales go to food support project for alienated class, library program support project, causing much more positive economic effect, compared with a simple spending life.

Participants who affirmatively talked about economic effect were housewives. As they became interested in recycling and up-cycling, they said they developed a habit to look once more before discarding anything, and it helps in family budget through the reduction in purchase of articles. On the other hand, students in their 20s did not mention the economic benefits, but they have a rather negative recognition about spending for up-cycling. This, as a result, shows the difference in securing of up-cycling materials.

Dissatisfaction

Recognize time and energy as expenses Whereas they recognize the necessity and value of recycling and up-cycling in family clothing, they answered that too much energy and time is spent due to passive reason in practicing up-cycling. And compared with

ready-made product minding on having spent time and energy, participants who think that buying ready-made product is much more economic was skeptic in practice of up-cycling.

'Without hand skill I never think of or have courage to do it. I think it's better to buy cheap clothes, rather than putting so much effort (energy). It takes so long to make, and I can use them for a long time compared with not having much time. Buying necessary articles is fast and easy.... (Participant 6)'

'Re-forming also becomes labor costly with the efforts, and nowadays labor costs are much too expensive. But, I think buying the clothes at shopping mall is convenient and cheaper and more effective. (Participant 12)'

Like this, participants understand positive effect of up-cycling, but short-term economy became an obstacle in families, they compared and chose economy for the time and energy cost of sustainability and up-cycling. The effect of sustainability should be understood in long-term view, and cheap product can be superior as families are more interested in direct and short-term economy. Therefore, it showed that emphasis only on long-term effect such as sustainability of up-cycling is difficult to activate up-cycling behaviors in families.

Methodological limit Participants who are afraid of in-person practice of up-cycling thought they should have sewing machine or specific skills for the practice of up-cycling, and were rather worried that their own practice of up-cycling could bring deterioration of quality, feeling burden in practice of up-cycling.

'I am worried that I'm not familiar with making things. I don't dare touch it, thinking, what if I deteriorate the value when I fiddle with it. (Participant 21)'

Participants who think they have no hand skill or need specific skills for up-cycling of clothes were passive about up-cycling, but told their intention of participation, telling they need education program about up-cycling.

'There's basic patterns in clothes. And it's like that some people are unable to reform and don't think of trying, as they can make use of lines and sense of wearing it, if they don't have pattern skills for it. (Participant 24)'

'If there are much public programs for necessary skills for up-cycling, that is, sewing machine handling program, I'd like to do it after learning them.... But, there's no such option for me. (Participant 11)'

And they showed negative opinion in repeated making of unnecessary product, as they practice only a simple method by 'having materials,' 'with limitation in making,' rather than practicing of up-cycling upon necessity. Beside this they talked about negative factors in practice, such as 'space for up-cycling is insufficient,' 'purchase new and side materials for up-cycling, as using of waste only is part when doing up-cycling.'

'Doing up-cycling is not just using the things that are to be discarded, we should buy the materials for it. I'm not sure if I will wear it after doing up-cycling Then it's ultimately a waste. (Participant 5)'

Limitation in quality We can see that quality dissatisfaction for recycling product was the biggest part, and the part of quality was the weakest in use of recycling product in the study of Choi et al. (2014). Participants in this study also talked about the quality in up-cycling product, many opinions were that they cannot utilize the function of product though they do up-cycling because of insufficient hand skills, or up-cycling product is 'poor', 'unclean', and that the quality gets deteriorated even with up-cycling due to weak durability as the product itself used for up-cycling material are produced according to fast-use and fast-discarding. Actually, the result of interview showed that they quality could be assured when the practice of up-cycling in families was commercialized with good-quality product materials, with high degree of satisfaction and long-term use.

And they answered that when doing up-cycling, the clothes were weak and unclean with trace of use in up-cycling material itself, falling the sense of satisfaction.

'As it's a good thing, I can do it once or twice. But, there's doubt if this is solid, and it was much insufficient in that aspect, because of feeling that up-cycling product was made by thinning out of something. (Participant 11)'

'With many of SPA brand these days, doesn't the re-forming itself with the cloth of SPA brand cause deterioration of quality? SPA brand is much thin and not very good in the cloth itself. The quality doesn't look good as it is made so that the cycle rotates much too fast, and buying the cheap product in the market seems better than making something with such low price materials. (Participant 12)'

Conclusion

This study performed the research for the purpose of status of sustainable clothing and up-cycling in families. In particular, this study shared routine experiences of individuals in families in various ways through interaction of participants in comfortable atmosphere via group interview, and researcher suggested significant implication of such results by in-depth understanding of the attitude and experience of participants.

It showed that they lay stress on the practice of sustainable clothing in families, and make efforts for sustainable clothing in families, considering the family as subjective consumer. It showed that they make selective purchase of sustainable fashion products in families, washing and control for minimizing of environmental impact and energy consumption, and recycling and used articles trade, a way of life for sustainable clothing.

Participants talked about recycling as one of practice methods for sustainable clothing in families, in particular, up-cycling area expansion of sustainable clothing in families could be expected for 'recycling of raised value'.

Participants thought that up-cycling would weigh positive impact on environment, and they could practice environmental sustainability by reducing wastes, as they actually do up-cycling with use of waste in families. And as up-cycling's way of life they practice qualitative consumption by reducing unnecessary spending, and further created earnings by selling up-cycling products made in families at citizen marketplace.

And up-cycling product is valuable with its scarcity, and could escape monotonous living by expressing their own personality, and enjoy high emotional satisfaction living as

up-cycling becomes a hobby. Therefore, it showed that up-cycling raises cultural, social sustainability.

They said they cannot easily discard up-cycling product they made and use them for a long time with affection. Like this sustainable characteristics of up-cycling appeared in families, and it is thought that up-cycling will be helpful in creation of new values and developmental availability in sustainable clothing.

This study has its meaning that it raised the understanding of the attitude and aspect of sustainable clothing in families in psychological aspect, but has difficulty in generalization as it is a qualitative study targeting small group of participants. Therefore, quantitative research targeting large group of participants should be supported in future study.

Authors' contributions

SS conducted a literature review and focus group interview, JK summarized the focus group interview results, and YN made the overall conclusion. All authors read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

Ethics approval and consent to participate

Not applicable.

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References

- Brito, M. P., Carbone, V., & Blanquart, C. M. (2008). Towards a sustainable fashion retail supply chain in Europe: Organisation and performance. *International Journal of Production Economics*, *114*, 534–553.
- Chi, T. (2015). Consumer perceived value of environmentally friendly apparel: An empirical study of Chinese consumer. *Journal of Textile Institute*, *106*(10), 1038–1050.
- Choi, S. R., Choi, E. H., & Do, W. H. (2014). Upcycling awareness research fashion clothing goods for Korean university students. *Journal of the Korean Society of Clothing and Textiles*, *16*(1), 111–117.
- Clark, H. (2008). SLOW+ FASHION—an Oxymoron—or a Promise for the Future...?. *Fashion Theory*, *12*(4), 427–446.
- Dickson, M. A. (2000). Personal values, beliefs, knowledge, and attitudes relating to intentions to purchase apparel from socially responsible business. *Clothing and Textiles Research Journal*, *18*(1), 19–30.
- Fletcher, K. (2008). *Sustainable fashion & textiles—design journeys*. Earthscan: London.
- Follows, S. B., & Jobber, D. (2002). Environmental responsible purchase behavior: A test a consumer model. *European Journal of Marketing*, *24*(3/4), 723–746.
- Goworek, H., Fisher, T., Cooper, T., Woodward, S., & Hiller, A. (2012). The sustainable clothing market: An evaluation of potential strategies for UK retailers. *International Journal of Retail & Distribution Management*, *40*(12), 935–955.
- Howard, J. A., & Schwartz, S. H. (1980). Explanations of the moderating effect of responsibility denial on the personal norm-behavior relationship. *Social Psychology Quarterly*, *43*, 441–446.
- Joergens, C. (2006). Ethical fashion: myth or future trend. *Journal of Fashion Marketing and Management*, *10*(3), 360–371.
- Kim, Y. J., & Kim, J. S. (1999). A study on the environment-oriented consumer behavior of housewives -as related to wives in Cheju City. *Journal of the Korean Home Economics Association*, *37*(3), 157–174.
- Krueger, R. A., & Casey, M. A. (2000). Overview of focus groups. In *Focus groups: a practical guide for applied research* (pp. 3–19). Thousand Oaks: SAGE.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, *18*(6), 503–520.
- Maineri, T., Elaine, G. B., Trisha, V., & John, B. U. (1997). Green buying: The influence of environmental concern on consumer behavior. *The Journal of Social Psychology*, *137*(2), 189–204.
- Manchiraju, S., & Sadachar, A. (2014). Personal values and ethical fashion consumption. *Journal of Fashion Marketing and Management*, *18*(3), 357–374.
- Merchant, C. (1989). *Ecological Revolutions: Nature, Gender, and Science in New England*. London: The University of North Carolina Press.
- Na, Y. J. (2011). Appearance frequency of eco-friendly emotion and sensibility words and their changes. *Science of Emotion & Sensibility*, *14*(2), 207–220.
- Na, D. K., & Na, Y. J. (2015). Investigating the sustainability of the Korean textile and fashion industry. *International Journal of Clothing Science & Technology*, *27*(1), 23–33.

- Shaw, D., Hogg, G., Wilson, E., Shui, E., & Hassan, L. (2006). Fashion victim: The impact of Fair Trade concerns on clothing choice. *Journal of Strategic Marketing*, 14(4), 427–440.
- Tillikidou, I., & Delistavrou, A. (2004). The influence of the materialistic values on consumers' pro-environmental post-purchase behavior. In *Marketing Theory and Applications, Proceedings of the 2004 American Marketing Association Winter Educators' Conference*, (Vol. 15, pp. 42–49. Chicago, IL: AMA.
- Turker, D., & Altuntas, C. (2014). Sustainable supply chain management in the fast fashion industry: An analysis of corporate reports. *European Management Journal*, 32(5), 837–849.
- Vining, J., & Ebreo, A. (1990). What makes a recyclers? A comparison of recyclers and non-recyclers. *Environment and Behavior*, 22(1), 55–73.

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