

The effect of consumer attitudes on design for product longevity: The case of the fashion industry

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Abstract: Product longevity is a key aspect of sustainability and encouraging consumers to prolong the lifetime of products therefore has a part to play in minimising environmental sustainability impacts. The production, distribution and disposal phases of the clothing life cycle all create environmental impacts, but extending garments' active life via design, maintenance and re-use of clothing is the most effective method of reducing the negative effects of the clothing industry on the environment. The study took an exploratory approach using mixed qualitative research methods to investigate consumer perspectives on clothing longevity and explore everyday processes and practices of clothing use, e.g. purchase, wear, care, maintenance, repair, re-use and disposal. The research findings showed that numerous factors affect consumers' perspectives of clothing longevity during the purchase, usage and disposal stages of the clothing lifecycle. The conclusion addresses how these factors can influence product design practice in the fashion industry.

Keywords: clothing longevity; sustainable fashion; consumer behaviour; consumer attitudes

1. Introduction

Product longevity is a key aspect of sustainability and encouraging consumers to prolong the lifetime of products therefore has a part to play in minimising environmental sustainability impacts (Evans & Cooper, 2010). The production, distribution and disposal phases of the clothing life cycle all create environmental impacts, but life cycle assessment (LCA) has found that extending garments' active life via design, maintenance and re-use of clothing is the most effective method of reducing the impact of the clothing industry on the environment. Extending the average life of clothes by three months' usage per item would reduce carbon,



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water and waste footprints by 5-10%, thus leading to savings of billions of pounds for producers and consumers (WRAP, 2012; McLaren et al., 2015). Previous research into extending product lifetimes has identified a requirement for more in-depth understanding of consumer perspectives on clothing longevity, as well as behaviour relating to maintenance and disposal of garments (Cooper et al., 2014; Cooper et al., 2013; Langley, Durkacz & Tanase, 2013). However, the fashion business clearly thrives on innovation and the creation of obsolescence, thus appearing to be incompatible with the notion of keeping clothes for an extended period of time. This contradictory situation is explored within our paper, by seeking insights from consumers about their behaviour towards clothing and assessing the ways in which it can impact upon the incorporation of longevity into clothing through design.

The paper aims to investigate consumers' behaviour towards clothing longevity, establishing potential obstacles and finding ways in which they could be overcome through design practice and processes. The research questions that the study seeks to answer are:

- What are consumers' views on the longevity of fashion products?
- Which aspects of fashion design could encourage consumers to prolong the lifetime of clothing?
- What are the barriers and enablers to designing products for longevity that should be investigated to meet consumer needs?

This research project has been conducted by an interdisciplinary team comprising members with experience of knitwear and textile design, fashion management, marketing, product longevity and supply chain management. Funding has been provided by the UK Government's Department for Environment and Rural Affairs (Defra). At the end of the study, findings will inform the development of a tool-kit to facilitate fashion design that prolongs the life of clothing.

2. Literature Review: Consumer attitudes towards clothing longevity

If the usable life of clothing can be increased, leading to less frequent replacement, fewer garments can be discarded, with a lower number of resources being consumed in clothing manufacture (Cooper et al., 2013). Existing research indicates that certain consumer segments, such as mature consumers and those looking for value, are becoming more willing to buy clothing that lasts for longer.

There are various approaches that brands and retailers can take in order to enhance product longevity. For example, knitwear label 'Keep and Share' designs garments in styles that do not follow mainstream fashion trends, and which can be offered for hire, with the aim of making them wearable for longer than ordinary garments (Goworek et al., 2012; Keep and Share, 2015). Further examples include children's schoolwear, which often has a protective Teflon coating, and Flint and Tinder (2015), who offer their customers free repairs to their branded hoodies for 10 years.

2.1 Purchase

During design and production, longevity can be built into clothing in various ways such as classic styling, strengthening seams or using durable fabric and components (Cooper et al., 2010; Goworek et al., 2012). Although fast fashion has contributed to the trend towards a throwaway approach by consumers (Barnes & Lea Greenwood, 2010; Birtwistle & Moore, 2007), WRAP research has identified more recently that there is a level of demand for clothes that last longer, mainly amongst men, older people, those on low incomes or higher social grades and those who own a large number of garments (Langley et al., 2013). However, durability of clothing can be an elusive concept for consumers; they may be unsure of how to check and assess durability at the point of purchase, or not consider it at all (Langley et al., 2013). Additionally, their expectations of clothing durability may be dependent upon factors such as retail price (Bide, 2012) and it is unclear whether they impact upon consumer behaviour during purchase, or the usage phase.

2.2 The Usage Phase: Wear, Care, Maintenance and Repair

A paradox exists regarding clothing care and maintenance, in that laundering can enhance garments whilst simultaneously contributing to their deterioration (Kelley, 2009). Consumers' understanding and implementation of care instructions has a significant effect on the longevity of clothing. Some of the major issues that can have a destructive effect are the selection of inaccurate wash cycles and abrasive detergents (Ross, 2013), over-use of fabric conditioner (Chiwese & Cox Crews, 2000), and overly frequent washing and tumble drying (Laitala, Boks & Klepp, 2011). The 2013 Langley et al. study for WRAP revealed that men, younger people and those in high income brackets were the main segments that lacked confidence in their ability to care for clothing correctly. The literature on clothing care is relatively sparse and the limited amount of studies available on this topic tend to concentrate on reducing energy, water or chemicals, in the interests of being more environmentally sustainable or economical (e.g. Bain et al., 2009; Dombek-Keith & Loker, 2011). Consequently, there is a literature gap in terms of consumers' behaviour relating to care, maintenance and understanding of the effects of care on clothing lifetimes.

Previous studies have investigated the social and technical aspects of clothing usage and maintenance, relating to mutually interdependent dimensions of wear and laundering, establishing that there are opportunities to influence consumers to alter their behaviour towards more sustainable practices (Shove, 2003). Other research has proposed that a deeper understanding of the social and experiential dimensions of usage and ability to maintain and repair garments effectively is important to keep clothing in use (Fletcher, 2012; Laitala & Boks, 2012; Niinimäki & Armstrong, 2013). Value is identified as a key factor in retaining garments, moving beyond purchase price to functional, aesthetic, emotional, social, and sensory value (Pink, 2005; Fletcher, 2012; Laitala & Boks, 2012; Niinimäki & Armstrong, 2013; McLaren et al., 2015) that could be facilitated by initiatives from the clothing industry, such as the production of clothing made from naturally anti-bacterial fibres to maintain garments' freshness (Laitala & Boks, 2012).

2.3 Re-use and disposal

Consumers inevitably display variable behaviour in determining when clothing is ready to be discarded, since they may have different criteria that affect their decisions about the point when garments are no longer usable (Bide, 2012:126). For example, pilling may be acceptable to some, but for others it would result in disposal of a garment (Laitala & Boks, 2012). Clothing may often be disposed of before the end of its useful life because consumers have become tired of it or it is perceived as being out-of-date, making new products appear more desirable (Cooper et al., 2013; Laitala & Boks, 2012; You Gov, 2012). Wearable clothing of this kind can be donated to charities, thus extending its life, but UK consumers buy so much new clothing that the supply of second-hand garments exceeds demand, resulting in it being exported, which can impact negatively on the economies of developing countries by replacing sales from local suppliers (Rodgers, 2015). Consequently, WRAP (2012) proposes a higher rate of re-use in the UK as a preferable method of increasing the life-span of clothing. Despite this, a lack of social acceptability and hygiene considerations can limit sales of used products (Fisher et al., 2008). Nevertheless, consumers are demonstrating an increased willingness to re-use items via a variety of contemporary routes such as buying online via eBay or 'swishing' events where participants swap clothing.

Clothing can be recycled with the support of local government services, private companies and, more recently certain brands and retailers, such as H&M and Patagonia, have begun to offer recycling initiatives to their customers (Ekström, 2015). Even garments that can no longer be worn can retain some use by being made into carpet underlay, furniture fillings or insulation (WRAP, 2012). However, most consumers may not be aware of these opportunities to recycle clothing, which are therefore frequently disposed of in general refuse (Fisher et al., 2008; Birtwistle & Moore, 2007). It would therefore be beneficial to increase consumers' awareness that all used textiles are of value, to raise the level of repurposing, whilst reducing the amount of disposal in landfill.

3. Methodology

The study adopted an exploratory approach, using mixed qualitative research methods to investigate consumer perspectives on clothing longevity and explore everyday processes and practices of clothing use (e.g. purchase, wear, care, maintenance, repair, re-use and disposal) for the purpose of establishing barriers and opportunities for design to support the creation of longer lasting clothes.

3.1 Focus Groups

Four focus groups were conducted in order to gain a variety of consumer perspectives on clothing longevity, located in cities in the Midlands. This research method was selected since it is suited to research which investigates a topic to be investigated in depth, encouraging interaction between participants, and focus groups were used in a previous study on a connected theme (see Armstrong et al., 2015).

The focus groups included discussion facilitated by members of the research project team and additional interactive tasks. The schedule prompted discussions on four main stages of garment lifetimes, e.g. purchase, usage, re-use and disposal. Personal expectations and experiences of different garment lifetimes were described, to explore individual and shared behaviours at each of the stages and determine what limits garment lifetimes.

Interactive tasks explored participants' relationships with clothing through a favourite garment exercise (Figure 1), and perspectives on a range of potential sustainability strategies by presenting products, services and marketing that could support clothing longevity (following Armstrong et al., 2015).

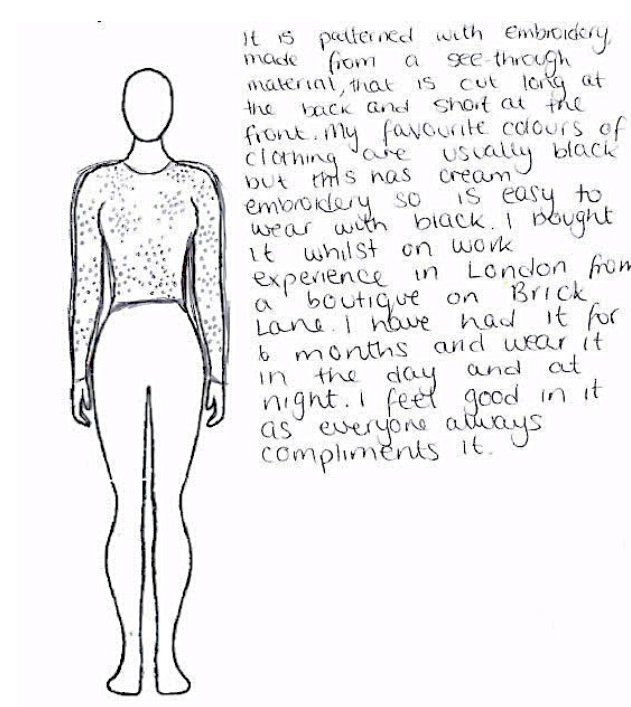


Figure 1 Example of focus group favourite garment exercise

The focus groups took place in November and December 2014, each for a duration of around two hours, involving 29 participants in total. The discussions were transcribed, then analysed using NVivo Qualitative Data Analysis software.

3.2 Clothing Diaries

An ethnographic approach was taken towards exploring the details of consumers' clothing maintenance, since this is an appropriate method when an aspect of culture needs to be studied in-depth (Quinlan, 2011). In addition to the focus groups, clothing diaries (Figure 2) were designed as an empirical tool for qualitative data collection in the specific research environment (participants' own homes), and to gather insights into everyday garment wear and care practices. An additional sample of six consumers carried out the following:

- Consumer clothing diaries recording wash, wear and care patterns of an individual, everyday garment selected by each participant over an eight-week period.
- Diary-interviews were compiled following completion, in order to learn more about participants' attitudes towards clothing longevity and social factors behind their behaviours

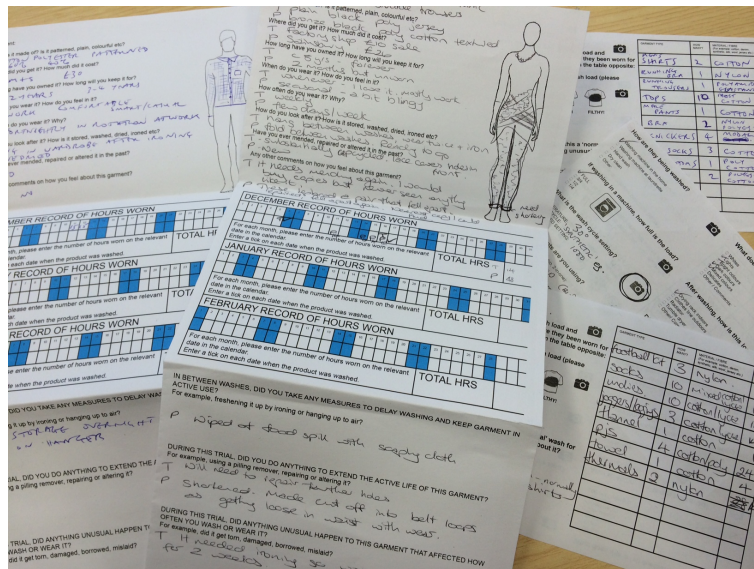


Figure 2 Clothing diary packs (image credit: Angharad McLaren)

3.3 Sampling

Qualitative research was carried out via focus groups with 29 participants in three consumer segments, identified as priorities for research into clothing longevity in a previous study by Langley et al. (2013):

- Consumers aged 18-35-years associated with 'fast fashion' consumption (Group F)
- Parents with children of school age (Group P)
- Consumers aged 30-60-years with a focus on classic clothing (Group S)

Each focus group contained one consumer segment, as listed above. The three segments were selected to represent market segments with different approaches to shopping, different demands of clothing and lifestyles that affect their behaviour towards clothing lifetimes.

Purposive sampling was used to recruit participants in the three consumer segments to ensure that a range of relevant types of participant could be included (Bryman & Bell, 2015). The sample was selected via a combination of demographic and behavioural segmentation. Group F consisted of students from mixed disciplines and young, full-time professionals aged 18-35-years, who shopped frequently in high street fast fashion outlets, such as Topshop,

H&M and Zara. In Group P, participants were all parents and the discussion focused on garments purchased for their children. Group S consisted of respondents aged between 30-60-years in a range of job roles and one who had taken early retirement.

Snowball sampling was used for the clothing diaries to acquire respondents with a variety of backgrounds and lifestyles who were willing to commit to the time involved. The samples for the focus groups and clothing diaries consisted mainly of female consumers, to reflect the fact that almost twice as much women's wear as men's wear is sold in the UK (Mintel, 2014) and that women are also typically responsible for purchasing most children's clothing.

As the findings of this study are qualitative, local and limited, the findings are not representative of the UK population, but provide rich descriptive data about consumer behaviours and perspectives on clothing lifetimes about which relatively little is known. This paper will present the findings of this consumer research, followed by a discussion of their implications for the design of longer-lasting clothes. As the study is not quantitative and the sample is not intended to be sufficiently large to be statistically significant, there is intentionally no mention of percentages of responses, as is recommended practice with a qualitative study of this kind (Hennink, 2014; Bryman and Bell, 2015).

4. Findings

This section discusses initial findings from the study, prior to the publication of the report by its funding body. The key aspects covered in the literature review: purchase, usage and disposal, will be considered, to provide insights into the ways in which consumer behaviour can impact upon fashion designers and the organisations in which they work.

4.1 Purchase

The results of this research showed willingness among consumers to purchase longer-lasting clothes, supporting the findings of Langley et al. (2013). Generally, value for money was the most important priority for all groups when purchasing clothing. Longevity was considered within this implicitly, as consumers want garments to last a reasonable lifetime in relation to their expectations, which were influenced by where it was bought, how much they paid for it, its care requirements, the type of material, and considerations of its purpose/context, e.g. work wear. Assessment of longevity at point of purchase was based on a combination of experience, touching, and trying on garment, as illustrated by this comment from one of the focus group participants:

"I think that's, it's sort of experience isn't it? ... you can't always 100% tell because you could buy something and be surprised by it but you do tend to look at the quality overall, you know, you fold it up. You might look at the seams. You might just look at the general hang of it, how the fabric reacts, what it's made from, so those sorts of things. It's not necessarily indicated by the price I don't think." (S)

Most of the consumers in each focus group were confident in their ability to assess longevity and identify better quality clothes, although all had experience of garments that had failed in a short time period and not met their expectations. All agreed they were unable to assess whether or not a garment would pill and some were unsure what caused it, how to prevent it or remove it. Participants associated certain brands with cheap, throwaway clothes that are unlikely to last, and avoided by some (e.g. Primark), whereas other brands were valued, associated with quality, style, customer service, good fit and selection (e.g. Nike, Gap, M&S and Next), resulting in a level of trust for their products. One of the respondents explained her views:

"I don't shop in any stores that I think would be short life garments. I think it's the store I go in rather than looking and checking the garment. I know that it's going to last. I don't go into the ones that are doing sort of instant throw-away fashion. So, if I did that, I probably wouldn't be bothered if the seams were going to go in after five wears because I probably expect it." (S)

Purchase price was, predictably, of the least importance for the 30-60 year-old focus group (S) and more of a priority for parents (P) and younger fast-fashion consumers (F). It was found that people did not generally bother to return low-priced faulty items. Although expectations of more expensive items were higher, as Bide (2012) also found, consumers felt price did not always positively correlate with quality. In general though, they had a higher level of trust in more expensive brands, and brand value was understood beyond the purchase price, as this statement shows:

"I feel like because I've spent more money, I have trust in that brand. If something went wrong with it, I'd be happier to go back and say, "This has happened. Would you mind replacing the garment?" And I feel like that's the kind of quality, whereas if that happened to me in the T-shirt from Primark I would probably throw it away." (F)

Comfort was also important and consumers said that they would avoid fabrics that had caused negative experiences, such as being scratchy, having no 'give', or making them feel sweaty. Comfort had different interpretations: comfortable to wear, a comfortable, relaxed style of casual wear for the younger market, or an outcome of feeling confident in styles that suit a person's body shape and sense of personal identity. Emotion-driven purchases, although sometimes impulsive, may be preferable to encourage clothing longevity, as the garment is better loved by the owner from the start, leading the owner to value it and take more care of it. Purchase strategies based on whether garments will go with other items in their wardrobe emerged in both the 30-60-year-olds focus group (S) and the student fast fashion group (F). Co-ordination helped to engage active use and, as one of the respondents stated:

"I very rarely buy anything that's sort of standalone. I will buy something which I think, 'Oh, that will go with that and that in my wardrobe.' So, you can mix and match..." (S)

Garment context was more important for young workers (F), making a clear distinction between work and leisure clothes. Most of the younger children were described as being

happy with whatever is chosen for them to wear, although some favoured comfortable materials (e.g. fleece) and developed extreme attachments to items as a result, refusing to wear anything else and wearing them past the point of outgrowing them. Certain items were bought specifically to last a long time, such as coats, work clothes, suits, children's clothes and jeans, which had fairly high expectations of being long-lasting for some members of the sample, such as this participant:

“... jeans shopping is horrific! ... I think my favourite pair of jeans I'd had for about five years. And then the seam just split. I was gutted. I've never found another pair of jeans like them.”
(S)

In relation to longevity, online shopping was considered a risk, as it wasn't possible to assess the quality of a garment and several in the sample said that they preferred interacting with clothing before buying. This was a typical comment from one of the participants:

“I think shopping for clothes online is always going to be a little bit of a gamble as well because it might look all right on the actual image but when you try it on, it could be a different case scenario, so you are taking a gamble with it, rather than going in the shop and physically having that item there.” (F)

Time affected clothing purchases for many in the focus groups, as a lack of time sometimes resulted in quick purchases and bad decisions. Visible indicators of longevity considerations, such as labelling, may be valued in these situations, to allow consumers to take longevity into account despite having to make a quick decision.

One of the most direct ways of enhancing clothing longevity would be to purchase second-hand clothing. The respondents' attitudes to buying and wearing second-hand clothes varied with reasons cited being similar to those mentioned in previous research (Fisher et al., 2008), including hygiene; not being comfortable wearing strangers' clothes; questions of quality and disliking the shopping experience. The younger fast fashion group were the most likely to shop second-hand, including online, reflecting a rising trend towards vintage clothing and possibly due to this group having the lowest income. The other groups were less likely to buy second-hand, due to lack of time and being able to afford new (professionals in the F group), or having adequate supply of hand-me-downs for children from friends and family (P). Some of the participants in the focus group aged 30-60-years said that they would buy second-hand if items were viewed as particularly valuable or rare, for example designer pieces, but they believed that the quality of clothing in charity shops had decreased. The younger (F) group discussed how they thought older clothes were better quality, made with more craftsmanship and care to last longer. Some of their comments suggested they felt trapped by the current cheap, fast system of short-life garments as it made them feel obliged to buy new clothing frequently.

4.2 Usage: Care, Maintenance and Repair

Easy care, convenience and cost of laundry were top priorities for parents and working people, as these two statements from focus group participants show:

"I mean with washing, I used to separate darks and lights, now it all just goes in in a mixed wash, everything. Yeah, I haven't got time to be messing with whites, darks, and also it's cheaper, isn't it to put one massive wash than two separate washes." (P)

"That's the joy with like M&S and Next and even Hobbs now have a suit you can machine wash now, even the jacket. That's so easy. Because otherwise, it's just going to live there in a dry-cleaning bag..." (F)

Care labels were rarely followed by the research participants beyond first wash and many found them difficult to understand. Wash and wear frequency was affected by social norms and habits, such as washing after one wear. The clothing diary exercise revealed that detergents were chosen largely due to brand familiarity rather than by suitability for fibre types, and that limited washing machine settings restrict how garments are washed. Price also affected the care relationship: consumers were more likely to hand-wash, separate colours, maintain and repair higher priced items. The value of an item was understood beyond purchase price though: the emotional value, exchange potential, social value, aesthetics and use value were also important.

As well as being seen as straightforward cleaning, washing was also seen as a process of refreshing the material or sensory qualities of the fabric, e.g. when leggings go baggy at the knees, or clothes need 'freshening up'. The cost of care was judged financially, e.g. dry cleaning, but also in terms of energy and water. Additionally, washing was seen as having a material cost to the garment's fibres that, while prolonging their active life in the short-term, ultimately leads to their deterioration. Pilling was a main area of concern that was experienced in both high- and low-priced garments and across fibre types, e.g. cashmere, acrylic and mixed fibres; a cause of much frustration and disappointment, despite many participants removing pills in attempts to preserve garment life. This is demonstrated by this statement from one of the study's participants:

"I started to buy a batch of this winter's jumpers, although I really only expect them to last a season quite a lot of them have already started to get bobbly bits on them, which, I mean we're only in November, that's not kind of not where my expectations would be when I made a purchase six, seven weeks ago." (F)

One of the participants in the diary exercise said that she did everything she could to maintain clothes and launder in an environmentally friendly manner, e.g. using eco detergent brands and low energy cycles, but would like to know more, to be able to sew and fix everything. She washed trousers after every wear though, despite reporting that clothes were at a low level of dirtiness. Further questioning revealed that, while this respondent stated that sustainability was a priority, in practice, social norms that dictate the importance of cleanliness and avoiding odours overtook her desire to wash garments less frequently.

Participants in the study were asked whether they took any special measures to extend the life of their clothing. Examples given by respondents were darning, stitching up hems, using Wundaweb and sewing on buttons: activities which were more prevalent in the groups of

parents and professionals, than in the student group. Some of the participants in group S occasionally paid for clothing repair services, although one member stated:

There are very few and again, particularly if you work full-time, you haven't really got much free time available... To be honest, it's easier to replace it. I would repair more if it was easier and cheaper to do it.

4.3 Re-use/Disposal

Those who were trend-driven would pass on or sell clothes before they wore out so that they could find replacements and keep up-to-date. All of the focus groups discussed donating items to charity shops. Most had a hierarchy of disposal methods, with expensive items being sold online (via eBay and Facebook selling groups, dress agencies or exchanging sites) or at car boot sales. Good quality items were passed on to friends or family, especially children's clothes. In Nottingham, there is a council 'red bag' textiles collection, and this was seen as a convenient way to dispose of items, especially when they did not feel these were good enough to be worn again:

"So my hierarchy goes: nice things for people I know, wearable, but not that nice to charity shop and complete rubbish into the red bag." (P)

Pilling was considered unacceptable to wear and affected satisfaction of user experience, leading to low active use and disposal. Other examples of reasons for disposal of clothing were T-shirts that had shrunk after three washes; zips and lining going on expensive garments when the rest of the garment was fine and leaching colours onto other items (due to colour transfer or hairy fibres). Failure of garments prior to their expected useful life caused strong emotional responses of frustration, annoyance and disappointment in our participants.

5. Conclusion

The research findings showed that numerous factors affect consumers' perspectives of clothing longevity during the purchase, usage and disposal stages of the clothing lifecycle, supporting the findings of previous studies (for example, Fisher et al., 2008; Laitala & Boks, 2012; Langley et al., 2013). This conclusion addresses how these factors can influence design practice in the fashion industry, recommendations that could also be applied in other industries. Designers and consumers can influence each other and this iterative process can potentially lead to improved product longevity.

This study found that a key way in which fashion products could be designed to encourage consumers to prolong the lifetime of clothing would be to ensure that customers would perceive garments as good value for money (although not necessarily cheap), because valuing clothing and having positive emotions towards it could encourage consumers to use them for longer. Practical considerations for designers such as selecting materials that ensure straightforward laundering, providing clearer care instructions, avoiding fabrics that

pill and ensuring designs are comfortable to wear, could also increase users' perception of a garment's value, thus improving the care and maintenance of clothing and prolonging active use prior to disposal. Certain participants were willing to repair clothes themselves, with repair services being difficult to access, and therefore designing garments to allow them to be repaired by consumers would be beneficial. For example, spare parts could be included or componentry could be replaced easily. Clothing which is designed to be versatile and adaptable in its styling and purpose could also help to minimise consumers' need to purchase more garments. There are commercial benefits to clothing brands and retailers as these measures also foster consumer trust, loyalty and brand perception.

Various barriers to designing products for longevity should be investigated to meet consumer needs, particularly two key issues. Firstly, due to the influence of fast fashion, there is pressure on the new product development process to design products quickly and cheaply, thus leaving limited time and resources to consider aspects of physical and emotional longevity. Secondly, designers may lack information about consumers' perspectives on clothing longevity, which does not enable them to be considered during the design process. Management support to facilitate access to market research about consumer perspectives and a toolkit of relevant guidelines for fashion designers could be enabling factors in facilitating design for longevity, to better meet consumer needs. This could be provided in the form of an online presentation via relevant government departments and industry bodies, to promote awareness of the environmental costs of clothing disposal. The toolkit could influence designers to develop products that have longer active use and thus discourage premature disposal by consumers. This could be a series of specific guidelines, used as a collaborative tool by design teams and other departments involved in product development, such as quality control, buying and marketing, blending consumer research and technical knowledge.

The implications for clothing companies are that they can provide product longevity guidelines to their design teams and investigate their own customers' opinions of clothing longevity, either supplying them to designers or involving the design/product development team in the discussion. To facilitate this, additional time and financial resources may need to be allocated by management. Clearly, this would be likely to affect price in certain respects, so price ranges may need to be reviewed in relation to consumers' perceptions of value. Implications for theory are that new models of the consumer decision-making process and the new product development process could be developed to incorporate steps which address clothing longevity.

Limitations of this study are that it was based in one country and one industry. Therefore, the research topic could also be applied in future research in the context of other locations and product sectors.

Acknowledgements: The findings presented in this paper are derived from a Defra funded research project EV0553 'Strategies to improve design and testing for clothing longevity'.

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