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What factors could be used to promote environmentally beneficial behaviours within garment use and discard?

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In the blue wardrobe of heaven are many unused clothes, too tight-fitting yet too beautiful to throw away. And in that wardrobe we hang our likenesses, yellow diaries yellowed with yesterday, thumb smeared with tomorrow. But the now, the present, like the hollow screech of ancient flamingos in search of shrimps, is still vibrantly shocking pink.

Vivian Stanshall, 1988

Abstract

It is becoming increasingly important for all disciplines to consider their impact on the environment; fashion design is no exception to this, as garment consumption behaviour has significant impacts on the environment. Most research into sustainable fashion has focused on the area of supply and production while under-emphasising the importance of demand in the material garment economy. More specifically, effort has been focused on reducing the impact of materials and manufacturing while the consumer use phase of a garment's lifecycle (frequency of wear, retention, maintenance and disposal) has been downplayed.

Reducing the impacts of the consumer use phase is dependent on changing consumer behaviour. Documenting and researching the consumer experience provides an opportunity to evaluate where changes towards sustainability can be made while acknowledging existing influences on behavioural practices. In this study, consumer research was undertaken in order to examine the motivations for, and barriers against four environmentally desirable consumer use behaviours; wearing garments for longer, repairing garments, shifting ownership of inactive garments and discard channel selection. A multi-strategy approach was utilised and included an in-depth qualitative wardrobe study with 17 participants followed by a quantitative online survey with 270 participants. The research sample was made up of females between the ages of 18 and 75, living in the UK. This sample was selected to give the best insight into garment consumption, framed within the location of the UK.

The results showed that understanding of environmentally desirable garment consumption behaviours were variable amongst participants. Despite this, environmentally desirable behaviours were occurring, motivated by a range of factors. Pro-environmental intent was not found to be a significant motivating factor for any of the four target behaviours. The participants' personal circumstances appeared to have a considerable influence on their practices, and any changes in circumstances could act as a prompt for behaviour change. Previously, sustainable fashion 'solutions' have focused on the design of new garments, based on the assumption that that physical attributes of garments have a dominant influence on consumer behaviour. The results suggest that the influence of garment design on behaviour may have been previously overstated.

Within fashion, little attention has been given to applying theoretical models to garment consumption behaviour. The understanding gained from the research was used to adapt Stern's Attitude- Context- Behaviour model for garment consumption behaviours. The adaptations focused on the inclusion of personal circumstances and the physical attributes of garments. This model offers meaningful insight into the influences on behaviour; a crucial

resource for designing behaviour change strategies. It is hoped that this research will help to expand sustainable fashion solutions beyond the design of garments, and allow more targeted behaviour change strategy. With this understanding of consumer behaviour, we could be promoting more sustainable consumer behaviours in more interesting and exciting ways- by making them more convenient, by incentivising them, prompting them, and other clever tricks, such as encouraging public commitment to change.

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List of Abbreviations and Symbols

ABC Theory	Attitude-Behaviour-Context Theory
App	Application
CBSM	Community-Based Social Marketing
CHA	Craft and Hobby Association
DEFRA	Department for Environment, Food and Rural Affairs
ECAP	European Clothing Action Plan
EU	European Union
kWh	Kilowatt-hour
LCA	Life Cycle Assessment
MISTRA	The Swedish Foundation for Strategic Environmental Research
ONS	Office of National Statistics
p	British Pence
SCAP	Sustainable Clothing Action Plan
TED	Textile Environment Design
UK	United Kingdom
WRAP	The Waste and Resources Action Programme
%	Percent
£	British Pound

1 Introduction

This thesis explores how existing theoretical behavioural models can be applied to consumer garment use behaviour. The developments in behavioural understanding give insights into how behaviour change could be motivated. Behavioural models have rarely been applied in the context of fashion use. A study was conducted with adult female consumers in the UK, with a focus on four garment use and discard behaviours: wearing garments for longer, repairing garments, shifting ownership of inactive garments and the discarding of garments using reuse channels. The findings are initially presented as motivations and barriers to behaviour, and, when modelled, suggest that habits, context and personal capabilities may be more influential on behaviour than the physical characteristics of a garment or pro-environmental attitudes. Sustainable fashion has often depended on the design of garments as a method of reducing environmental impact. This approach is likely to have a limited impact. The thesis concludes by suggesting how the findings might be developed into more meaningful behaviour change strategies.

1.1 Overview of the problem

The impact of human behaviour on the planet has become unsustainable. Environmental impact includes a broad range of factors including energy use, air, land and water pollution, use of un-renewable materials, and waste production. Environmental impact is largely a by-product of human desire (Stern, 2000). Originally for protection, shelter and food, these desires have now grown to include the need for affection, understanding, participation, creation, recreation, identity and freedom (Max-Neef, 1992). Many individuals use consumption as a way to provide for these needs and desires. As the global population increases, and previously developing populations establish a 'consumer class' (Spencer, Lilley and Porter, 2015), sustaining human needs will be a continued pressure on the natural environment.

Among the factors that contribute to the largest household impacts (food, shelter, mobility) garment consumption is not included (Steen-Olsen and Hertwich, 2015). Within the UK five percent of the annual carbon and water footprints come from garment consumption (WRAP, 2012b). However, Tukker & Jansen (2006) found that it is proportionately higher than the use of other product groups, in a review of studies into the environmental impacts of products (Tukker and Jansen, 2006).

Garment consumption is defined as a series of phases of including pre-purchase, purchase, use and discard (Winakor, 1969). Garment consumption behaviour is understood to be responsible for environmental impact including energy and water use, chemical contamination, and

material waste (Fletcher, 2008). Despite these impacts, relatively little is known about garment consumption beyond the point of purchase.

In 2010 DEFRA reported that two million tonnes of clothing are purchased per annum in the UK, with an estimated value of £23 billion. The majority of clothing is now very cheap in relation to the average income, and clothing sales increased by 60% in the ten years between 1998 and 2008 (Black 2008; Fletcher 2008). Fast fashion refers to the low cost, on-trend garments sold by value and high street retailers. The fast fashion sector doubled in growth in the decade between 2000 & 2010, and as of 2010 made up one-fifth of the UK market (DEFRA 2010); this has amplified the impact of garment consumption. The speed at which clothing is consumed has increased with the ascent of fast fashion, and the average life of a garment in the UK is now 27 months (WRAP, 2012b). Fast fashion is the result of a range of social, economic and political factors including a change in a world trade agreement in 2005 (Black, 2008).

1.2 Limitations of current research

Garment consumption behaviours have a significant impact on the environment, but research into these behaviours and their impacts are still in the exploratory stages. Historically, we have seen changes in garment consumption when the context of behaviour has changed, for example following the industrial revolution. However, understanding of the diverse influences on contemporary garment consumption is limited.

Fashion and apparel research has been more concerned with purchase behaviour, rather than the resulting use behaviour (Mohr, Webb and Harris, 2001). This could be a result of purchase behaviour being accessible, and therefore easier to record and quantify than use, which tends to occur privately at home. Research into purchase behaviour is also useful for marketing and therefore has been funded by retailers to develop their marketing strategies. However, this research focuses on the use and discard phase of the garment life cycle.

Despite the significance of the environmental impacts associated with garment consumption, again, understanding is limited. One gap in understanding is defining which practices are desirable, and which are not. This limitation is primarily the result of the methods used to assess impacts, which requires the simplification of behaviour when in reality garment use and discard is varied and complex.

Theories on the influences on behaviour exist and have predominantly been utilised within the social and environmental sciences. These theories have rarely been applied to the context of sustainable fashion. Despite this, the field of sustainable fashion has attempted to promote

behaviour change through various solutions. Such solutions are yet to have a significant impact. There is, therefore, an opportunity to apply behaviour theory to garment consumption behaviour.

The limitations of current research are explored in more detail in the literature review.

1.3 Research Aim

This research aimed to provide a more strategic approach to promoting environmental benefits through behaviour change in the context of garment use and discard.

1.4 Research Objectives

There were three objectives to the study:

- To identify the current state of consumer garment use behaviour and to explore a range of appropriate behaviour change strategies
- To provide a better understanding of the practicalities of consumer garment use behaviour, and identify potential for modes behaviour change
- To investigate the implications and significance of this further developed understanding in order to substantiate the strategies for consumer garment use behaviour change

2 Literature Review

This chapter reviews the existing literature on garment consumption behaviour to identify gaps in knowledge and form a basis for research enquiry. This chapter outlines theories of behaviour, including the role of pro-environmental intent. The current understanding of the environmental impacts of garment consumption are outlined. The limitations of the existing research into garment use behaviour are then considered, including the difficulties in defining environmentally desirable garment use behaviours. The chapter concludes with by identifying existing behaviour change strategies within fashion.

2.1 Evolution of problem

This section explores the historical evolution of garment use behaviour in the UK. The most significant changes in behaviour followed the industrialisation of garment production. The factors influencing behaviour during this evolution are considered below.

Pre industrial revolution, garments were more scarce and therefore very expensive (Farley Gordon and Hill, 2015). In the eighteenth century, the economic context of garment consumption behaviour in the UK was very different from today. Having a high monetary value, individuals needed to care for the few garments they owned. Keeping garments in good condition and utilising repair skills ensured maximum utility for the owner, and maximum resale value after use. Due to the scarcity and expense of new garments, there was a considerable demand for second-hand clothing from all but the very rich, who could afford to buy new clothing (Chrisman-Campbell, 2007). Therefore, garments had an exchange value that encouraged reuse. The exchange value of clothing and textiles was second only to precious metals and jewels (Lemire, 2004). Economics predominantly motivated garment consumption behaviour, including wearing garments for long periods of time, repairing garments and selecting discard channels.

Following the industrial revolution, clothing became progressively cheaper due to faster, more efficient production methods. This created a paradox where, despite increased efficiency which should reduce the amount of production needed, consumption increased, and therefore the demand for more production continued to expand. This paradox was first identified by Jevons with regards to the use of natural resources such as coal (York, 2006). This paradox is caused by lower prices reducing economic barriers to consumption.

The lower economic classes began to have access to new garments, which resulted in the higher economic classes looking for ways to differentiate their socio-economic status (Veblen, 1899). This began a cycle of differentiation known as the 'trickle down' effect (Simmel, 1904).

Once a fashionable style had been adopted by the masses, it was no longer desirable to the economic elite. This accelerated the pace of fashion change as the higher economic classes wore the most current styles as a way to make themselves distinct. This was motivated by attitudes towards class status and identity. Clothing became increasingly abundant and available at a lower cost; for most consumers, economics became less of a motivation for their garment consumption behaviours.

Periodically, consumption is disrupted, either on an individual level, or a more general level, and garment use is modified as a result. The Second World War is the widest reaching contemporary example of such a disruption in the UK. During this war, clothing and fabric were rationed, and the Ministry of Information published its '*Make Do and Mend*' booklet (British Ministry of Information, 1943). The booklet offered advice on how to prolong the life of garments and transform unwanted garments into new, fashionable items. Uptake of this approach was widespread during the war due to both necessity and patriotic values. Garments had once again become scarce and therefore practices that prolonged their life increased.

The landscape of clothing consumption has changed significantly over the last 20 years; as garment prices dropped, economics appears to have become less influential on the purchase of new garments. In 2005, the World Trade Organisation (WTO) removed quotas for the trade of textiles and clothing. Ending these quotas produced a rapid rise in Chinese exports, which reduced prices for UK consumers (Allwood *et al.*, 2006). This period coincided with an increase in garment sales in the UK and began the rise of fast fashion.

The UK experienced a financial crisis in 2008, which resulted in a downturn of the economy. Following this downturn, many UK households had less disposable income to spend on clothing. However, unlike earlier periods in history, this did not impact on the scarcity and cost of clothing. Cheap overseas production maintained low prices, and the fashion industry still saw a small percentage of growth, despite weakened spending (Mintel, 2010). Consumption was slowed by the economic downturn. However, many consumers could still afford to shop at fast fashion retailers where new garments were available for only a few pounds; this sector saw growth of almost 6% in 2009 (*ibid*). The culture of fast and cheap means perceived environmental limits to consumption are denied in favour of believing that one has a fundamental right to consume (Cooper, 1994).

Another significant shift in garment consumption was the introduction of online retailing. Many of the UK's leading women's retailers developed their online retailing platforms from 2010 onwards (Mintel, 2011). This area has seen continued growth, and in 2017 accounted for 24% of the clothing and footwear market (Mintel, 2017).

Historically, scarcities of materials and economic restrictions have been a significant influence on garment consumption. In recent years, economic restrictions have slowed down garment purchasing to a much lesser extent, as the cost of clothing remained low. The cost of clothing impacts on use and discard behaviours; when clothing is abundant, it is less likely to be repaired or re-used.

2.2 Understanding Behaviour

This section examines the influences on garment consumption behaviour. Initially, the influence of environmental concerns on behaviour is considered. This is followed by an overview of behaviour theory, with a particular focus on the attitude-behaviour-context theory. This theory acknowledges the influence of context on behaviour. The context of contemporary garment consumption behaviour is then outlined.

2.2.1 Pro-environmental intent

The term *pro-environmental behaviour* refers to behaviours where individuals act with the intention of having a positive impact on the environment. This section explores the relative influence of intent on behaviour. Some studies have started to identify that environmentally desirable behaviours do not always occur with intent, and can be 'accidental' (Fisher *et al.*, 2008b; Woodward, 2015). In the absence of pro-environmental intent, other influences are motivating behaviours that are, nevertheless, environmentally desirable. These other influences could be more understood regarding their effect on behaviour.

It is not always the case that pro-environmental intent is needed, and other factors can result in environmentally desirable behaviours. Pro-environmental behaviour, by its definition, involves pro-environmental intent; it is not the same as environmentally desirable behaviour. Despite the intent, the resulting impact of pro-environmental behaviour may not be environmentally desirable (Stern, 2000; Gatersleben, Steg and Vlek, 2002). Pro-environmental intent can be misplaced on an environmentally detrimental behaviour.

In the UK, it is sometimes the case that "enthusiastic greens", who want to behave sustainably, have the highest carbon footprint. This is thought to be because there is a link between education, affluence and interest in the environment (Jowit, 2008). Despite their intent, these affluent individuals are more likely to own large homes, own cars and take more flights than less affluent individuals in society. Less affluent individuals may not have any interest in the environment, but their financial situation prevents them from engaging in these environmentally damaging behaviours.

Research is needed to understand better the variables affecting environmental impact (Gatersleben, Steg and Vlek, 2002). Within fashion and apparel research, relatively little attention has been given to the variables affecting garment use. However, models from other disciplines could be applied to these behaviours.

To behave in a pro-environmental manner (with intent), individuals need to understand what constitutes environmentally beneficial behaviour. The Department for Environment, Food and Rural Affairs (DEFRA) (2008) study into public understanding of sustainable clothing found awareness and understanding to be low amongst the general public (Fisher *et al.*, 2008b). Although consumers are aware of the increase in 'throwaway culture', there is little interest in the environmental impact of that change (Birtwistle and Moore, 2007). DEFRA identified that some environmentally desirable behaviours were being undertaken, but as an advantageous side effect of the participant's normal routine; other factors were motivating these behaviours, and pro-environmental intent was not necessarily needed.

Increased knowledge of environmental impact does not necessarily result in pro-environmental behaviour; education may be helpful in changing attitudes, but cannot overcome external barriers such as context or personal capabilities (Gardner and Stern, 2002). Studies indicated no relationship between environmental apparel knowledge and purchase intention (Kim and Damhorst, 1988; Zheng and Chi, 2015), suggesting that increasing consumer awareness of the environmental impact of garment use may not be sufficient motivation to change consumers' purchase behaviour. A study that assessed the understanding of environmental apparel knowledge and their findings indicated that environmental knowledge did not necessarily relate to behaviour (Kim and Damhorst, 1988).

Much of the research into pro-environmental behaviour within the field of fashion and apparel is limited to the attitude-behaviour gap in consumer purchasing behaviour. An *attitude-behaviour gap* exists when an individual's attitude towards an issue, such as sustainability, is not reflected in their actual behaviour. Within garment purchasing behaviour such a gap has been found to exist; individuals prioritise other factors such as price, style, fit, and self-expression above a garment's sustainable credentials (Kim and Damhorst, 1988; Butler and Francis, 1997). The relationship between apparel and identity means garment acquisition is often an act of self-interest to fulfil complex emotional needs. Individuals find it challenging to prioritise environmental concerns above their own.

Pro-environmental intent in one garment behaviour cannot be used to predict other behaviours; an individual may be more interested in one aspect of environmental impact than another (Ha-Brookshire and Hodges, 2009), and pro-environmental behaviour in one phase of

the garment life cycle is not necessarily an indicator of behaviour in another phase (Stern, 2000). The exploration of pro-environmental behaviour in apparel has been relatively limited, and where research has been undertaken, it has identified that pro-environmental attitudes are not always reliable motivations for behaviours.

Environmentally desirable behaviours can be motivated by a range of factors, other than pro-environmental intent, such as self-interest, frugality and competence (De Young, 2000). Garment consumption behaviours are reliant on the social norms and moral codes of an individual which will be based on experience from family, friends and society. The same behaviour may be undertaken by two separate individuals for entirely different reasons (Shim, 1995), and for many individuals, this will not include pro-environmental intent.

De Young (2000) reviewed nine studies on environmentally desirable behaviour to expand the motives for such behaviour. De Young found that many motivations fit into what he defined as 'intrinsic satisfaction'. *Intrinsic satisfaction* includes behaviours that are of self-interest, and unrelated to outcomes external to the self, such as environmental impact. Intrinsic satisfaction motivations are considered here as they may have applications in garment consumption behaviour.

Self-interest is a motivating factor for many behaviours. Self-interest is distinct from selfishness and can comprise of more than just personal happiness (De Young, 2000). It can act as a durable motivating factor within behaviour; individuals who volunteer in community projects for reasons of self-development are more likely to stay in the voluntary role than individuals who volunteer for reasons based on community, and social values (Clary and Snyder, 1999). An example of self-interest in garment consumption would be selling garments on eBay to make money to buy new garments.

De Young began to expand the motives for environmentally responsible behaviour from financial incentives and altruism to include aspects of intrinsic satisfaction. The four satisfactions that were tested were competence, frugality, participation in community and luxury. These motivations can overlap, for example, frugality and participation in community have aspects which are driven by competence (De Young, 2000).

Competence is the perception that one has the skills, knowledge and understanding to carry out a behaviour. Within psychology, competence is identified as a basic human concern (White, 1959). Competence within garment use could include behaviours such as skills in repair, selling garments and utilisation of existing garments with new purchases. An

individual's confidence in their competence motivates them to partake in the behaviour, as they achieve enjoyment from doing something well.

Frugality is the skill of limiting expenditure and waste, which many individuals find inherently satisfying (De Young, 2000). Frugality in garment use could include trying to save money by making clothes last longer, adapting garments for a range of activities or purposes, swapping or selling garments. Although frugality can be personally satisfying, for some individuals, frugality is a necessity due to restricted financial means; although not desirable this can stimulate creativity. For example, many contemporary ideas for garment reuse have been inspired by the Make Do and Mend (British Ministry of Information, 1943) movement which came out of a time of limited economic means during and following the Second World War.

Individuals can gain personal satisfaction from participating in community activities (De Young, 2000). The definition of a community now includes online communities and is not restricted to the local. Examples of garment orientated community activities include clothing swaps, sewing groups, repair cafes, volunteering at or donating to charity shops, utilising laundrettes, and online fashion forums. The satisfaction of taking part in community activities is derived from both interacting with others sharing news, skills and knowledge, as well as a sense of working towards a common goal (De Young, 2000). Participation behaviours as part of a community may increase the durability of the behaviour; if the individual feels their participation is needed by the community, they are less likely to opt out (De Young, 2000).

Research findings are inconclusive about whether pro-environmental intent influences behaviour. However, other motivations have been shown to lead to environmentally desirable behaviour. Understanding the motivations for garment use behaviour will help to develop this area, and models of behaviour could offer insight into behaviour change.

2.2.2 Behaviour theories

The influence of external context factors such as economics and trade agreements can be recognised when scrutinising the historical use of garments. However, many theories on behaviour focus on the relationship between an individual's opinions and their resulting behaviour. This section examines the advancement of these theories, including the theory of reasoned action, the theory of planned behaviour, the norm activation theory and the theory of values-beliefs-norms. These theories progressively expand on the causal variable influencing behaviour. Causal variables are independent variables that produce a causal effect (Colman, 2015); they are the motivational factors that influence the resultant behaviour. The attitude-behaviour-context theory, which considers the influence of both attitude and context, is then introduced. These theories, which tend to come from the fields of psychology or

environmental behaviour research have rarely been adopted in the fashion field for examining garment use behaviour.

Early developments on behaviour theory, such as the *Theory of Reasoned Action*, recognised the influence of an individual's social network on their behaviour. Despite their personal attitude, individuals are more likely to engage in behaviour if it is the social norm amongst their peers (Ajzen and Fishbein, 1977). The *Theory of Planned Behaviour* develops on this by considering the positive effect when an individual believes they can undertake a behaviour. The theory proposes that intent can only predict behaviour if three causal variables are supportive: the individual's attitude to the behaviour, the individual's normative beliefs, and the individual's perceptions of control over undertaking the behaviour (Ajzen, 1991).

The *Norm Activation Theory* examines the basis of pro-social (altruistic) intent, to understand how intent is formed. Norm activation suggests there are three preceding factors to pro-social behaviour; awareness of the consequences of a behaviour, the individual's ascription of responsibility for those consequences, and the individual's normative beliefs (Schwartz, 1977). As these three factors become more positive, the behaviour becomes more likely to occur. This theory begins to examine in more depth how awareness of the consequences of a behaviour is, alone, not necessarily enough to motivate behaviour. Similarly, the *Value-Belief-Norm theory* suggests that beliefs are stimulated by the normative belief of helping (Sawitri, Hadiyanto and Hadi, 2015). This involves three antecedents to behaviour: an individual's personal values, the beliefs that those values are under threat, and the belief that the individual can act to reduce the threat and restore their values (Stern *et al.*, 1995).

The *Attitude-Behaviour-Context (ABC)* theory attempts to model and predict motivations and barriers to behaviours. It is a development of the values-beliefs-norms theory. The theory suggests that if behaviours are not supported by the context and personal capabilities, then there is a weaker dependence on attitudinal factors (Stern, 2000). Put simply; a positive attitude can be blocked by an unsupportive context. Thus two individuals who have the same attitude, placed in facilitating and non-facilitating situations, may end up exhibiting different behaviours.

The ABC theory considers the four causal variables of attitude, context, personal capabilities and habits. Attitudes include personal norms, beliefs, values and perceived costs and benefits of behaviour. The context of behaviour includes community expectations, social norms, material costs, laws, and social, political and economic context. Personal capabilities include factors such as behaviour specific skills and knowledge, availability of time and social status.

Habits are routinely undertaken behaviours that occur automatically, without active decision making (Wood, Quinn and Kashy, 2002; Lehner, Mont and Heiskanen, 2015).

The ABC theory suggests that changing attitudes only contributes a certain amount to changing behaviours. The causal variables influencing garment use and discard need to be understood to identify barriers that may be preventing desirable behaviours. The ABC theory also brings attention to the need to understand the context in which behaviour is being undertaken. The evolution of contemporary garment consumption behaviour supports the theory that context is a significant influence, making this a suitable theory to develop further.

2.2.3 Current context for garment consumption in the UK

In outlining the current context of garment consumption in the UK, the complex and broad range of factors that contribute to a culture of consumption are considered. These factors include context and personal capabilities, as defined by the ABC theory. This research focuses specifically on the garment consumption behaviours of women. This is because much of the existing literature focuses on female behaviours, and for a variety of reasons [context, personal capabilities], consumption habits tend to differ between males and females (Koca and Koc, 2016).

Fast fashion has increased in popularity over the past two decades and has led to a culture of disposable fashion. The low cost of garments has created a situation where the economic status of an individual is not a barrier to access multiple on-trend garments. The abundance of fast fashion has changed the value of garments, which has impacted on consumer values and habitual behaviours.

Garment consumption is not something that is legislated in the UK. The only legislation that applies to clothing in the UK are labelling laws, and import/export laws that mainly refer to the payment of duties and taxes, and safety (Department for International Trade, 2016). The UK operates under a capitalist economic system, with free market trade; trade is privately owned for profit, and free from intervention from the government (Dictionary.com, 2017). UK consumers have the freedom to purchase, use and discard garments as they please, within the restrictions of their personal circumstances. This freedom encourages prioritising the individual over the needs of society and does not foster any sense of responsibility for the impacts of garment consumption.

The weekly spend on clothing and footwear in UK households is £23.50 (Office for National Statistics, 2017a). The average household in the UK appears to have recovered financially from the 2008 financial crisis. According to the UK Office for National Statistics, the median

household disposable income has risen to £1000 higher than the pre-downturn (2007-08) and stood at £26,300 in 2017 (Office for National Statistics, 2017b). Despite this rise, there has been an increase in 'income inequality'. This means that while the median household disposable income has risen for many, some households still have less money, on average than before the crash (ibid). This particularly affects lower income households.

Fast fashion endorses 'use' as a fleeting encounter with the most current trend (Mellick Lopes and Gill, 2015). This short-lived relationship with our clothing is amplified by the increase in celebrity culture and use of social media. Clothing contributes significantly to an individual's identity formation (Kaiser, 1997). Celebrities are vilified in the media for wearing a garment on more than one occasion (Mitchell, 2014). Similarly, individuals who feel they need to manage their online identity may not want to wear the same outfit more than once (Taylor, 2012). 'Shopping haul' videos, outlining purchases from recent shopping trips on social media sites such as YouTube (Zoella, 2017), have become increasingly popular. The trend in consumers sharing their hauls indicates that, for many, it is socially acceptable to consume large quantities of cheap garments.

To contextualise contemporary consumer behaviour, it is important to consider their knowledge and understanding of the environmental impact of their garment consumption. Much of the information individuals encounter regarding sustainable fashion may be from retailers (Fisher *et al.*, 2008b), who ultimately have their own agenda, which is to sell clothes. A study into consumer understanding of environmentally conscious garment acquisition behaviours focused on participants who already engaged in environmentally motivated behaviour (Hiller Connell, 2011). It found that behaviours such as reducing consumption, extending garment life, purchasing from eco-brands, purchasing high-quality garments, purchasing second-hand garments and home sewing were thought to be environmentally conscious. Reducing consumption and acquiring second-hand garments were the predominant practices amongst the participants; this was thought to be because it did not incur any additional financial cost to consumers. Only the very engaged are willing to spend more to behave more sustainably (DEFRA, 2008).

Skills associated with garment maintenance which were seen historically, for example, repair are not as prevalent today. In the UK, there is currently limited data on the frequency of instances of consumer repairs, or the use of repairs services. A study by DEFRA in the UK found that their participants were not actively engaged in the practice of repair (Fisher *et al.*, 2008b), although their sample was not representative. A decline in engagement with this practice has been associated with a decline in skill levels. Norum (2013) found that, in the US, Baby

Boomers and Gen X had higher levels of mending skills than Gen Y (Norum, 2013). It is unclear if the lack of mending skills is the cause of a decline in mending or a resultant effect.

There are now few financial incentives to use repair services due to the low cost of garments relative to the high cost of labour (Fletcher and Grose, 2012). It is likely to be cheaper to buy a new garment than to pay for a damaged one to be repaired. A cost that is incurred by domestic repairs is time. With increasing working hours in the UK (Trade Union Congress, 2015), the availability of time could be a significant barrier to participation in repair activity. Conversely, consumption of new garments has become much more convenient, with the rise of online shopping.

This is not an exclusive list of influences on garment consumption behaviours, and the resulting behaviours are highly individualistic. It is clear that more information is needed to build a more authentic model of the factors impacting garment consumption behaviour.

2.3 Defining environmentally desirable behaviours in fashion

Environmentally desirable behaviours are the optimal behaviours for consumers to undertake that reduce the impact on the environment. The 'optimal' behaviour may mean a neutral, not damaging, or reduced damage effect, rather than having a definite positive effect or making the environment 'better'. Limitations of current understanding make it difficult to give an absolute answer as to what constitutes environmentally desirable garment behaviour. This section starts with the behaviour changes that aim to reduce the environmental impact of garment use and discard. Each of the behaviours is examined with regards to the current uptake of the behaviour, and understanding of the factors influencing the behaviour.

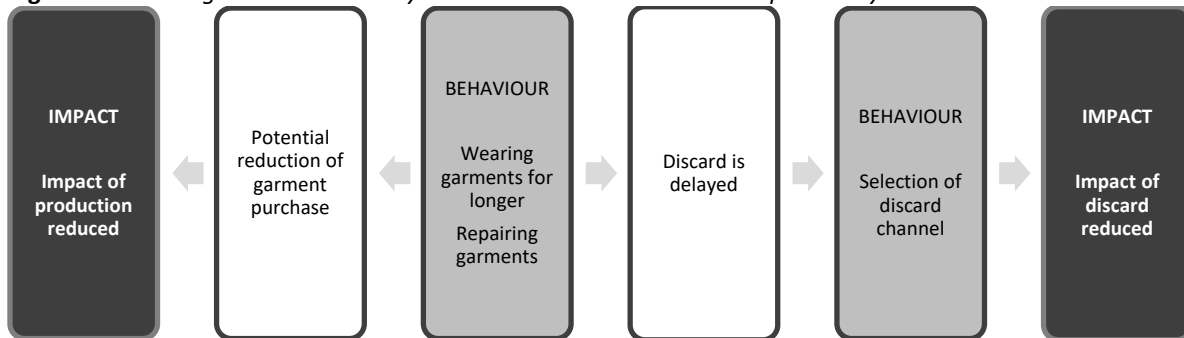
In the literature, there is a limited amount of evidence-based suggestions on how consumers should behave to be environmentally desirable. However, the Well Dressed (2006) report suggested a range of behaviour changes that consumers could adopt to reduce their environmental and social impacts (Allwood *et al.*, 2006). From this list, three target behaviours, which focused on the use and discard of garments were selected.

- Extending the life of garments through wearing them for longer
- Extending the life of garments through repair
- Discarding used garments through reuse channels where possible, but otherwise, recycling channels

Figure 2-1 presents the relationship between those behaviours and the environmental impact they aim to reduce. Extending the life of a garment, through whichever means, has a potential

impact on both reducing the impact of discard, and the impact of the production of a replacement garment. The selection of a discard channel has the potential to change the impact of discard.

Figure 2-1 *The target environmentally desirable behaviours and the impacts they aim to reduce*

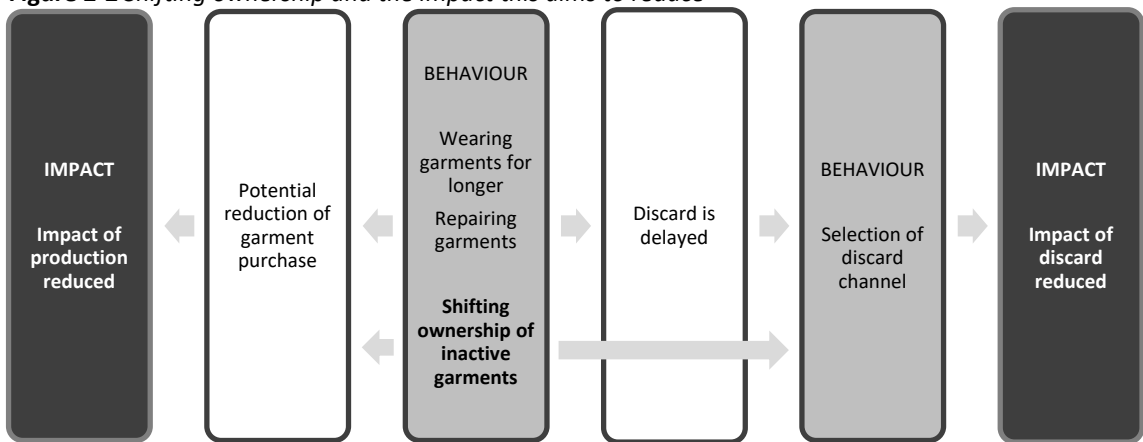


A fourth behaviour has been selected from a more recent report produced for MISTRA (2015), the Swedish Foundation for Strategic Environmental Research:

-Shifting ownership of inactive garments, rather than storing them

Storing inactive garments does not have a direct environmental impact. But, such garments are unused utility and therefore not reaching their material potential. The maximising of utility is important for products that have a high production impact (Gullstrand Edbring, Lehner and Mont, 2015). One way of extending the practical lifespan of a garment toward the technical lifespan is to shift ownership (Sandin, Zamani and Peters, 2015). The use of the word 'ownership' indicates re-use of the garment, i.e. the inactive garment is discarded via a re-use channel. Adding this behaviour to the behaviour/impact diagram (Figure 2-2) shows that shifting ownership of inactive garments has a latent impact dependant on the particular re-use channel selected. However, for the new owner, the shifting of ownership may have removed the need for them to purchase a new garment. This would, therefore, reduce the impact of production.

Figure 2-2 *Shifting ownership and the impact this aims to reduce*



2.3.1 Prolonging the use of garments

Wearing a garment for longer reduces the need to produce a new garment, although this is only effective if wearing a garment for longer results in a reduction in the garments purchased by the individual (Allwood *et al.*, 2006). The pro-longed use of garments can also reduce the impact of discard if wearing a garment for longer is preventing discard via landfill. This is dependent on the individual utilising desirable discard channels when they do eventually discard the garment, or wearing garments for longer could still result in a latent environmental impact. The use of garments has associated impacts such as the energy, water and chemical impacts of laundering garments (Fletcher, 2008). These impacts are therefore extended with the extension of the life of a garment. However, in the case of some garments, it is possible that extending the life has a larger potential reduction in overall impact than reductions in washing and drying (Sandin, Zamani and Peters, 2015).

Garments are being discarded before they are physically worn out. In product-based research premature discard has been linked to fashion change or change in circumstances which deem a product as no longer needed (Mont, 2002). Other motivations for replacing products, rather than extending life, include wear and tear, improved expression and new desires (Van Nes and Cramer, 2005). A meta-analysis of garment discard studies found that the main reasons individuals discarded garments were wear and tear, fit or size and fashion: taste or boredom (Laitala, 2014). There are similarities between general product behaviour, and behaviour specific to garments.

Garments are a visible form of identity marker. Identity is not fixed but in a continual process of emerging (Kaiser, 1998); as identities shift garments may no longer fit with that identity. Klepp & Laitala suggest that fashion change has less of an influence on garment behaviour than may have been previously assumed (Klepp and Laitala, 2015); individuals attribute their taste changes to influences other than fashion. Woodward, who utilises ethnographic

methods, supports this theory, recognising that changes in an individual's practices are more likely to come from everyday influences than the influence of fashion change (Woodward, 2015).

Fashion change, change in circumstance, wear and tear and desire for new things appear to be barriers to using products for longer. Motivations for wearing garments for longer are less well documented in the literature.

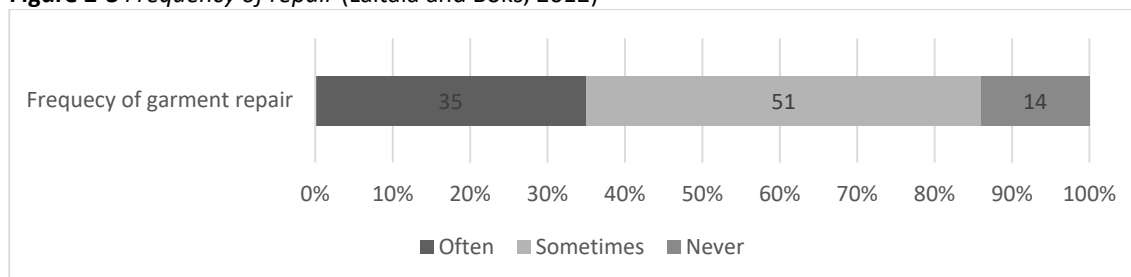
2.3.2 Repair of garments

Repair is one method of extending the usable lifetime of a garment, resulting in a reduction in environmental impact (Allwood *et al.*, 2006; Fletcher, 2008). However, the repair of a garment only extends the life of a garment if it continues to be used. Repair is a more efficient approach to waste reduction than recycling, which often involves resource-intensive processes to take garments back to the fibre stage (Fletcher, 2008).

The repairing of garments involves returning damaged clothes to a usable or acceptable condition. Garment repairs involve varying degrees of complexity from replacing a button to darning a hole or re-lining a jacket. Repair may be done by the garment owner, a friend or relative of the garment owner, or could be done by a repairs service. Alterations and re-design have, by some studies, been included in the category of repair.

In their 2010 Norwegian survey of use behaviour, Laitala & Boks reported the frequency of repair of the 546 participants, which is shown in Figure 2-3.

Figure 2-3 Frequency of repair (Laitala and Boks, 2012)



Out of their interviews with sixteen households, all informants would do the simplest repairs (Laitala and Boks, 2012).

Individuals can find it highly rewarding to participate in an activity in which they have a high level of competence and skill (De Young, 2000). This means individuals that have a high level of skill in repair may be motivated by having the opportunity to utilise those skills. Adversely, individuals tend not to enjoy engaging activities in which they feel they have low levels of competency. Those who have low levels of skill may be discouraged from even attempting to

engage in garment repairs. Competency is, therefore, a potential motivating factor for those who already have repair skills, and a barrier for those who do not.

There is a surprising lack of empirical literature on consumer mending behaviours, despite its associations with reducing environmental impact. This makes it an opportune area for exploring in more detail.

2.3.3 Shifting ownership of inactive garments

Extending the lifespan of a garment does not mean merely keeping it for longer; the technical lifespan, or how long the garment is functional for, is dependent on use and a garment's technical function is to be worn. If an individual has no desire to keep a garment for longer, then they will not (Chapman, 2005); encouraging reuse via shifting ownership is a desirable alternative. When an individual has no desire to keep a product, the environmentally desirable option is to optimise garment use, rather than extend use with that individual (Cooper, 2010).

Impact on the environment that is delayed is described as a latent impact (Steen-Olsen and Hertwich, 2015). An example of latent impact is a garment that is kept for a long time and then discarded via landfill. Behaviours that have latent impact, such as long-term storage of inactive garments, are rarely recognised by consumers as having an environmental impact. Immediate consequences influence consumer behaviour more than latent ones (Gardner and Stern, 2002), and therefore it is likely that many consumers do not consider the impact of stored clothing.

Inactive garments also have latent value (economic and exchange) and utility. There is an estimated £89 billion worth of adult clothing in the collective British wardrobe (WRAP, 2012a) therefore there is potential for a shift in ownership to contribute to the economy. Garments that are stored long-term are at risk of discolouration and damage from mould and moths, which impacts on the latent value and utility of garments.

Shifting ownership of inactive garments reduces the environmental impact, but only if garments achieve use in new ownership.

2.3.4 Discarding garments

Allwood, et al. defined environmentally desirable discard behaviour as: *'Discarding of used garments through recycling businesses that would return them for second-hand sale wherever possible, but otherwise extract and recycle the yarn or fibres'* (Allwood et al., 2006). This definition covers a narrow range of discard channels such as charity shop donation or sale to rag merchants. This research expanded this definition to include informal discard channels that

would not be characterised as businesses, such as gifting garments to friends, selling garments on online auction sites such as eBay and repurposing garments for alternative uses.

By selecting reuse or recycling discard channels, the environmental impact of discard is reduced. Reuse of garments, with minimal transportation, is currently regarded as the discard channel with the lowest environmental impact. For products, such as garments, that have a high production impact, reuse brings about a significant reduction in environmental impact (Gullstrand Edbring, Lehner and Mont, 2015). Reuse can still have negative environmental and social impacts due to the export of second-hand garments overseas (Baden and Barber, 2005).

Reuse can save five times more carbon dioxide than recycling methods such as returning garments to fibre (Farrant, Olsen and Wangel, 2010; Fisher, James and Maddox, 2011).

Recycling is less desirable than reuse due to energy consumption, but it is still preferable to discard via landfill or incineration.

Once an individual has decided to discard a garment, they need to select a discard channel. Discard channels are diverse, including resale on online auction sites such as eBay, passing onto family and friends, donating to charity, placing in textiles recycling bins, sending to landfill, etc. In 2012, WRAP reported that 31% of used clothing (350,000 tonnes) goes to landfill annually in the UK (WRAP, 2012b). This represents a significant improvement from the figure in 2010 which was 50% (1,000,000 tonnes) (DEFRA, 2010). The increase in levels of reuse and recycling is consistent with a general rise in recycling behaviour (European Environment Agency, 2013). The European Union (EU) set up the Waste Framework Directive in 2008, which will require at least 50% of household waste (including textiles) to be recycled by 2020. Further, the European Clothing Action Plan (ECAP) aims to divert over 90,000 tonnes of clothing waste per year from landfill and incineration by March 2019 (WRAP, 2015b).

Consumer studies have found that the most common method for garment discard is charity donation (Francis and Butler, 1994; Koch and Domina, 1999). A study by WRAP found that 73% of individuals give some of their unwanted clothing to charity, and 41% give at least half of their unwanted garments to charity (WRAP, 2012a). However, 48% of individuals in the UK have put at least some garments in the bin (WRAP, 2012a). Another study, with a smaller sample, found that 75% of their participants had discarded garments via landfill (Smithers, 2017). This suggests that although charity donation is a prevalent behaviour, it is not being used for all garments.

The condition of the garment will impact on an individual's discard channel selection. When selecting a discard channel individuals are making judgements about the suitability of a

garment for that particular channel. These judgements are based on their belief of the wearability of a garment, and garments judged to be unwearable would be discarded through landfill (Birtwistle and Moore, 2007; Ha-Brookshire and Hodges, 2009). These beliefs will come from the individual's normative beliefs, and their assumptions about the suitability of a garment for a particular discard channel, which may be incorrect. For example, damaged garments are more likely to go to landfill (Birtwistle and Moore, 2007), despite being suitable for recycling. One study found that 49% of participants did not recycle their garments because they were worn or dirty, and a further six percent did not know that garments could be recycled (Smithers, 2017). This indicates that more information and education on the types of garments that are appropriate for different discard channels would be useful.

Donation to a charitable organisation has been found to have more than one motivation (Shim, 1995). In one study, feeling good about helping others was cited as a motivating factor (Baker, 2011), whereas another study found charitable donation was used as a way to conveniently rid individuals of garments they no longer wanted; the benefit was for the individual rather than the charitable organisation (Ha-Brookshire and Hodges, 2009).

Convenience is a motivation for discard channel selection that is recognised in multiple studies (Shim, 1995; Koch and Domina, 1999; Domina and Koch, 2002; Ha-Brookshire and Hodges, 2009). One study further recognised that convenience is used as a justification for not recycling when participants had a lack of storage space (Domina and Koch, 2002). Another aspect of convenience is familiarity (Koch and Domina, 1997; Domina and Koch, 1999); convenient discard channels may be used habitually without much reasoning. The most convenient discard channels are those which an individual does not need to leave their home to engage in; landfill, charity bag collection and kerbside recycling.

Kerbside textile recycling has been introduced in some parts of the UK, and seventeen percent of local authorities were participating in schemes in 2006 (Woolridge *et al.*, 2006). The impact of this on consumer behaviour is not currently known, but it can be speculated that it will increase participation in textile recycling due to convenience. Folz found that participation in kerbside recycling (non-textile) was almost twice as much as participation in 'drop off' recycling schemes (Folz, 1991).

Domina and Koch's study (1999) looked at disposal methods; they found that regardless of the discard channel selected (not including landfill) avoiding waste was given as a reason for the selection. This indicates that, even at the point of discard, individuals want to maximise the utility of their garments. Many individuals will donate garments to charity to pass on that utility to a new user.

When discarding garments, there is an opportunity to make money. One study found that very few individuals engage in selling their unwanted garments, but those that do are motivated by economic factors (Bianchi and Birtwistle, 2010). The motivation for purchasing second-hand products on eBay is predominantly economic (Clausen *et al.*, 2010); the motivation for the seller is also likely to be economic. Barriers to selling garments online through auction sites such as eBay include difficulty in understanding the online system, and the effort involved outweighing the financial incentive (Clausen *et al.*, 2010).

Selecting a desirable discard channel will only be supported if the reuse market is developed. If the EU and ECAP are to achieve their aim to increase the number of garments that are reused and recycled then infrastructure needs to be developed to support the re-distribution of these garments (Allwood *et al.*, 2006). Second-hand garments are bought or received by two-thirds of UK consumers, and according to WRAP many consumers would like to wear more pre-owned garments (WRAP, 2012b). This suggests that new owners of unused garments could be found in the UK, and there may be opportunities to develop new and innovative distribution methods to engage consumers further.

The motivations influencing the area of discard are currently some of the more understood within garment consumption. This is likely to be a consequence of garment discard being included into studies into general household discard, resulting in a larger mass of research. However, research into environmentally motivated garment discard is a more recent development in this area of research (Ha-Brookshire and Hodges, 2009). Informal reuse channels such as resale, swapping and gifting have not been widely investigated (Klepp and Laitala, 2015) despite growth in resale through online sites such as eBay, and organised clothing exchange events.

2.3.5 Life cycle assessment

Life Cycle Assessment (LCA) is one method of measuring the environmental impact of product life cycles. Currently, very little assessment of the environmental impacts of garment use and discard has been undertaken. This makes it difficult to give empirical information on the impacts of an individual's garment consumption behaviours. This research looks to life cycle assessment for guidance on where garment use and discard environmental impacts occur. However, it is understood that the assessment of these impacts is not always reliable.

Life cycle assessment of garments has, thus far, been relatively limited. Probably due to the complex nature of undertaking a life cycle assessment. According to Chapman (2010), there are four parts to the assessment methodology, as defined by the ISO14040 (international standard) life cycle assessment principles and framework:

- defining the scope of the assessment
- conducting an inventory analysis
- conducting an impact assessment
- interpreting the results

During inventory analysis, the product life cycle is modelled. It can be challenging to model behaviour as there is variety in the way different individuals use their garments, and in the way the same individual may use two different garments. For the use phase, this model would be based on assumptions of 'typical' behaviour. This is one of the weaknesses of LCA; the 'typical' behaviours modelled may be different from actual behaviour, and life cycle analysts cannot take into account the variety of use behaviours found within garment use (Allwood *et al.*, 2006). Therefore, a garment LCA will not apply to all garments and users, but only those that fit with 'typical' behaviour.

Methodological difficulties are based on the fact that this type of assessment relies on reported private behaviours. It could be that life cycle assessment will invariably be difficult to apply to garment use behaviour, due to the variation between how consumers use garments. However, further understanding of the consumer use phase would give life cycle analysts more evidence on which to build life cycle models.

When MISTRA undertook a review of existing garment life cycle assessments, it found a large variance in the results regarding the impacts emerging from the end of life phase (Chapman, 2010). The studies they reviewed did not look at reuse and recycling scenarios; the assessments had been made based on the scenario of all discarded garments going to landfill or incineration. This furthers the need to model a range of representative behaviours.

During the impact assessment, it was decided which environmental impacts were going to be evaluated; this decision significantly simplifies the analysis process, making analysis more manageable to undertake. Life cycle assessments have typically concentrated on the carbon footprint of a product (Chapman, 2010). All products have a variety of different impacts on the environment, so by only focusing on specific impacts, they are neglecting to take into account other environmental impacts such as water use, toxicity and solid waste. This approach risks ignoring significant environmental impacts and could fail to recognise potentially damaging behaviours (Bras, 1997).

An LCA by Woolridge *et al.* examined the impact on energy use of purchasing second-hand garments as opposed to virgin materials. They found that for every kilogram of virgin cotton displaced by second-hand clothing approximately 65 kWh is saved, and for every kilogram of

polyester around 90kWh is saved (Woolridge *et al.*, 2006). They recognised that the purchase of one second-hand garment would not necessarily replace the purchase of one virgin garment, but the assessment was based on this behaviour. Again, the assessment of second-hand garment impact could be improved by the inclusion of a broader spectrum of results, and more realistic behaviour modelling to generate a more reliable result.

The production phase is often presumed to have the highest impact in a product lifecycle (Laitala and Klepp, 2011), possibly due to industrial production generating more visible and measurable impacts. In 1993, an analysis by Franklin Associates found that, in the case of a polyester blouse, the impacts of consumer use were higher than the production phase (Franklin Associates, 1993). The high impact is a result of the laundering of clothes, which is water, energy and chemical-intensive and may be repeated many times over a garments life. Washing and drying alone were found to contribute to the impact of the complete lifecycle:

- 82% of energy use
- 66% of solid waste
- 83% of CO₂ emissions
- 96% of biological oxygen demands (water pollutants) (Fletcher, 2008)

The use phase of a garment lifecycle is now often cited as having the highest environmental impact (Fletcher, 2008; WRAP, 2012a; Gwilt, 2013). This is based on the life cycle assessment of assumed laundry behaviours for one specific garment; assumptions that might not apply to all users or garments. More accurate information on the use of a range of garment types is needed, including frequency of wear, retention, laundering, maintenance and disposal. Despite having the potential highest impact the use phase also has the highest potential error due to the assumptions on behaviour.

In summary, there are difficulties in assessing garment consumption behaviours using life cycle assessment due to both an over-generalisation of typical behaviour models, and simplification of impacts.

2.4 Existing behaviour change strategies within fashion

This section presents the current strategies that have been adopted to promote behaviour change, towards the environmentally desirable, in fashion. These strategies are predominantly based on assumptions about what motivates consumer behaviour, limiting their actual impact. This strengthens the argument that behaviour change strategies should be grounded in an understanding of behaviour. The section concludes by examining potential barriers to behaviour change.

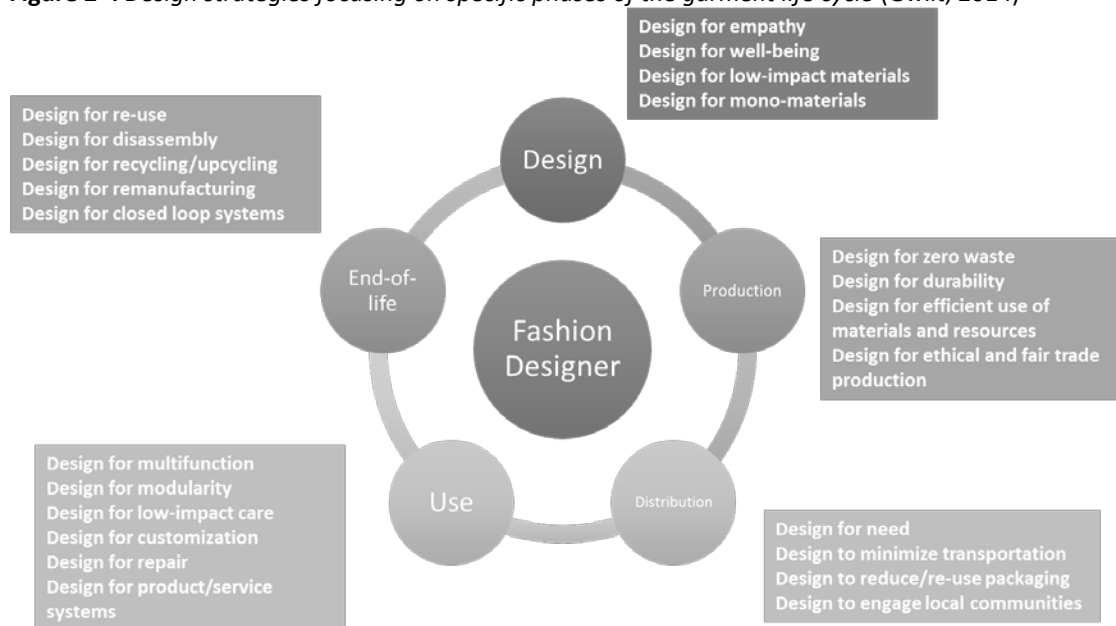
2.4.1 Garment design

Assigning responsibility for promoting environmentally desirable behaviour remains ambiguous. Within the field of fashion, it has often been left to designers, or design-led researchers, to explore solutions to the environmental impacts of garment consumption. However, there is some conflict in the literature on how much influence designers have over consumer behaviour.

It has been suggested that decisions made in the design of a garment have a direct impact on its use and, therefore, on its environmental impact (Thackara, 2005). Fletcher and Grose argue that designers are in a unique position to influence behaviour. They state that design can be transformative; changing both the way individuals use products and the way individuals think (Fletcher and Grose, 2012). This authority over consumer behaviour should involve a responsibility to promote environmentally desirable behaviour.

However, others argue that designers are only ever going to be partly responsible for what happens to the things they design (Mellick Lopes and Gill, 2015). Consumer behaviour is complex, and many of the variables influencing are beyond a designers control (Jääskö and Mattelmäki, 2003). It is evident that as contextual factors have changed in the UK, this has influenced garment consumption behaviour. The difficulty in using product design to change behaviour is due to the inability to accurately predict changing contextual factors, such as the economy, which impact on use (Bras, 1997). Chapman also recognised the difficulties in predicting where emotional bonds would be made between consumers and products (Chapman, 2005).

Figure 2-4 Design strategies focusing on specific phases of the garment life cycle (Gwilt, 2014)



Based on the theory that designers influence consumer behaviour, a range of sustainable fashion design strategies have been developed; this is summarised in the life cycle diagram by Gwilt (Figure 2-4). Many of these strategies are based on the assumption that the physical characteristics of a garment have the biggest influence on behaviour. This is an assumption that is not necessarily supported in the literature.

Many of these strategies are a response to life cycle thinking but are not necessarily engaging in theoretical frameworks for behaviour change. The overarching aim appears to be to change the physical characteristics of new garments, rather than to influence personal capabilities or context. If sustainable fashion design continues to predominantly address garment design to change behaviour, efforts may be wasted.

Of the four behaviours examined in this study (keeping garments for longer, repairing garments, shifting ownership of inactive garments and selecting discard channels), garment design strategies have been developed for three; keeping garments for longer (design for durability), repairing garments (design for repair) and selecting discard channels (design for re-use and recycling). Some of these strategies, such as Slow Fashion design for garment durability, have been adopted marginally by designer-makers and student designers rather than being adopted widely amongst commercial fashion designers. The outcomes of many of the design strategies remain as concept pieces to encourage dialogue and debate, rather than commercial products. It is difficult to assess the outcomes of these strategies regarding environmental impact. Additionally, many of these strategies have not been in circulation long enough or had a wide enough impact, to begin to assess their influence on consumer behaviour.

Sustainable fashion design has utilised life cycle thinking to develop the field from a singular approach, which was reducing material production impact, to a range of strategies across every phase of the garment life. Despite this development, sustainable fashion design has remained predominantly focused on the design of garments as a solution. There is an opportunity to develop the field to include a broader spectrum of solutions.

2.4.2 Provision of information

Outside of the design of garments, it is often assumed that providing consumers with information is a potentially effective strategy for changing behaviour. When considering the provision of information, there are two categories of information to consider: information on the impact of current behaviour, and information on environmentally desirable behaviour, or how to act. The assumption that provision of information alone will be effective in changing behaviour is flawed for several reasons.

Some of the flaws of information provision include; information is easily forgotten (Jelsma, 2003), individuals may not assign responsibility to themselves for changing environmental impact (Sawitri, Hadiyanto and Hadi, 2015), and an individual's attitude may be outweighed by other factors such as context and personal capabilities (Stern, 2000). However, information provision can be more effective for promoting behaviours that have a low impact on everyday life, involving little financial or time cost (Gardner and Stern, 2002).

When providing individuals with information on the consequences of behaviours, they may not necessarily ascribe responsibility to themselves to act to reduce these consequences. The ascription of responsibility occurs when individuals both understand the impact of their behaviour and hold the belief that they are responsible for changing their actions to reduce that impact (Schwartz, 1977). Responsibility for the environmental impact of the fashion industry is not easily assigned, allowing individuals to consider them someone else's problem. Some individuals would not respond to information on the environmental impact of behaviour but would wait to be provided information on how they should behave. Defra (2008) found that different segments of the population responded differently to government policy on environmental beneficial behaviours (DEFRA, 2008). Some segments, for example, '*cautious participants*' looked to government to take the lead, and give examples of how to behave. Providing both types of information (environmental impact and desirable behaviour) is more enabling when using information to promote behaviour change.

Some environmentally desirable behaviours are unintended outcomes of other motivations; changing attitudes is not always needed to change behaviour (Lehner, Mont and Heiskanen, 2015). There is potential to change an individual's behaviour without them ever having the

knowledge or understanding of the impacts of their behaviour. This removes the need for the provision of information. However, avoiding exposing individuals to the impact of their behaviour allows consumers to ignore their responsibility to act and avoid challenging their consumption behaviours (Lehner, Mont and Heiskanen, 2015). Information could play a supportive role in other behaviour strategies; *'the best interventions will certainly be those that seek to change minds alongside changing context'* (Dolan *et al.*, 2012). Although motivations other than pro-environmental intent can influence environmentally desirable behaviour, information provision is important for changing attitudes and engaging debate. Pro-environmental intent should not be ignored as a behaviour motivator, but other behaviour change motivations can be developed alongside changing attitudes.

Behaviour change strategies in the field of fashion and sustainability appear to have been built on assumptions. Therefore, it is important that any proposed behaviour change strategies are assessed for their actual impact. Assessing the success of behavioural change is based on two factors; the reliability of the approach for implementing behaviour change across a variety of individuals, and whether the behaviour is maintained long-term without additional prompt or support (Cone and Hayes, 1980). The aim of most studies into motivational techniques for behavioural change is to create changes that are both long-term and self-maintaining (De Young, 2000). De Young (2000) questions whether it is important that the technique can be implemented across a range of individuals, and suggests that motivations may need adapting to specific sub-groups or individuals. A motive that proves durable and reliable for one individual may not have widespread, generalisable appeal. Habits are developed when behaviours are easy to follow, repeatable and regularly reinforced. Bharmra *et al.* suggest trying to emulate these characteristics of habit formation when designing interventions to promote environmentally desirable behaviours (Bhamra, Lilley and Tang, 2011).

2.4.3 Other strategies

In recent years, there have been developments in the provision of services on the UK high street that aim to promote environmentally desirable behaviour.

High street stores, such as Marks & Spencer's and H&M, now offer garment take-back schemes, which have proved to be a convenient alternative to charity shop donation (H&M, no date; Marks and Spencer PLC, 2015). Many of these schemes offer the customer money off vouchers in exchange for the donation of their unwanted garments. In this way, in-store schemes for clothing donation strengthen the link between discard and acquisition; such schemes could be criticised for further encouraging careless consumption, and perpetuating the cycle of consumption. The reward is access to more consumption.

In contrast to this, Repair Cafés, which are anti-consumption, have grown in popularity. Repair Cafés are a concept originally started in Amsterdam in 2009 (Repair Café, no date). Repair Cafés are non-profit organisations and are now franchised all over the world, including the UK. The aim of the Repair Café is to provide a space to facilitate repair. Tools and materials for repairing a range of products, including garments, are provided. Patrons of the repair café share their knowledge and experience of repair with other patrons, encouraging a social and sharing atmosphere. This strategy is based on individuals being highly self-motivated to engage in repair activity.

There are indications that high street retailers are beginning to see the potential of running services alongside retail. For example, Marks and Spencer's ran a pop-up 'Shwop and Sew Lab' in 2015 (Florea, 2015). This included a range of sewing and repair classes offered in their Bristol store. This kind of activity is currently limited.

2.4.4 Potential barriers to change

Many of the current behaviour strategies adopted by the fashion sector do not address actual behaviour motivations. However, even when supported with an understanding of behaviour, there are potential barriers to behaviour change strategies.

Reactance could act as a barrier to behavioural change. Within psychology, reactance is a motivational reaction to an individual feeling like their options are limited. The individual may react to this feeling by doing the opposite of what they feel is being demanded (De Young, 2000). Psychological reactance can limit the impact of motivations for behavioural change. Therefore, it is important that behaviour change strategies do not limit or restrict an individual's freedom to decide. Even if a behaviour appears to have changed initially, reactance can be later triggered, limiting the permanence of the behaviour change (De Young, 2000).

Changes in behaviour will change the resulting environmental impact. Impacts may improve in one area, but worsen in another. For example, collaborative consumption through garment rental may increase impacts from transportation (Sandin, Zamani and Peters, 2015). This is problem shifting (eco-innovation observatory, no date). Proposed behaviour change strategy needs careful consideration regarding its repercussions on other impacts.

2.5 Summary

This chapter has examined a breadth of literature, including the environmental impacts of garment use and discard behaviour, and the difficulties in determining these impacts. The literature indicates that current understanding of environmentally desirable behaviour may be flawed due to variances in individual behaviour. Further to this, motivations for behaviour are

likely to vary between individuals. Pro-environmental intent may not be necessary to produce environmentally desirable behaviour. The link between attitude and behaviour has been applied in some studies. However, this has excluded the significant influence of context on behaviour. Factors influencing behaviour were not all related to the design of the garment, yet strategies for sustainable fashion are predominantly focused on garment design. Extending the responsibility for promoting environmentally desirable behaviour may be a significant, and necessary, development in the field.

It was decided that an in-depth study of consumer use and discard behaviour would be beneficial to begin to build understanding, which is lacking in the literature.

3 Methodology

This chapter is made up of two sections; the study of the wardrobe as a research method, and the design of the method for this thesis.

The first section examines the collection of empirical data through the wardrobe study method. In the second section, each element of the design of the research is considered, including paradigm, purpose, strategy, research type, data collection and data analysis. The validity and reliability of the data gathered are also discussed.

3.1 Studying the Wardrobe

Studies into actual consumer use of their everyday wardrobes have been described as 'Wardrobe Studies' (Laitala and Klepp, 2011). In the past twenty years, wardrobe studies have been used by a variety of disciplines to gain insight into consumer garment use practices. Before wardrobe studies examined everyday garment use, fashion research was limited to historical costume and Haute Couture fashion. Following Tseelon's pioneering research in the social sciences, the focus of fashion research shifted to everyday wardrobes and the application of the 'wardrobe study' has continued to develop (Tseelon, 1989, 1992; Guy and Banim, 2000; Fletcher and Tham, 2004; Gregson and Beale, 2004; Woodward, 2007). The wardrobe study, in its various semblances, has been used to research the behaviours, social context and social psychology associated with clothing and the act of dressing.

More recently, the wardrobe approach has been utilised within research into clothing and sustainability. Wardrobe studies have been used to further our understanding of consumer attitudes, garment use practices including laundering, sorting and storage, and garment disposal practices (Birtwistle and Moore, 2007; Fisher *et al.*, 2008a; Laitala and Klepp, 2011; Niinimaki and Koskinen, 2011; Laitala and Boks, 2012).

Wardrobe studies tend to focus on the everyday utilisation of garments. Some studies have attempted to research such behaviours through questionnaire alone, but this section focuses on those studies which have included multiple methods of data collection such as observation, diaries, and object-focused interviews (see Table 3-1).

Early examples of the wardrobe study still utilised established qualitative methods, such as open-ended questionnaires, but were pioneering in the way they gave attention to the everyday wardrobe (Tseelon, 1992, 1995). Before this, the garment behaviour of an ordinary individual was not valued as a serious topic for study. Wardrobe studies emerged from the social sciences, which have a tradition of qualitative research practice. Wardrobe studies still predominantly utilise qualitative methodologies and analysis techniques. More recently,

wardrobe studies have appropriated methods from other disciplines, including ethnographic studies, focus groups, participant diaries, object-focused interviews, audits, case studies, workshops and lab tests (Fletcher and Tham, 2004; Woodward, 2007; Laitala and Klepp, 2011).

Table 3-1 presents research that utilised wardrobe study methods. This list was generated through a literature search, focusing on published research, such as journal papers and academic books. Table 3-1 represents the best approximation of all the studies published in the fifteen years between 2000 and 2015. Although research into garment use and discard became increasingly prevalent, the wardrobe study method seems only to be utilised in relatively small numbers of publications annually. This is perhaps because the involvement required from both the researcher and participant is more significant than for traditional methods such as questionnaires.

Table 3-1 *Studies that utilised the wardrobe study method*

Year	Author	Title	Publication	Methods
2000	Guy & Banim	Personal collections: women's clothing use and identity	Journal of Gender Studies	Personal account Clothing diary Wardrobe interview
2004	Fletcher & Tham	Lifetimes	Sustainable Fashion & Textiles: Design Journeys [book]	Clothing Diary
	Gregson & Beale	Wardrobe matter: the sorting, displacement and circulation of women's clothing	Geoforum [journal]	Ethnographic Study
2007	Woodward	Why women wear what they wear	Berg [book]	Wardrobe audit Interview Clothing diary Participant observation

	Birtwistle & Moore	Fashion clothing- Where does it all end up?	International Journal of Retail & Distribution Management	Focus groups Consumer interviews Retailer interviews
2008	Fisher, et al.	Public understanding of sustainable clothing	Report for the Department for Environment, Food and Rural Affairs [UK government]	Focus groups Wardrobe audit Clothing diary
	Cluver	Consumer Clothing Inventory Management	PhD thesis, Oregon State University	Garment Interviews Longitudinal study
2011	Niinimaki & Koskinen	I love this dress, it makes me feel beautiful! Empathic knowledge in sustainable design	The Design Journal	Questionnaire x 2 Case study
	Laitala & Klepp	Environmental improvement by prolonging clothing use period	Conference paper: Towards Sustainability in the Fashion & Textiles Industry, Copenhagen	Questionnaires Interviews Laboratory tests
	Hertz	Costuming potential: Accommodating unworn clothes	Museum Anthropologie Review [journal]	Bedroom Ethnographies

2012	Laitala & Boks	Sustainable clothing design: Use Matters	Journal of Design Research	Questionnaire x 2 Interviews Garments analysis
2013	Laan & Velthuis	Inconspicuous dressing: A critique of the construction-through-consumption paradigm in the sociology of clothing	Journal of Consumer Culture	Wardrobe Interview
2014	Choo et al.	The effect of consumers' involvement and innovativeness on the utilisation of fashion wardrobe	International Journal of Consumer Studies	Wardrobe Audit Questionnaire
2015	Lovgren	Squirrels and nostalgia: About wardrobe collections of older women	Ageing, Culture & Identity [book]	Wardrobe interview

Many of the wardrobe studies have been used to generate more than one publication; in these cases, the first publication of the method is included in the table (3-1). As a relatively new method of research, dissemination of research methods and results has allowed development and progression.

The researchers that undertook these studies come from a range of backgrounds including geography, consumer research, design, and environmental science. Interest in garment consumption has now developed outside of the social sciences; researchers from other backgrounds bring their own set of tools and methods with them. The development of wardrobe methods relates to the development of theories of social practice. The focus on everyday behaviours, valuing individual perspectives and the study of actions, as well as attitudes, are all attributes of wardrobe study methods that fit into the discipline of practice theory (Reckwitz, 2002; Warde, 2005).

Wardrobe studies are grounded in qualitative research. Qualitative methods are useful when trying to capture the meaning of everyday behaviours (Kaiser, 1997). It is common for wardrobe studies to utilise more than one qualitative data collection method, and many utilise additional quantitative methods. An example of this multiple method approach is the study undertaken by Laitala and Klepp (2011) that combined a quantitative questionnaire, a six-month clothing audit, laboratory tests and qualitative interviews. Laboratory tests are an unusual addition to the methods utilised, as scientific testing has seldom been applied to garments after consumer use, in relation to consumer behaviour.

There are several reasons for combining methods. From the perspective of research quality, it allows for the triangulation of results, and it allows riskier experimental methods to be validated through the results from more established methods. Questionnaires alone can be inadequate for capturing behaviour, as they are disconnected from actual use (Klepp and Laitala, 2015). Individuals may not have a good cognitive understanding of their actions, as up to forty-five percent of our everyday behaviours are not actively reflected upon (Verplanken and Wood, 2006). They may, therefore, struggle to recall behaviour when asked at a later date, removed from the context of the behaviour. This can weaken findings as remembered behaviour often differs from actual behaviour (Laitala, 2014).

Access is another concern; garment behaviours occur behind closed doors, in private spaces, which are often difficult for researchers to gain access to. Observation of individuals in these spaces would be intrusive, making recruitment of participants difficult. Despite the difficulties, some studies have utilised ethnographic observations methods (Gregson and Beale, 2004; Woodward, 2007). In these examples participants needed to be comfortable with the researcher entering their personal spaces such as bedrooms, which resulted in Woodward recruiting participants from her social network (Woodward, 2007). Recruiting participants in this way could lead to bias in the results (Jupp, 2006), although it does allow for a less guarded relationship between the participant and researcher. Other researchers used alternative methods, such as participant diaries to capture similarly detailed information. Studies that utilised diaries (Guy and Banim, 2000; Fletcher and Tham, 2004; Woodward, 2007; Fisher *et al.*, 2008a) aimed to encourage participants to record their thoughts and behaviours as they happened to build a more accurate picture of behaviour, and to avoid the erosion of recollection that can occur over time. There is a risk when utilising diaries as a research method that participants may edit their account, or forget to complete their entries.

Another reason for including multiple methods is to capture information about the materials characteristics of garments as well as consumer behaviour. The materials characteristics of

garments undoubtedly impact on use and discard practices, but research tends to focus on either material properties or consumer behaviour. Some wardrobe studies have attempted to bridge this gap. Laitala and Klepp also brought together methods to cover both the material and material culture of discarded garments. They used surveys and interviews to collect data on consumers use, maintenance and the disposal of garments. Textile testing methods (laboratory tests), were used to determine the material properties of the garments disposed of by the participants (Laitala and Klepp, 2011). This allowed for comparisons of 'worn out' clothing which was found to be dependent on garment type and participant perceptions (Laitala and Boks, 2012). Utilising methods that capture the non-verbal aspect of behaviour offer the advantage of a deeper understanding that could not be expressed through language alone (Klepp and Laitala, 2015).

For many of the studies, the garments were used as a prompt or cue for discussion, rather than being included in data collection. Using objects as prompts for discussion is a tool developed in object centred methods (Woodward, no date). Such methods allow interactions with the garments during the interview and allows narratives to be anchored within the context of the physical garment. Garment interviews and wardrobe interviews were conducted in the presence of selected garments, or the complete wardrobe inventory. Fisher et al. audited three garments from each of the participant's wardrobes; '*one you use for leisure, one you use for work, one you use for special occasions*' (Fisher et al., 2008a). While Fletcher & Tham concentrated on four garments; '*party top, basic underwear, utility trousers, and plain coat*' (Fletcher and Tham, 2004). Studies that focus on a variety of garments within the participants' wardrobes allow them to capture a range of behaviours, without examining the entire wardrobe inventory. Garments have been selected for inclusion in studies based on perceptions of typologies in the wardrobe, such as work garments being utilised differently to social clothing. This could result in behaviours being missed by studies, especially if the participant uses their garments in an atypical manner.

Wardrobe study methods undoubtedly require more commitment from participants than online surveys, which are quick to complete and accessible for large numbers of participants. Wardrobe studies have predominantly used non-probability sampling methods such as snowball and convenience sampling to recruit participants (Guy and Banim, 2000; Cluver, 2008; Hertz, 2011; Niinimaki and Koskinen, 2011; Laan and Velthuis, 2013); it would be difficult to encourage participation in such time-intensive studies with an unsolicited request. The commitment required from participants has also resulted in studies that may have a small sample size, but generate rich qualitative outcomes.

In the examples given in Table 3-1, sample sizes range from four participants (Fletcher and Tham, 2004) to around two hundred participants. Those studies with large sample sizes utilised quantitative methods and analysis (Choo *et al.*, 2014), or qualitative questionnaires, which in some cases supplement a smaller qualitative study (Birtwistle and Moore, 2007; Niinimaki and Koskinen, 2011), to manage the practicality of working with larger sample sizes. In-depth qualitative phases of the studies targeted between fifteen and thirty participants.

In-depth qualitative studies, with small sample sizes, can be critiqued for not being representative, and therefore not generating results that can be generalised to a wider population. However, these studies result in rich and detailed data, which can develop our understanding of complex phenomena. The depth of this data has resulted in several publications for many of the wardrobe studies included in Table 3-1. Some of the studies supported their small, in-depth, qualitative studies with larger surveys. This allows them to strengthen their findings by balancing the disadvantages of each type of data.

Most of the wardrobe studies focus on female behaviour, although a few do include male and female participants (Fisher *et al.*, 2008a; Hertz, 2011; Laitala and Klepp, 2011). There is only one wardrobe study that focuses solely on male behaviour (Laan and Velthuis, 2013). Females have different garment consumption habits to males (O' Cass, 2000; Baudoin, Lachance and Robitaille, 2007; Handa and Khare, 2013). Focusing on female behaviour makes it easier to look for patterns in behaviour, although including males allows comparison between male and female behaviour.

Most of the studies have focused on the behaviour of adults aged over seventeen, although one study examined the behaviours of 16 households and, therefore, included children (Laitala and Klepp, 2011). Adult demographics are assumed to have financial independence, and control over their acquisition, use and discard habits. Individuals in the 18 to 24-year-old age group may still be occupied with identity formation, which tends to be more prevalent in teenagers and young adults (Erikson, 1959); this will impact on their behaviours. Many studies focus on this age group (Morgan and Birtwistle, 2009). This group have the least environmentally desirable garment behaviours, with high acquisition and discard rates (Mintel, 2007), and they are often accessible participants to researchers. However, the behaviours of older individuals should not be overlooked.

Representative samples accurately represent the population (McNeill and Chapman, 2005). Although none of the samples aimed to be representative, some studies segmented participants in a preliminary participation stage to select a range of segments to be represented in further stages of the study (Fisher *et al.*, 2008a; Laitala and Klepp, 2011). This

required adding additional stages to the research method to allow segmentation. Willingness to participate in further research depended on the benevolence of the participants, making it difficult to target strategic samples.

Fisher et al. segmented their participants according to their environmental attitude. Participants were represented from seven groups: positive greens, waste watchers, concerned consumers, side-line supporters, cautious participants, stalled starters, and honestly disengaged. This was based on DEFRA's framework for pro-environmental behaviour (DEFRA, 2008). It was utilised to compare the garment behaviours and attitudes of participants in each segment, who had differing environmental attitudes.

With the exception of one study (Choo *et al.*, 2014), all of the studies included in Table 3-1 utilised an exploratory approach to the research. Due to the limited knowledge and understanding of garment use behaviour, it has been more relevant for researchers to let theory emerge from the data, rather than to test a theoretical hypothesis. As the field advances, there may be more studies that seek to test theories on patterns of behaviour.

Early wardrobe studies were concerned with advancing understanding of everyday garment practices. As the method developed, it attracted researchers who were interested in understanding behaviour in order to change it. Not all of the studies in Table 3-1 considered motivating behaviour change, but of those that did, it was common only to consider how findings may be applied in the concluding comments (Morgan and Birtwistle, 2009; Laitala and Klepp, 2011; Niinimaki and Koskinen, 2011). Including recommendations for behaviour change strategy in the concluding comments does not allow for in-depth analysis or discussion of plausibility. This suggests a missed opportunity to situate the findings of wardrobe studies in behaviour change strategies.

A few studies were more effective in the application of their findings. DEFRA commissioned the study by Fisher et al. (2008), and the outcomes have therefore been used to develop recommendations for government policy and industry, and the Sustainable Clothing Action Plan (SCAP). Fletcher and Tham (2004) developed their wardrobe study findings into innovative design scenarios. It is surprising that more examples of garment design practice informed by wardrobe studies have not been published.

3.1.1 Development of the wardrobe study method

The study consisted of two main parts: the wardrobe study, and an online survey. The online survey was used to develop and verify the results of the wardrobe study with a larger sample. The development of the two-part study is considered in this section.

The research methods were developed based on a grounded theory approach. A grounded theory does not start with a hypothesis or a theory, which is to be validated by the results. Rather, it is an inductive process where data is first collected; then the theory is developed (Harding, 2006). A grounded theory approach is often taken when researching topics where there is little existing theory in the literature (Goulding, 2002); hence its appropriateness for utilisation within the field sustainable fashion. The aim was to build theory from the 'ground' up. Therefore, the development of the method in this study focuses on the collection of experiences of garment use and discard, rather than testing a hypothesis. The process of analysing and developing categories, which leads into theory building, happened throughout the data collection process (Harding, 2006).

In order to design the wardrobe study, existing wardrobe study methods were first reviewed. Methods were developed over three experimental studies to ensure the correct type of information was obtained for the wardrobe study. Methods were selected based on the research objectives of the study, which were:

- To identify the current state of consumer garment use behaviour and to explore a range of appropriate behaviour change strategies
- To provide a better understanding of the practicalities of consumer garment use behaviour, and identify potential for modes behaviour change

This motivated the design of a study that would capture a breadth of causal variables. Three phases of the research were proposed; a questionnaire to capture demographic factors, a wardrobe audit to capture material properties, and a garment interview to capture in-depth data on all causal variables. Each phase collected data in a slightly different way.

Fisher et al. had already developed a method for segmenting individuals according to their environmental concern (Fisher *et al.*, 2008a), which was used in this study. This method was utilised to measure the participants' level of general environmental concern, but not to segment.

The wardrobe study was designed to capture more detail about the physical properties of the wardrobe inventory than could be captured or revealed by interview alone. The intention for including material properties was to understand the links it has with use and discard practices. Conducting the wardrobe audit was also intended to familiarise participants with their wardrobe inventory before the interview.

The interview was designed to be a garment interview; participants would be asked to bring garments with them to allow discussions to be centred within the context of the physical garment (Woodward, no date). Having the garments in the interview was intended as a prompt to the recollection of participant behaviours. Six garments were selected for inclusion in the garment interview; a garment they have owned for a long time, a garment they are emotionally attached to, a garment they never wear, a garment that they wear frequently, a garment they have recently purchased, a garment they are likely to dispose of soon. These garments were selected to give a broad overview of the participants' garment behaviour. Whereas other studies asked for garments worn for specific purposes, this study categorised the garments based on where they were in the life cycle of the participants' wardrobe. The garment interview questions were designed to collect rich and detailed data regarding each garment. The focus was on understanding their current behaviours, for example, what had made them keep and wear a garment for a long time.

Experimental studies were undertaken to trial the research method to ensure it met the research objectives, and to develop the research design to address any problems.

The pre-audit questionnaire utilised was adapted from the questionnaire used by Fisher et al. in the study 'Public Understanding of Sustainable Clothing' (Fisher *et al.*, 2008a). It was decided that in addition to the level of environmental concern, interest in fashion, income, occupation, age, ethnicity and car ownership would be recorded. Following the first experimental study two adjustments were made to the pre-audit questionnaire; part-time work classified as 8 to 29 hours per week was changed to 1 to 29 hours per week in order to not exclude participants that class themselves as part-time but work less than 8 hours a week, and a question regarding second-hand garments was included. Following the second experimental study one adjustment was made to the pre-audit questionnaire; the number of optional answers to the question 'How often do you purchase clothing for yourself?' was increased to include more frequent shopping habits. The resulting questionnaire is included in Appendix 1.

Woodward's study audited every garment in participants' wardrobes and used this to calculate percentages of active and inactive garments (Woodward, 2007). The first experimental study involved a complete audit of all items in the participants' wardrobe. A total of 187 garments were audited; Garment, Brand, Fibre, Fabric, Colour, Pattern, Details, Damage, Cut, Occasion were noted for all of them. Due to time constraints, only three of a potential ten parts of the participants' entire garment inventory were audited; this included the main wardrobe, summer wardrobe, and winter wardrobe.

There were practical issues relating to the full wardrobe audit; the volume of garments to be assessed led to a very long audit and it was felt that participants would find this too time-consuming to complete, limiting the number of willing participants. It was concluded that the number of garments audited would need to be refined. The audit was adapted to focus on garments that were worn regularly. It was hoped that this would dramatically reduce the amount of time spent auditing. Further categories were also added to the audit sheet to obtain information on the age of the garment, and whether the garment was second-hand.

The method was further developed in the second experimental study to make it easier for participants to complete the process remotely. A help sheet was included to offer suggestions as to how to fill in the different categories. It was taken into account that participants may have very limited prior knowledge of textiles and fashion, especially the associated vocabulary. An image-based help sheet was also included to help participants describe their garments.

Following the three experimental studies, a basic analysis produced findings that supported that the audit was effective in capturing material properties.

In the first experimental study the participant was asked to bring six garments which played a different role in their wardrobe:

- A garment they have owned for a long time
- A garment they are emotionally attached to
- A garment they never wear
- A garment that they wear frequently
- A garment they have recently purchased
- A garment they are likely to dispose of soon

These garments formed the basis for a semi-structured interview. The six garments examined in the garment review remained the same throughout the experimental studies and the main study. However, some of the interview questions were developed over the three experimental studies to obtain the most detail from the participant. Questions continued to be developed and adjusted throughout the main study in accordance with the grounded theory method.

The resulting wardrobe study method is discussed in 3.2.5.1 Wardrobe Study Method. The questions in the online survey aimed to validate the findings of the wardrobe study. Therefore, the wardrobe study analysis had to be completed before the online survey questions could be compiled. A small pilot was trialled to ensure the questions were accessible and uncomplicated. A few slight changes were made to the wording as a result. The online survey method is covered in detail in 3.2.5.2 Online Survey Method.

3.2 Research Design

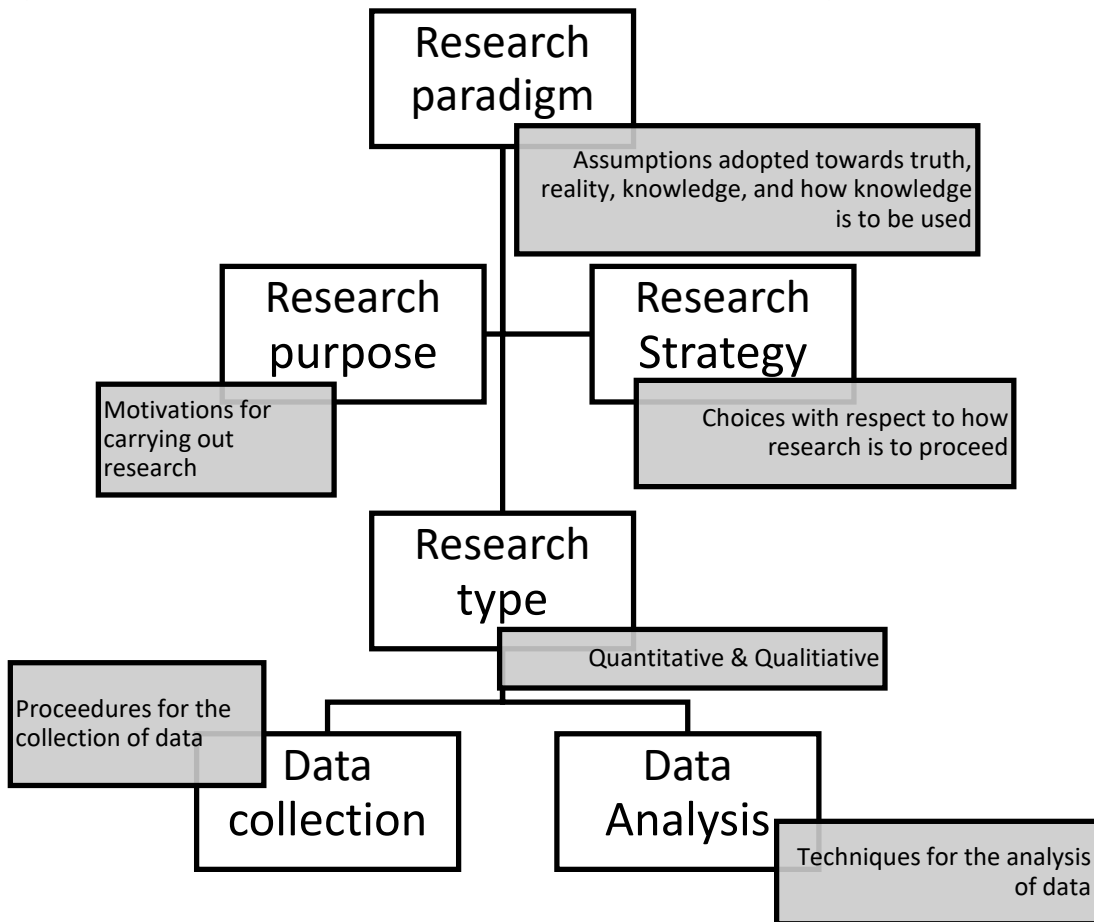
A quote from Taskakorri and Teddlie was used as a guiding principle throughout the research design:

'Study what interests and is of value to you, study it in the different ways that you deem appropriate, and utilise the results in a way that can bring about positive consequences in your value system' (Tashakkori and Teddlie, 1998).

The success of a research project is largely dependent on the selection of an appropriate methodology. Methodology refers to the approach or paradigm that underpins the research (Blaxter, Hughes and Tight, 2006). The six elements that need to be considered at the research design stage are; paradigm, purpose, strategy, type, data collection methods, and analysis.

Figure 3-1 presents an overview of the research design process, with a definition of each stage

Figure 3-1 The six elements constituting research design. Adapted from (Tang, 2010)



3.2.1 Research paradigm

A research paradigm is a belief system that guides the practice of researchers (Weaver and Olson, 2006). Examples of paradigms used in research include *Positivism*, *Post-Positivism*, and *Constructivism*. This research used the *Pragmatism* paradigm. Pragmatism is value orientated. This research is concerned with improving a situation, making pragmatism relevant to the

research question: *What factors could be used to promote environmentally beneficial behaviours within garment use and discard?* Pragmatism concerns itself with solving practical problems in the real world (Feilzer, 2010). Murphy defines the pragmatic rule as: *'the current meaning or value of an expression is to be determined by the experiences or practical consequences of belief in, or use of, the expression in the world'* (Murphy, 1990).

In Pragmatism, the research question takes precedence over method or paradigm (Teddle and Tashakkori, 2003); pragmatists believe that methods should be used in the best way to answer the research question (Johnson and Onwuegbuzie, 2004). Pragmatism is considered, in most cases, the most appropriate philosophical position to take when undertaking multi-strategy research (Johnson and Onwuegbuzie, 2004), as Pragmatism supports the use of qualitative and quantitative research in the same study (Teddle and Tashakkori, 2003). Pragmatism is effect and outcome orientated (Johnson and Onwuegbuzie, 2004), which can be observed using either qualitative or quantitative methods. This research utilised a multi-strategy method, making pragmatism a suitable paradigm.

3.2.2 Research purpose

The four motivations for research study are classified as Exploratory, Descriptive, Explanatory (Robson, 2011) and Emancipatory (Marshall and Rossman, 2010). The table below defines each of the classifications (Table 3-2).

Table 3-2 Classification of research purpose. Source: (Tang, 2010)

Exploratory	<ul style="list-style-type: none"> -To find out what is happening, particularly in little-understood situations -To seek new insights -To ask new questions -To assess phenomena in a new light -To generate ideas and hypotheses for future research -Almost exclusively flexible design
Descriptive	<ul style="list-style-type: none"> -To portray an accurate profile of persons, events or situations -Requires extensive previous knowledge of the situation etc. to be researched or described, so that the appropriate aspects can be distinguished on which to gather information -May be of flexible and/or fixed design

Explanatory	<ul style="list-style-type: none"> -Seeks an explanation of a situation or problem, traditionally but not necessarily in the form of causal relationship -To explain patterns about the phenomena being researched -To identify relationships between aspects of a phenomenon -May be of flexible and/or fixed design
Emancipatory	<ul style="list-style-type: none"> -To create opportunities and the will to engage in social action -Almost exclusively of flexible design

This research utilised exploratory research. Exploratory research is intended to make advances into understanding a relatively unexplored phenomenon (Colman, 2015). As explained in the literature review, post-purchase garment behaviour is still not well understood, making it a suitable phenomenon for explorative research. The aim of exploratory research is not to prove or disprove a hypothesis, but to build understanding.

3.2.3 Research strategy

This research utilised sequential exploratory design (Robson, 2011). Sequential exploratory design initially employs a phase of qualitative data collection and analysis, followed by a phase of quantitative data collection analysis which is informed by the qualitative findings. The exploration of a phenomenon is the central focus of this research strategy. Some researchers give priority to one set of data, whereas this research took a complimentary interpretation. Conflicts in the two sets of results are not necessarily interpreted as a contradiction; where possible an understanding of the conflicts was sought (Slonim-Nevo and Nevo, 2009).

3.2.4 Research type

Tables 3-3 and 3-4 outline some of the differences between qualitative and quantitative methods regarding their respective strengths and weaknesses.

Table 3-3 *Strengths of qualitative and quantitative research methods. Adapted from (Johnson and Onwuegbuzie, 2004)*

Strengths	
Qualitative	Quantitative
<ul style="list-style-type: none"> -Data is based on the participants' categories of meaning. -Useful for describing complex phenomena. -Can conduct cross-case comparisons and analysis. -Provides understanding and description of people's personal experiences of a phenomena. -The researcher identifies contextual and setting factors as they relate to the phenomenon of interest. -The researcher can study dynamic processes. -The researcher can use "grounded theory" to generate a tentative but explanatory theory about a phenomenon inductively -Data is usually collected in naturalistic settings. -Researchers are responsive to changes that occur during the conduct of a study and may shift the focus of their studies as a result. -Data in the words and categories of participants lend themselves to exploring how and why phenomena occur. 	<ul style="list-style-type: none"> -Can generalise a research finding when it has been replicated in many different populations and subpopulations. -Useful for obtaining data that allow quantitative predictions to be made. -The researcher may construct a situation that eliminates the confounding influence of many variables, allowing one to more credibly assess cause-and-effect relationships. -Data collection using some quantitative methods is relatively quick. -Provides precise, quantitative, numerical data. -Data analysis is relatively less time-consuming. -Research results are relatively independent of the researcher. -Useful for studying large numbers of people

Table 3-4 Weaknesses of qualitative and quantitative research methods. Adapted from (Johnson and Onwuegbuzie, 2004)

Weaknesses	
Qualitative	Quantitative
<ul style="list-style-type: none"> -Knowledge produced may not generalise to other people or other settings. -Quantitative predictions are difficult to make. -Hypotheses and theories are more difficult to test. -When compared to quantitative research, data collection can be more time-consuming. -Data analysis is often time-consuming. -Results are more easily influenced by the researcher's personal biases and idiosyncrasies. 	<ul style="list-style-type: none"> -Researcher's categories may not reflect local constituencies' understandings. -The researcher's theories may not reflect local constituencies' understandings. -The researcher may miss out on phenomena occurring because of the focus on theory testing rather than on theory generation. -Knowledge produced may be too abstract and general for direct application to specific local situations, contexts, and individuals.

Within this study both qualitative and quantitative research methods were used, making it a multi-strategy study. *Multi-strategy* research is sometimes referred to as mixed-method; this term is ambiguous as it implies that the methods are in some way combined (Robson, 2011).

As the tables show, the strengths and weaknesses of qualitative and quantitative methods differ significantly. Multi-strategy methods exploit these differences; utilising the complementary strengths of each research type, while weaknesses are minimised (Johnson and Onwuegbuzie, 2004). Despite their differences, both methods '*describe their data, construct explanatory arguments from their data, and speculate about why the outcomes they observed happened as they did*' (Sechrest and Sidani, 1995).

The rationale for using a multi-strategy method was complimentary; seeking elaboration, enhancement and clarification from one method to another (Johnson and Onwuegbuzie, 2004). Within this study, the two methods were used sequentially. Multi-strategy research enables grounded exploration, and confirmation, within the remit of one study. This allows for both the generation and verification of theories (Teddlie and Tashakkori, 2003; Johnson and

Onwuegbuzie, 2004). The methods from the wardrobe study phase were used to inform the subsequent online survey phase (Nastasi, Hitchcock and Brown, 2010)

Qualitative data was collected initially in the wardrobe study; this allowed for a real, rich, in-depth exploration of garment use behaviours. Themes emerging from the rich qualitative data were then tested in a quantitative online survey. The survey aimed to validate to what extent particular attitudes that had emerged from the wardrobe study were held. The online survey sought verification for the emerging themes. One method alone would not have given a detailed enough insight into garment use behaviour.

The skills needed to conduct qualitative or quantitative methods are quite different. This gave the primary researcher the opportunity to acquire a range of research skills in the process of completing the study. The risk of undertaking a multi-strategy study is that the researcher needs to understand the characteristics of both qualitative and quantitative methods. Critics of multi-strategy research propose that qualitative and quantitative methods are incompatible and could not, and should not be mixed (Howe, 1988). However, many studies have shown that the methods can be used together successfully.

Multi-strategy methods can create conflict if there is a divergence between the two sets of results; this can push the researcher into expanding their critique of theory and questioning of phenomena (Teddle and Tashakkori, 2003).

3.2.5 Research methods

This study used a multi-strategy approach; qualitative and quantitative methods were applied at sequential stages of the research to meet each objective. The two stages of the method are referred to as the Wardrobe Study and the Online Survey. The methods for each stage are explored below.

3.2.5.1 Wardrobe study

The wardrobe study predominantly utilised qualitative methods. Qualitative methods are inductive; they are concerned with exploration and theory generation (Johnson and Onwuegbuzie, 2004). There were three strands to the wardrobe study: a pre-audit questionnaire, a wardrobe audit, and a garment interview. These methods were designed to determine the significant influencing factors on post-purchase garment behaviour. The aim was to discover theory from the data, utilising a grounded theory approach to data collection (Strauss and Corbin, 1998).

The three phases of the wardrobe study method are shown in Table 3-5. The three phases were undertaken sequentially, with the garment interview being the final stage. The garment

interviews consisted of semi-structured questioning regarding the garments the participants had brought with them. The informal nature of the semi-structured interviews allowed the researcher to build a rapport with the participants and allowed the participants to share ‘off topic’ insights, which often provided useful context to their garment consumption.

Table 3-5 *Three phases of the wardrobe study*

<p>Pre-Audit Questionnaire</p>	<p>The pre-audit questionnaire collected information on the participants’ demographic information (e.g. age, ethnicity, income), garment purchasing habits, and environmental viewpoint (see Appendix 1). This is similar to the environmental viewpoint questionnaire conducted by Fisher, et al. within their ‘Public understanding of sustainable fashion’ study (Fisher <i>et al.</i>, 2008c). The pre-audit questionnaire was used to categorise participants and examine the influence of contextual factors.</p>
<p>Wardrobe audit</p>	<p>Following the pre-audit questionnaire, an audit pack was posted to participants. Participants were asked to complete a wardrobe audit worksheet at home. This involved self-auditing the garments that they wore regularly using a wardrobe audit worksheet. The worksheet asked them to record garment type, brand, fibre content, fabric, colour, pattern, details, cut, age & damage (see Appendix 2). A help sheet was provided to guide them (see Appendix 3).</p>
<p>Interview</p>	<p>Participants were asked to bring six garments from their wardrobe:</p> <ul style="list-style-type: none"> A garment they have owned for a long time A garment that they are emotionally attached to A garment that they never wear A garment that they wear frequently A garment that they recently purchased A garment that they are likely to discard soon <p>These garments were selected to give an overview of the wardrobe including active (frequently worn) and inactive (infrequently or never worn) garments. Participants were questioned regarding the wardrobe audit before being asked open-ended questions about</p>

	each of the garments they had brought to the interview (see Appendix 4).
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3.2.5.2 Online survey

Following the wardrobe study ideas on the attitudes, contexts, personal capabilities and habits of consumers were tested for validation using an online survey.

Due to the obtrusive nature of the wardrobe study, it was not possible to reach large sample numbers; the survey method allowed the development of themes with a much larger sample which aimed to build on generalisability.

It was identified in the wardrobe study that participants' understanding of environmentally desirable garment behaviour was variable. Some of the questions in the online survey were therefore designed to assess knowledge of the environmental impact of garment consumption. The wardrobe study also identified that a dislike of waste might be more influential on behaviour than other environmentally motivated factors. Questions in the online survey aim to further the understanding of the influence of a dislike of waste on garment consumption behaviours.

For the four target behaviours- wearing garments for longer, repairing garments, shifting ownership of inactive garments and selecting a discard channel- questions were predominantly directed towards validating the barriers and motivations identified in the wardrobe study. However, for garment repair questions were included to further the variables that may influence the behaviour.

This online survey utilised a Likert scale. The Likert scale test attitudes (Boone and Boone, 2012), and participants select how strongly they agree with a statement from a list of answers. The online survey used a five-point scale: Strongly Agree (1), Agree (2), Neither Agree or Disagree (3), Disagree (4), Disagree Strongly (5). Likert scales tend to be used when measuring a combination of answers (Boone and Boone, 2012), but the online survey used the Likert scale to analyse individual questions and answers. This online survey examined attitudes, context, personal capabilities and habits. Although the method tests attitudes, the online survey included questions regarding context, personal capabilities and habits, as it is possible to measure the participants' beliefs about these variables.

In a Likert study, all the statements need to be a single statement, to avoid any confusion when the participant is responding (Garwood, 2006). For example, 'I forget about clothes I

don't wear'. Statements also need to be balanced between the positive and the negative to avoid an obvious bias in the statements (Johns, 2010); balance between the statements about motivations and barriers to behaviours was sought. The full survey, including all the statements, can be found in Appendix 5.

3.2.6 Research sample

For the experimental pilot studies, appropriate participants were recruited from the researcher's social networks. For all of the other data collection stages, voluntary sampling was utilised (Jupp, 2006). Voluntary sampling is non-probability (Jupp, 2006), and therefore, does not create a representative cohort of participants. However, the aim of grounded theory research is not to achieve a representative sample, but to gain enough insight to build theory which can be validated by a representative sample at a later date (Harding, 2006).

When using a multi method research approach, it is important that the researcher considers how the two samples relate (Gray, 2014). Because the study used sequential methods, it was deemed appropriate that the online survey sample should 'parallel' the wardrobe study sample. This means that different participants took part in each of the methods, but they were drawn from the same sample frame (ibid). The results from the online study can, therefore, be used to support the wardrobe study, rather than offer a comparison.

3.2.6.1 Sample criteria

The criteria for participants was always the same: women aged over 18 living in the UK. These three criteria- age, gender and country of residence- were given careful consideration. Females were chosen as the focus of the study as they consume greater quantities of garments (O' Cass, 2000; Baudoin, Lachance and Robitaille, 2007; Handa and Khare, 2013). The sample would, therefore, provide the best insight into garment consumption (Gray, 2014). Those over 18 are considered adults, and therefore likely to control their consumption of clothing; making them more appropriate for inclusion in the study. The research is located in the UK, and as a means of framing the research within this location, participants were limited to those currently living in the UK.

These three criteria were the only requirements for participating in the research. Therefore, the potential sample frame is large; the female population of the UK is approximately twenty-six million (Office for National Statistics, 2012). Despite this broad sample frame, the amount of time and effort required to participate in the wardrobe study prevented large numbers volunteering.

3.2.6.2 Wardrobe study approach

The initial aim was to achieve a sample size of twenty, as a small sample size, utilising qualitative methods, would provide enough rich, in-depth data to explore the factors influencing behaviour. This would support the development of the understanding needed to respond to the research question. The challenge was to resolve how to approach potential participants.

The researcher started by identifying and approaching established female social groups locally (e.g. the Women's Institute, library craft groups). These groups were informed that the research being conducted was regarding garment consumption, and members of these groups were invited to volunteer to take part. They were also asked if they knew of other women who may like to be involved. The individuals who agreed to take part made up the sample (Jupp, 2006). This voluntary approach was convenient for the researcher and allowed for the identification of volunteers who were prepared to offer the time necessary to participate. Volunteer samples are sometimes biased because the individuals that volunteer have an existing interest in the research topic; hence their willingness to take part. However, this does not appear to have been the case in this study, as only three of the participants reported having an interest in fashion.

Participants opted into the study by email and were sent an audit pack which included a participant information sheet and two copies of a consent form to sign (see Appendices 6 & 7). Once they had completed the audit, the participants were invited to interview and were instructed to bring along the six garments covering the criteria outlined in Table 3-6.

3.2.6.3 Wardrobe study sample

Despite the large volume of women who expressed an interest in participating, and who received audit packs, only seventeen participants completed the process in full. Potential participants could have been discouraged by the perceived amount of time and effort needed to complete the study.

The participants were aged between 18 and 65 years old, which gave representation to a range of age groups. The participants had a range of salaries, and working statuses, the mode salary being under £10,000 annually. The Office for National Statistics (ONS) reported that the median gross salary in the UK in 2011 for full-time employees was £26,200 (Office for National Statistics, 2011). Almost half of the participants earn below the national average salary; this may be indicative of the demographic who belong to groups approached. Having a large population of low earners within the cohort of participants may bias the results, as financial incentive and frugality may have more significance for this group.

The levels of environmental concern within the sample leaned toward the more pro-environmental, including eight participants were classified as being 'positive greens'. However, two participants were categorised as 'honestly disengaged', meaning that they demonstrated a very low level of environmental concern. More information on the profiles of the participants, including levels of environmental concern, can be found in Appendix 8. Participants were allocated a coded pseudonym to maintain anonymity.

3.2.6.4 Online survey approach

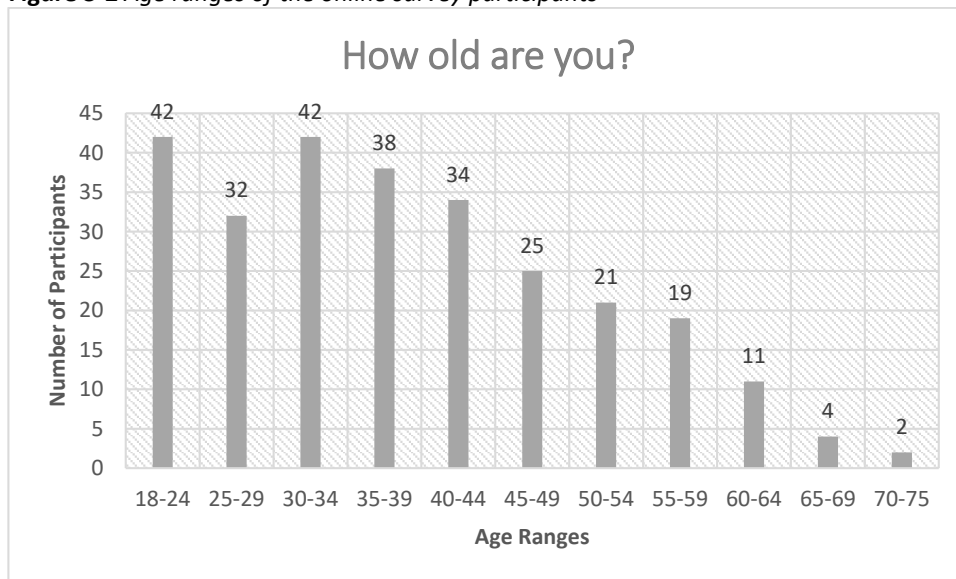
The survey was created using the Bristol Online Survey Software. After the survey was developed and piloted, the online link to the survey was emailed to the researcher's contacts, and posted on social media such as social groups' Facebook and Twitter accounts. Again, participants were encouraged to pass the link on to others who may be interested in taking part. The front page of the survey explained that it was intended for women, over the age of 18, living in the UK. There was much less time involved in both locating participants, and taking part in the survey which allowed access to a much larger sample size.

3.2.6.5 Online survey sample

Of 968 individuals that visited the homepage of the survey 270 participants completed; that was a completion rate of 27.9%. A response rate of 20% is acceptable for electronic surveys (Gullstrand Edbring, Lehner and Mont, 2015). However, the sample was still non-representative. A much larger sample, with participation from thousands of women, would be needed for the results to be representative of the UK population.

Participants were aged between 18 and 75, with the under forties being represented in higher numbers (see Figure 3-2). The online survey participants had a range of salaries, and working statuses, again, the mode salary being under £10,000 annually; this is similar to the wardrobe study sample. Over half of the participants (58.6 %) earn below the national average salary. With the financial status of the participants being so similar to the wardrobe study, the same potential biases towards frugality may exist in the results.

Figure 3-2 Age ranges of the online survey participants



Unlike many other studies into garment consumption behaviours, this survey did not focus on students or young adults but attempted to target a broad sample of adult females. A table of the demographic data for this online survey sample is given in Appendix 9. The environmental attitudes of the entire sample were examined, using the DEFRA model, also used in the wardrobe study. Classifications were not sought for each participant, but the overall attitudes of the sample were examined; this is shown in Appendix 10. A range of environmental attitudes were represented in the sample, with a higher proportion of pro-environmental attitudes shown. Again, this was similar to the wardrobe study.

3.2.7 Data analysis

Data analysis occurred twice in the study: the wardrobe study and the online survey. Analysis occurred sequentially; the results of the wardrobe study analysis were subsequently used to design the online survey. The purpose of the online survey was to increase the meaningfulness and validity of the results to support the creation of theories on garment consumption (Gray, 2014).

The wardrobe study was analysed using techniques from the grounded theory approach. Grounded theory approaches the analysis of data as a method for generating and discovering theory (Strauss and Corbin, 1998). The researcher approaches the data with no pre-conceived ideas about what may be discovered. There were three types of data for analysis in this wardrobe study: quantitative data from both the questionnaires and from the audits, and qualitative interview transcript data.

The online survey data was analysed using statistical analysis. The findings of each part of the research were then integrated to look for convergence and divergence. In multi method

research, this is described as parallel analysis; both sets of data were analysed separately before being brought together (Louis, 1982; Onwuegbuzie and Teddlie, 2010).

3.2.7.1 Wardrobe study analysis

Data from the questionnaires and audits were analysed using basic descriptive quantitative statistical analysis. For example, the number of garments in the audit that were damaged or repaired were counted and recorded. To determine which environmental segment participants belonged to the answers to the questionnaire were analysed according to a rubric, which was used to determine which segment was most consistent with their answers.

Qualitative thematic analysis was used to analyse the interview data. Following each interview, the data was transcribed; this allowed the main investigator to familiarise themselves with the data. A contact sheet was then created to summarise each interview. The contact sheet was used to prevent the researcher from getting lost in the detail of the large quantities of text and helped identify questions that needed to be developed in the following interview (Miles and Huberman, 1994).

Open coding was used to generate codes for the data. Codes are labels for assigning units of meaning to descriptions in the data (Miles and Huberman, 1994). When using the grounded theory approach codes are not preconceived, but emerge as the researcher works with the data (Charmaz, 2004). As more data was collected, more codes and themes were added. Examples of codes emerging from the data were *ease of care*, *perceived quality* and *lifestyle*.

Patterns were identified in the codes, and broad themes were categorised, including consumer attitudes, personal context and physical characteristics of garments. These broad categories were then further analysed, which aided understanding of each category, as well as how the categories interrelate (Charmaz, 2004). How causal variables acted as motivations or barriers for the four target behaviours was then considered. Following the principles of grounded theory, theorising happened after the data analysis (Goulding, 2002).

The analysis was done by hand, allowing the researcher to obtain a richer understanding of the findings; having the same researcher undertake the coding and analysis of the data reduced inconsistencies (Cluver, 2008).

3.2.7.2 Online survey analysis

Quantitative research uses statistical analysis. The analysis of the online survey used basic techniques from statistical analysis and utilised Microsoft Excel software. The mode was utilised to identify the most common answer selected from the Likert scale. The standard deviation was also calculated to establish the variation in the responses. Likert scale answers

had to be converted to numerical values to calculate the standard deviation. The responses to the online survey were converted into numerical values, as shown in Table 3-6. This allowed the data to be sorted and analysed. For each question the number of participants who selected each answer was given allowing for the mode, or most common, answer to be identified. The mean and standard deviation are also given. The mean indicates the average answer, but in studies such as this that use ordinal data, it was important that the mean is not necessarily relied upon to draw conclusions (Cohen, Manion and Morrison, 2007). Ordinal data means data in which the intervals between each value are not equal (Blaikie, 2003), for example, the difference between agreeing strongly and agreeing may not be equal to the difference between agreeing and neither agreeing nor disagreeing. Despite this, the mean was included to calculate the standard deviation. The standard deviation figure indicates the clustering of the results, with a lower figure indicating less variation in the responses. With behaviours such as garment consumption, where there can be broad diversity, a higher standard deviation figure may suggest no common shared attitude.

Table 3-6 Conversion of survey responses into numerical values

Response	Numerical Value
Agree Strongly	1
Agree	2
Neither Agree nor Disagree	3
Disagree	4
Disagree Strongly	5

Following the statistical analysis, the results were interpreted for meaning. The 'neutral' answer, or Neither Agree or Disagree, can tell us a few differing things about the participant's attitude. They may have a neutral opinion on the statement, or they may not know enough about the statement to have an opinion, or they may not want to express their true opinion. When analysing the data, it was not possible to establish which of these cases may apply, so neutral answers were considered cautiously.

3.2.7.3 Integration of data

In the analysis of the wardrobe survey motivations and barriers to the four target behaviours were identified. The aim of the online survey was to build on and validate these findings, and therefore the online survey questions were designed to relate to the motivations and barriers.

Initially, each survey question response was analysed individually utilising statistical analysis. Following this, the results were re-grouped according to the motivation and barrier frameworks generated by the wardrobe study. At this point, the two data sets were compared to look for convergence or divergence. Explanations were sought for any discrepancies between the two data sets. A new consolidated data set was then created, with adjustments made for any divergence (Louis, 1982; Onwuegbuzie and Teddlie, 2010). The consolidated data set was then used in the discussion of the research findings, and the development of behavioural models.

3.2.8 Research ethics

Considering the ethical impact of a study is part of good research practice. The most significant ethical implication of this study came from working with participants. Informed consent was gained from all the participants before participation, and participant information was stored securely. It was identified that the wardrobe interviews could potentially lead to sensitive topics, such as body image issues. Therefore, a strategy was developed to deal with any sensitive topics that may potentially arise during the interviews. Participants would be offered support if they became distressed during the discussion, and were able to terminate the interview at any time.

3.2.9 Research quality

Although both qualitative and quantitative methods have criteria for assessing quality, the criteria are different. Therefore, this study used two different sets of criteria to determine research quality.

3.2.9.1 Qualitative research quality

It is more difficult to define quality within qualitative research, than quantitative research. The criteria used to assess the quality of quantitative research includes validity and reliability; these are used to ensure the results are accurate and replicable. Validity and reliability have come from a positivist paradigm and do not always apply to the diverse range of methods and paradigms used within qualitative research (Cassell, 2012). Within qualitative research, different quality criteria may be applied on a case by case basis, dependent on chosen method and paradigm.

Lincoln and Guba (Lincoln and Guba, 1985) devised four criteria which were intended to be universal criteria by which to assess the quality of qualitative research. These criteria are credibility, transferability, dependability and confirmability. Credibility refers to the assumption that the results presented are an authentic representation of the research undertaken. Transferability refers to the potential application of qualitative findings in other

settings. Dependability is similar to the principle of replicability; that if the study were repeated similar results would be obtained. The dependability criteria are still difficult for most qualitative studies to achieve due to the situational nature of the research. Confirmability refers to the researcher safeguarding against the impact of their idiosyncrasies on the results, for example by creating an audit trail for their data analysis.

Within the data collection phase of the wardrobe study, a range of methods were used including a pre-audit questionnaire, wardrobe audit, and garment interview. The wardrobe audit required that the participant collect their own data, reducing the influence of researcher bias (Robson, 2011). Within data analysis, an audit trail has been created and all research transcribed, labelled with codes, and grouped into data threads, to give transparency to the analysis process, and to ensure confirmability. Quotes were used in the presentation of results in Chapter 4 which enhances the richness and authenticity of the research (Strauss and Corbin, 1998; Robson, 2011) and adds to the credibility.

Morse (Morse, 1994) proposed another four criteria for ensuring quality in data analysis; comprehension, synthesising, theorising and re-contextualising. Comprehension involves developing a 'complete, rich and coherent account of a phenomena' (Brereton and Nolan, 2000). Synthesis comprises of working with several accounts of the phenomenon to identify themes and concepts. Theorising involves identifying 'frameworks for linking themes and concepts' which are utilised to give explanations of phenomena (Brereton and Nolan, 2000). Re-contextualising is the process of exposing emerging theory to critique through further testing and comparison with other theories in the field of study (Brereton and Nolan, 2000).

Comprehension was achieved in this study by one researcher conducting all garment interviews, which were transcribed by hand; this immersed the primary researcher in the data. Background research had also been undertaken to assemble the literature review. Themes were synthesised during the coding and grouping of data threads, which was documented in an analysis audit trail. Theorising was undertaken to structure the results chapter (Chapter 4), which presents explanations of findings. Finally, re-contextualisation was pursued through the use of a quantitative survey. The quality considerations of the quantitative survey are discussed in the next section.

3.2.9.2 Quantitative research quality

Quality of the quantitative data was insured in three ways: the design of the questions, objectivity and using internal validity. Using a Likert scale in the survey, the statements provided to the participant needed to be balanced regarding positive and negative statements. This avoids participants trying to second-guess the research bias. The online survey was also

anonymous, which removes personal bias from the study; this aimed to make the results more objective. The standard deviation was used to validate some of the results. For example, if a high percentage of participants agreed with one statement, and the standard deviation value was low (indicating the clustering of results), agreement with the statement could be more confidently concluded.

3.2.9.3 Integration research quality

Ensuring quality in each of the stages of the research develops the quality of the findings. Although the decision to use a multi-strategy method was made using a complimentary rational, triangulation supports the multi-strategy from a research quality perspective (Denzin, 1978). Combining methods attempts to overcome the weaknesses that would be encountered using a particular method in a single method approach; multiple viewpoints allow for greater accuracy (Jick, 1979) allowing verification of theories.

3.3 Summary

Research into the everyday use of clothing is a relatively new area of study, and many studies are still exploratory. Methods continue to be tested and developed to capture a more accurate picture of behaviour. Post-purchase garment behaviours are everyday behaviours, which are often conducted behind closed doors in consumers' homes. Wardrobe study methods seek to obtain insight into these concealed behaviours.

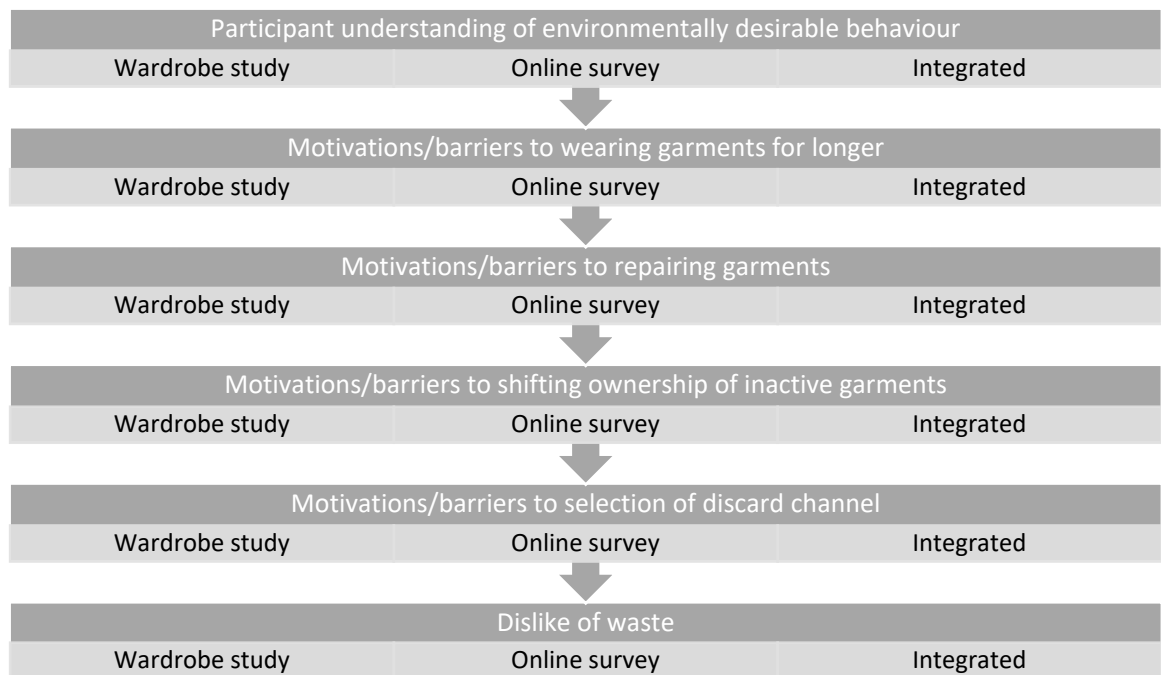
The wardrobe study for this research was designed to gain insight into the attitudes, context, personal capabilities and habits influencing a range of post-purchase garment behaviours. A wardrobe audit and garment interview were included to acquire information about both the participants' behaviours and the physical properties of the garments; bridging material and material culture.

The research was designed as a multi-method study to allow for the development and validation of the results over two sequential methods; the wardrobe study, followed by the online survey. The next chapter presents the results of the study.

4 Results

This chapter presents the results of the study, including the wardrobe study and the online survey. The results are broken down into six sections. The motivations and barriers to the four environmentally desirable behaviours, as defined in the literature review, are addressed, as well as the inclusion of participant understanding of environmentally desirable behaviour and dislike of waste (see Figure 4-1). Each section includes the wardrobe study results, the online survey results, and the integrated results. The full survey results are presented in Appendix 11.

Figure 4-1 Overview of the structure of the results chapter



Although ideally, the results of each study would be equally weighted, in this case, the quantitative data from the wardrobe study gives more weight due to the in-depth interrogation of behaviour. In some cases, discrepancies in the two data sets may offer further understanding; the results provide new perspectives on behaviour, even though they are conflicting.

4.1 Participant understanding of environmentally desirable behaviour

In the wardrobe study, participants revealed views that were mixed in their understanding of environmentally desirable garment behaviours. This was explored further in the online survey, where participants were questioned on their attitudes towards how desirable they deemed a behaviour to be.

4.1.1 Wardrobe study results

During the garment interviews, participants were not asked directly about pro-environmental behaviour as the aim of the study was for motivations and barriers to emerge from the questioning on their use and discard behaviours. Pro-environmental beliefs did not emerge as a significant motivator for any of the participants in the wardrobe study. This supports the argument that it may be more effective to encourage environmentally desirable behaviours through other motivations.

Very few participants expressed environmental attitudes in the garment interviews, and these comments either contained inaccuracies or were contradicted by their behaviours.

One participant had linked synthetic materials and environmental damage.

WS-P17: I realised 'oh, these are all like oil-based materials that probably cause some kind of horrible environmental damage' and it's not something I've really thought about before

This assumption reveals a lack of understanding; the debate on the environmental impact of fibre use is not as simple as synthetic fibres are bad, natural fibres are good. For example, the impact of cotton agriculture can be devastating regarding water use, and polyester can be recycled to prolong use (Fletcher, 2008). There is apparent confusion, or lack of clarity in the information individuals are receiving about environmentally desirable behaviours.

One participant had a strong pro-environmental attitude towards discard.

WS-P7: I mean I can't bear it when people just throw stuff away because you just think 'no, there's a charity shop, take it to the charity shop!'

For this participant, the attitude appears to be driven by a dislike of waste, which can be associated with frugality and utility efficiency. This was contradicted in another of their behaviours; this participant estimated they wore about ten percent of the clothing they owned, indicating over-consumption and large amounts of unused utility. Individuals may only have an understanding of the environmentally desirable behaviour for some aspects of garment use, and not others. This could be based on their personal priorities or the priorities of the participants' source of information on environmentally desirable behaviour.

There are indicators here that individuals are not getting enough information on what behaviours are environmentally desirable concerning garment use and discard.

Attitude-behaviour gaps were identified between the participants' beliefs, and how they behaved. The results of the environmental viewpoint questionnaire showed that most of the participants categorised their environmental attitudes on the positive side of the scale. This questionnaire referred to general environmental attitude rather than specific to garment use. Despite the high level of concern for the environment expressed in the questionnaire, there was little evidence from the interview results that this translated into environmentally motivated behaviour. Participants rarely mentioned environmental issues (general or garment focused), and knowledge levels of environmentally desirable garment behaviours appeared low. There are several potential explanations for this disparity; participants may have overstated their environmental concern in the questionnaire, participants may not have assigned ascription of responsibility to their behaviours, participants may have chosen to focus their environmental concern in specific areas, such as home energy use, and participants may not know how to behave in an environmentally desirable way within garment use and discard.

There were more specific attitude-behaviour gaps. Some participants were aware of the link between low-cost clothing and the abuse of human rights, but it was apparent that this was not a barrier to their consumption of these low-cost items.

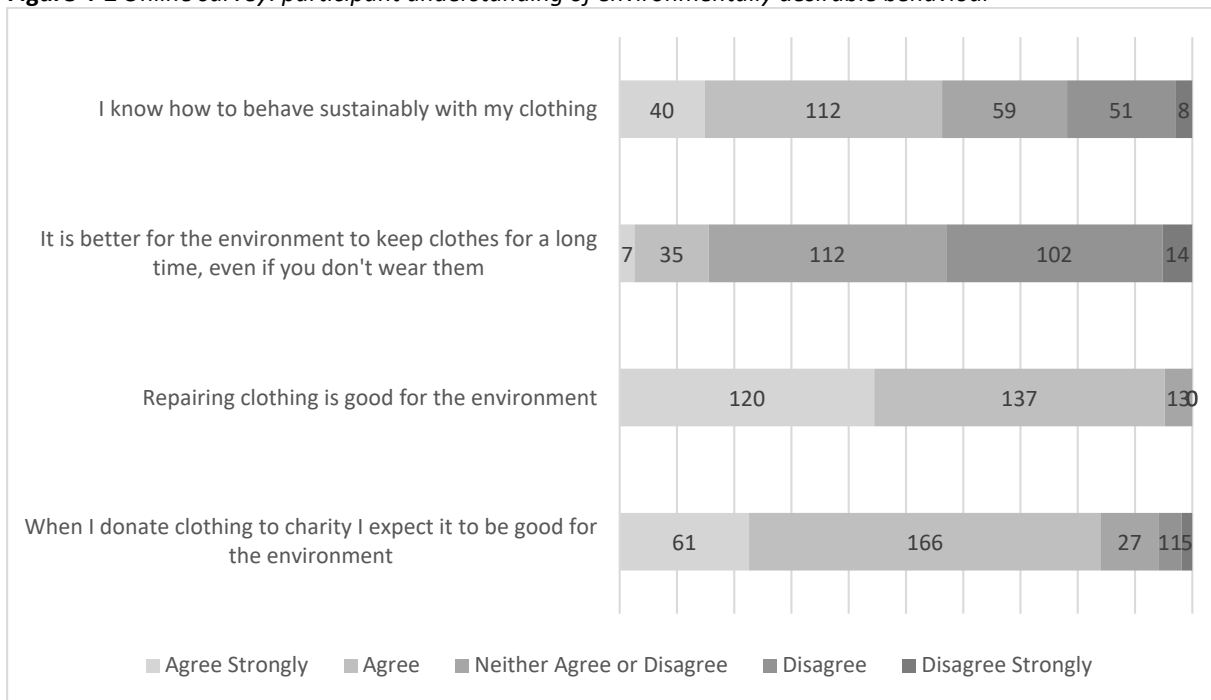
WS-P8: It's not bad quality, I've got a sneaking feeling it was probably made somewhere where they're not paid very much to make clothes.

The wording of this comment is interesting; describing this thought as a 'sneaking feeling' rather than knowing allows the participant to deny the direct social impact of their decisions. This allowed them to avoid ascribing responsibility to themselves to change the existing conditions. If individuals can put such thoughts aside and continue to consume, then motivations that are more focused on self-interest may be required to promote behaviour change.

4.1.2 Online survey results

The wardrobe study indicated a variable level of understanding of environmentally desirable garment behaviour. The attitude towards general environmental issues, as measured by the DEFRA environmental segmentation model demonstrated largely positive attitudes. The responses to the questions on garment-specific environmentally desirable behaviour are given in Figure 4-2.

Figure 4-2 Online survey: participant understanding of environmentally desirable behaviour



	Mode	Mean	Standard Deviation
I know how to behave sustainably with my clothing	Agree	2.5	1.05
It is better for the environment to keep clothes for a long time, even if you do not wear them	Neither agree nor disagree	3.3	0.85
Repairing clothing is good for the environment	Agree	1.6	0.58
When I donate clothing to charity I expect it to be good for the environment	Agree	2.0	0.81

There were mixed results regarding respondents' attitudes towards understanding how to behave sustainably with their clothing. Just over half of the sample agreed, while the other half either are not sure or do not know how to behave.

The remaining three questions focussed on specific behaviours to fully understand them. There was significant uncertainty about whether keeping inactive garments for longer was

better for the environment. It was expected that there would be some ambiguity to this behaviour as shifting ownership of inactive garments is not commonly promoted as environmentally desirable behaviour. Most of the participants agreed that repairing garments and donating garments to charity were environmentally desirable behaviours. Not a single participant disagreed or strongly disagreed with repairing being good for the environment, suggesting that this attitude is the social norm. This does not, however, indicate that repairing garments is the social norm.

4.1.3 Integrated results

Consumer understanding of environmentally desirable behaviour is variable. This was affirmed by both parts of the study.

4.2 Motivations & Barriers: Wearing garments for longer

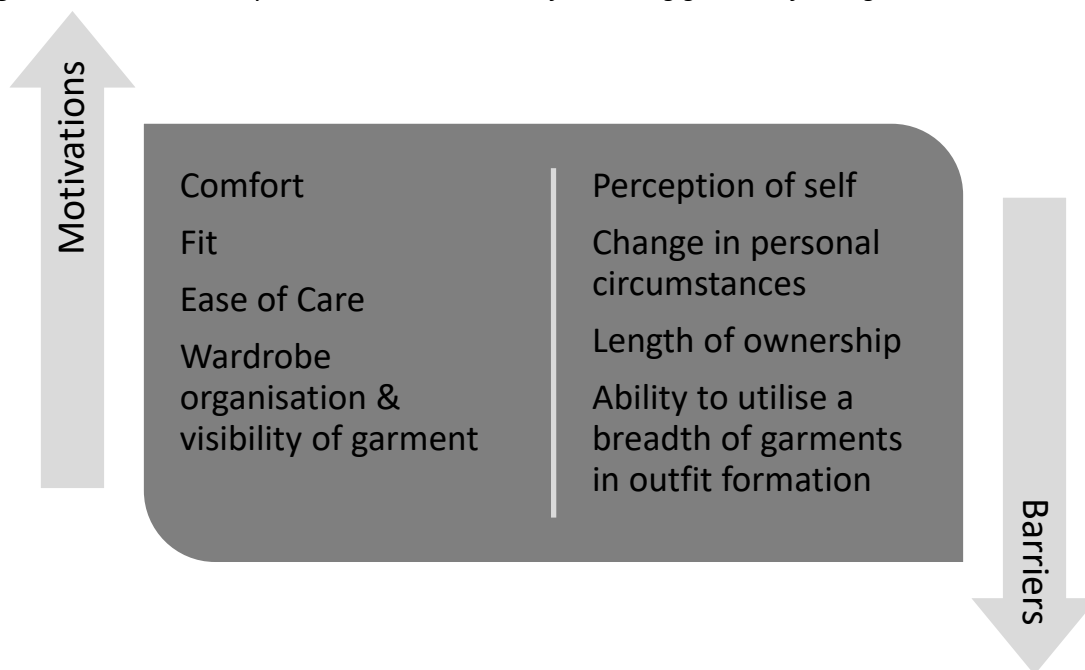
The environmentally desirable behaviour is for individuals to wear garments for longer. The wardrobe study and online survey explore motivations for and barriers to this desirable behaviour.

4.2.1 Wardrobe study results

The 'worn regularly' garments that were brought to the interview had been in the participants' wardrobe for various lengths of time, from one month to twenty years. This indicates that garments can be worn regularly regardless of how long they have been in the wardrobe. Despite this, the audit indicates that most of the garments that the participants wore regularly had been owned for less than two years.

Motivations for, and barriers to wearing a garment for longer are shown in Figure 4-3. Each is explored in more detail in the following section.

Figure 4-3 *Wardrobe study: motivations and barriers for wearing garments for longer*



4.2.1.1 Motivations for wearing garments for longer

The motivations that supported the long-term wear of garments tended to be focused on the material attributes of the garments.

There was a relationship between the clothing that the participants liked, wore frequently, and used for a long time and how comfortable they felt when wearing these garments. Clothing the participants felt comfortable in was favoured. With regards to clothing, comfort could be defined in two ways; the physical comfort determined by the material aspects of the garment or the psychological comfort determined by the individual’s approval of a particular style. Both perspectives on comfort are highly subjective to an individual’s beliefs and physical characteristics.

Participants habitually wore garments that they felt completely comfortable with and they often had garments that they relied on to wear most of the time.

WS-P7: I have... 3 wardrobes full of clothes, and it’s fitted wardrobes, and one of those wardrobes is shelves, and in terms of my wear regularly pile I wear the same things more or less all the time.

Some also had multiples of the same style of garment, often jumpers and hoodies; this was driven by an understanding of how and when they would wear the garment. Participants reported wearing such garments until they fell apart, or could no longer be worn. These were rare instances where the individuals’ desire to wear the garment outlived its technical life.

Similar to comfort, the way a garment fitted an individual impacted on wear; a well-fitting garment is more likely to be worn. When mentioning a well-fitting garment, participants lamented the difficulty of finding garments that fit them; they had often spent a long time looking for the right fit for their body shape and size. Garments that did fit well were valued in the wardrobe.

WS-P6: ...if they continue to fit me I tend to keep them for quite a while unless the fashion really changes...

Ill-fitting garments were dealt with differently than other inactive clothing; it was rarely kept in the wardrobe inventory and destined to leave the wardrobe much quicker than a garment that is inactive for any other reason. The exception being garments that were kept to inspire weight loss.

In general, the garment the participants wore frequently were easy to care for. Easy to care for items were described as being machine washable, requiring little or no ironing.

WS-P7: Other than that I really like it, because it's really easy to wear, it's really easy to wash.

Difficulties in the care process slow down the garments return to the wardrobe after use, and may dissuade individuals from wearing them due to the associated after-care.

Most of the participants organised their wardrobe in some way, but some did not. Those that did order their clothing did so by garment type, or by the occasion they wore it for.

WS-P2: I've ordered them all through to dress and playsuits at one end, and then I'll have like all in one kind of things then I'll have jumpers, and like cardigans and next to that I'll have my kind of going out clothes so nice tops and nice dresses. And then I shove all my jumpers in a pile at the top, all the other ones.

Organisation meant access to clothing was easier, as they knew where to look for particular garments, and it reduced the likelihood of garments being forgotten or inactive. Although this might not lead to individuals wearing garments for longer, it gave garments more exposure and, therefore, increased the probability of wear. Visibility of a garment is not just about physical visibility; with increasingly large wardrobe inventories it is impossible for individuals to store the complete inventory in their memory. Visibility may therefore also include visibility within the individual's 'mental inventory' of garments that they refer to when dressing.

Wardrobe organisation was dependent on an individual's belief in the benefits of organisation, relative to the time and skill required to undertake the behaviour.

4.2.1.2 Barriers to wearing garments for longer

The barriers that prevented long-term wear were less attributed to the garment itself, and more based on the participant's situation, capabilities and attitudes. However, as examined in motivations, if garments did not meet physical requirements such as fit and comfort, this could prevent them from being worn.

Beliefs on style are based on an individual's attitudes and beliefs about their identity. If an individual felt a garment was 'not me', they would not feel motivated to wear it. Individual's perceptions of their identity constantly evolve; therefore, the clothing they feel is appropriate to their perceived identities at one point in time may not fit at another point in time.

Participants recognised that their clothing preferences changed over time. These changes seemed to occur quite informally over time, without any significant impetus for decision making.

WS-P2: I like to get things that are a lot more jazzy [sic] now, whereas I used to go for really plain clothes.

Although personal style changed, very rarely did a participant attribute this to changes in fashion. In fact, the word itself 'fashion' was rarely used in the interviews. Only three of the participants agreed that they followed fashion in the pre-audit survey. There was only one example of fashion change acting as a barrier to wear; this was the result of a combination of a dated garment and an individual who perceived the garment to be inappropriate for her age.

WS-P8: Now these [denim shorts] are also very old, as you can tell because they're very high [waisted] now, very unfashionable, I would never [wear them].

There were other examples of the participant's age impacting on their perception of what was appropriate for them to wear.

WS-P11: I think, yeah. It gets to a point where you have to sort of tone down what you wear.

As participants aged, they felt they needed to wear clothing that was less revealing, and more reserved. This led to clothing that was previously worn becoming inactive.

WS-P4: I'm getting a bit older now, so I probably wouldn't wear anything... I'm probably steering towards not so small, revealing dresses now when I go out. I prefer to cover up a bit more

WS-P8: I like it, but not as much as I used to. I mean obviously, it is quite old now, and you do change how you want to be perceived.

Changes in perception of self over time seem inevitable as so many other aspects of an individual's life and appearance change.

A change in the amount a garment was worn was often motivated by a change in circumstances; this could prevent long-term wear of garments. Many of the participants mentioned having a 'work wardrobe' separate from the clothing they would wear socially. Work clothing had been carefully selected to give the right impression, and be suitable for their role; it is constructed around an identity.

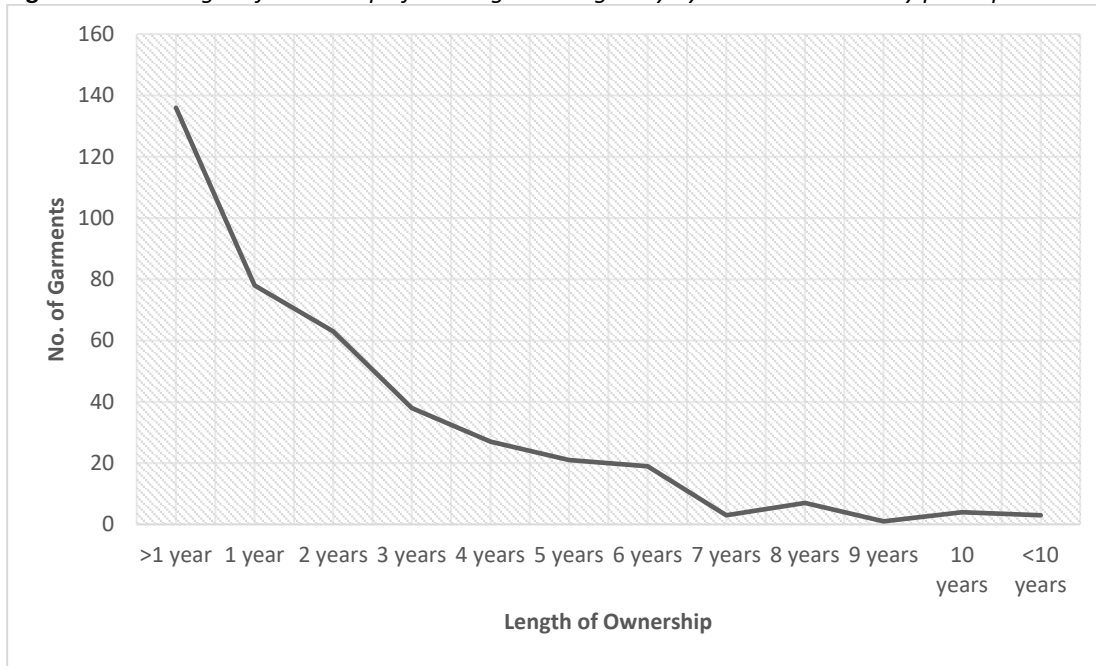
WS-P12: I'm trying to generate a certain kind of impression unfortunately, and it just helps people put me in a box I think. Hopefully that right one! I'm kind of going for librarian

This kind of clothing, which facilitates the individual in playing a role, may no longer be required when the role is over. WS-P3 had a pair of work trousers she no longer wore; they had been used when her role at work involved site visits and required practical clothing. Her current role was senior and office based, therefore she felt smart dresses were more appropriate. Not wearing these trousers reflected two factors; her situation had changed and, therefore, her belief of what styles she should wear or not wear had changed. Moving into a new life situation often requires new clothes (Kaiser, 1997).

For some garments the frequency of participation in an activity may dictate the frequency of wear, for example, a pair of salopettes for skiing holidays were only worn annually.

Looking at the length of ownership of the garments the participants regularly wore (see Figure 4-4); it suggests that the longer a participant owns a garment, the less likely it is to be worn. The graph shows that clothing is most likely to be worn regularly in the first year after purchase, with the likelihood of wear decreasing over time. This fits with other research that suggests that the average life of a garment in the UK is twenty-seven months (WRAP, 2012b).

Figure 4-4 *The length of ownership of clothing worn regularly by the wardrobe study participants*



Very few of the garments audited were over six years old. The seventeen garments included in the audit that were over seven years old came from four participants' wardrobes, with eight of the seventeen garments coming from one participant. These women all described the clothing that they regularly wear as practical, conservative or boring, indicating that new clothing and updating their wardrobes is of low priority to them. The definition of an 'old' garment varied between participants. This tended to be associated with the age of a participant with older participants having a protracted perception of what constituted old. This is understandable given that younger participants may have only owned their adult wardrobe for a few years; their experience of adult garment ownership limited to that short time.

Prolonged exposure to the same garment may lead to boredom and inactivity. Other reasons that clothing that has been owned for a long time may become inactive include: damage caused by frequent wear, change in body shape impacting on fit, and inevitable changes in circumstance over time. Some of the garments that the participants had owned for a long time had resisted these factors and were still worn frequently, although in some cases for an alternative use, such as being downgraded to gardening clothes.

Participants were asked if they considered what was already in their wardrobe when purchasing garments. Responses were split into two themes; those who did think about their existing wardrobes to assess whether the purchase would be able to be worn with an existing outfit, and those who did not think about their existing wardrobe at all. Some of those participants that did not think about their existing wardrobes suggested that this may have led

to them having a lot of inactive garments and expressed the desire to think more carefully about purchases in the future.

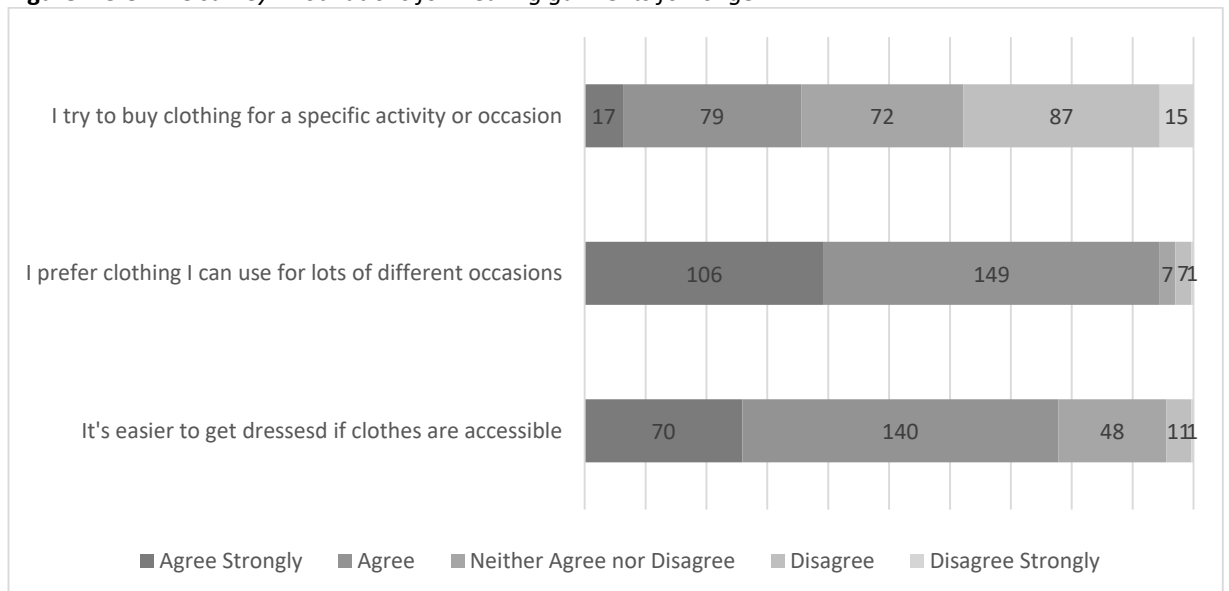
Garments that coordinated with lots of other items in the wardrobe were appreciated by the participants; there was frustration with garments that were difficult to partner with other items, which would often remain inactive. The personal capability to put together an outfit is also dependent on the material properties of a garment, and an individual’s belief in what can or can’t be worn together.

WS-P6: Because I’ve found it really hard to know what to wear it with... It doesn’t really look right with a top underneath it, so without a top underneath it, it would have to be really warm, but it’s actually a thick knit so I probably wouldn’t want to wear it when it was really warm. And it really only goes with... It would probably look ok with skinny jeans. It might look ok for an evening out with jeans or leggings, but the other thing with the leggings is I only really wear black leggings, and I don’t usually wear all black.

4.2.2 Online survey results

Figure 4-5 presents some of the responses to questions in the online survey regarding motivations for wearing garments for longer. The questions do not directly enquire about wearing garments for longer but relate to some of the motivations identified in the wardrobe study.

Figure 4-5 Online survey: motivations for wearing garments for longer



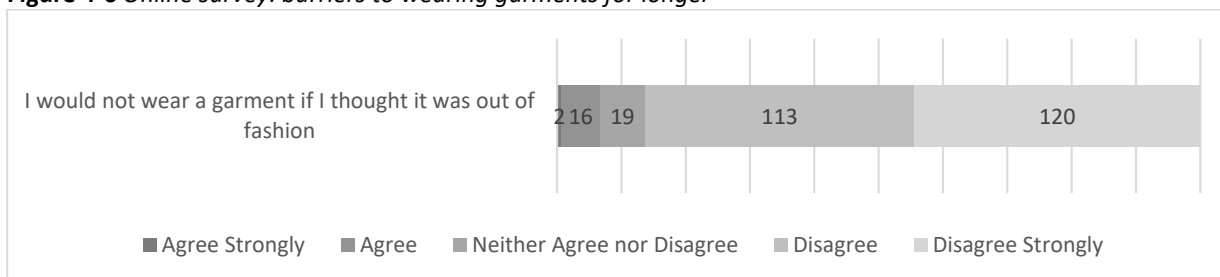
	Mode	Mean	Standard Deviation
I try to buy clothing for a specific activity or occasion	Disagree	3.0	1.04
I prefer clothing I can use for lots of different occasions	Agree	1.7	0.68
It's easier to get dressed if clothes are accessible	Agree	3.0	0.80

From the results, it is apparent that the participants preferred garments that they can wear for a variety of occasions, rather than for one specific activity or occasion.

A majority of participants agreed that it is easier to get dressed if clothing is accessible. This question relates to their opinion, rather than their actual behaviour. It would have been useful to include a question on whether the participants took the time to organise their wardrobes.

Figure 4-6 presents the responses to questions in the online survey regarding barriers to wearing garments for longer.

Figure 4-6 Online survey: barriers to wearing garments for longer



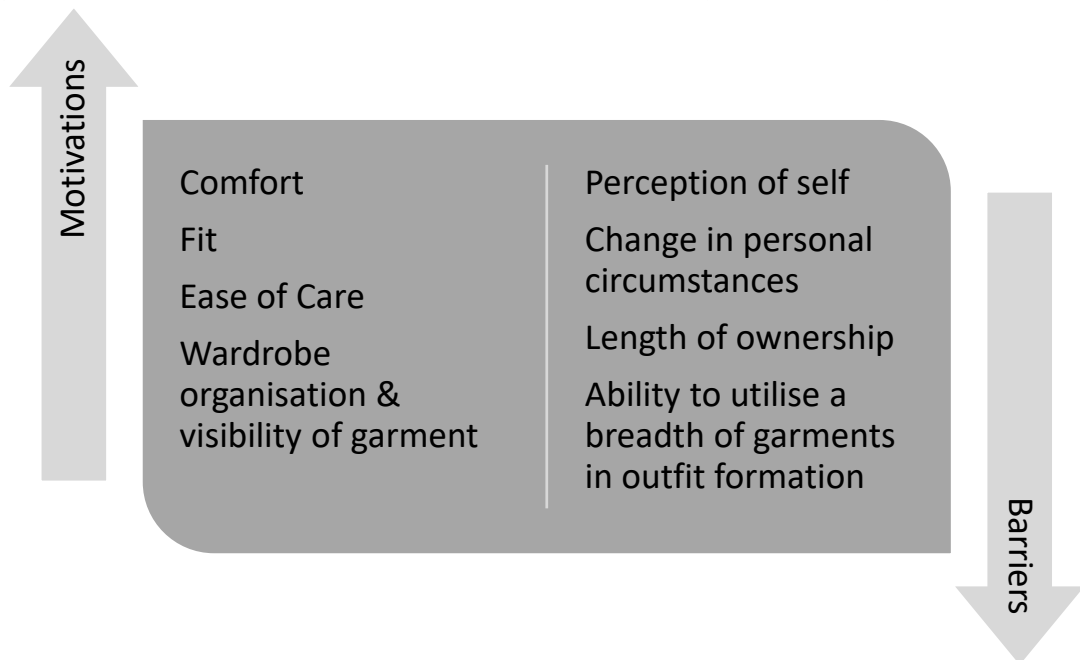
	Mode	Mean	Standard Deviation
I would not wear a garment if I thought it was out of fashion	Disagree Strongly	4.2	0.87

The results of this question back up the findings of the wardrobe study, and other previous studies, which suggest that fashion change may be less of an influence on consumer behaviour than previously thought. The mode response was to disagree strongly; one of the most resolute responses to the online survey, indicating that participants feel uncomfortable with being associated with fashion.

4.2.3 Integrated results

Figure 4-7 shows the integrated results from the wardrobe study and the online survey for wearing garments for longer. Although the physical characteristics of garments, such as comfort, fit and ease of care were not included in the online survey, they were kept in the integrated results. The reason for this being that they contributed considerably to the findings of the wardrobe study.

Figure 4-7 *Integrated results: motivations and barriers for wearing garments for longer*



The influence of fashion on behaviour was found to be minimal in both studies, supporting the argument that the responsibility of fashion change for the environmental impacts of apparel has been overstated. As a result, the influence of other factors on garment use behaviour may now be taken more seriously. A change in garment preference based on style was more likely to be based on personal context than on the wider context of fashion change. This supports the findings of Woodward (2015) and Klepp & Laitala (2015). This does not mean that the speed of fashion change plays no part in influencing consumer behaviour, but personal context appears to have a more significant influence.

4.3 Motivations & Barriers: Repairing garments

The environmentally desirable behaviour is for individuals to repair their garments. The wardrobe study and online survey explore motivations for and barriers to this desirable behaviour.

4.3.1 Wardrobe study results

Across the seventeen participants, a total of 404 'worn regularly' garments were audited. Of these garments, 88 (roughly one fifth) were damaged, but due to some items having multiple damage 108 occurrences of damage were recorded in total. The most commonly reported damages were; worn, pilled, holey, unravelled stitching, faded & stained.

Fifteen of the garments had been altered in some way, the most common alterations being taking garments in to change the fit, and cutting out necks and sleeves. There were eighteen instances of garments that had been repaired, the most common repairs being re-stitching hems, and sewing on buttons.

Only one participant specified that they did not repair their clothes. Previous repairs documented within the 'worn regularly' audit demonstrate a varied level of competencies, with some complex alterations such as taking in seams. None of the participants mentioned using a repair service, although one participant mentioned getting her mother to undertake more complex adjustments for her. Therefore, the results presented here refer to personal repair.

Motivations for, and barriers to repairing a garment are presented in Figure 4-8. Each is explored in more detail in the following section.

Figure 4-8 Wardrobe study: motivations and barriers for repairing garments



4.3.1.1 Motivations for repairing garments

Motivations for repair were concerned with trying to get the most utility from a garment, either through adding value or preventing discard.

One participant was motivated to repair garments due to the benefits of unlocking the use potential of damaged garments. This participant utilised her repair skills to access vintage garments at a lower cost, which was of benefit to herself.

WS-P15: Yeah, because I buy a lot of vintage clothes. Often there is a zip that's busted, or there's holes in it and I buy it because I know I can fix it, so it's like a bonus

It was not a problem to her if a garment was damaged at the point of purchase, as she knew she had the personal capability to repair it to a wearable state. As this individual was also interested in collecting vintage and historical clothing she valued vintage garments, making restoration worth the effort. This participant had a high level of sewing skills as she was studying for an undergraduate Costume degree. Interestingly, this participant still had garments that had not yet been repaired due to lack of time.

Unlocking the use potential of damaged garments incorporated self-interest, money saving, competence and enjoyment rather than necessity.

A dislike of what the individual perceives as wasteful behaviour can motivate them to try and keep garments for longer. Repairing a garment means it can be worn again, which therefore prevents waste.

WS-P13: *I repair things rather than throw them out*

Beliefs on wasteful behaviour are discussed further later in this chapter, as it is also a motivation for selecting discard channels.

4.3.1.2 Barriers to repairing garments

This section looks at the barriers to repair, lack of time being the most reported barrier. If individuals are comfortable with damaged clothing, they may not be motivated to repair it. This disorders the perception of repair as preventing waste; it is not always necessary to repair a damaged garment to continue to use it.

Access to time acted as a barrier to repair. Participants had the intention to repair but had not found the time to carry out the repair.

WS-P15: *I think 'one day I will get it fixed' and it will look amazing, but I just haven't got round to it yet*

One participant had noticed that after separating garments from her wardrobe to repair them, she would end up discarding the garment rather than repairing it.

WS-P17: *I often have the intention to, I even have like a small pile of things, and then most of the time I never get round to it and end up just giving them away.*

There is an attitude-behaviour gap; the individual has the intention to practice the behaviour, but it does not happen. The context of having limited time availability for repair prevails over a positive attitude.

The un-repaired garments are then being discarded, rather than the participant finding someone else to carry out the repairs. The act of creating a repair pile is similar to creating a 'charity pile', which several participants mentioned using when preparing to discard garments. The charity pile is a divestment ritual that allowed individuals to imagine living without a garment and test how that felt, without the risk of actual discard. Creating a repair pile may initiate a similar sense of separation between an individual and a garment, as they get used to not having it in their active garment inventory.

There may be garments that participants believe to be beyond repair.

WS-P11: *Maybe when it gets tatty it will go in the bin*

WS-P17: *Well I've had ideas of fixing it because it's a bit damaged, but I'm thinking I might try and fix it, but it's probably still going to look damaged*

This could be influenced by personal competency in repair and understanding of a range of techniques. However, some garments may be beyond repair, and it would be beneficial if individuals were aware of how to discard damaged garments in an environmentally desirable manner, rather than putting them in the bin.

Some of the participants did not engage in repair because they were comfortable with wearing damaged garments, or they were happy to change the wear of a garment to situations where damage is of less importance. Despite the lack of repair, these individuals were not engaged in wasteful behaviour. Although, in some cases, a lack of repair may lead to downgrading and loss of value in a garment. Damaged garments did not always need to be repaired to their former condition, as they were no longer used frequently, or used in situations where they needed to look pristine.

WS-P3: Yes nowadays it's been relegated to gardening and things like that...

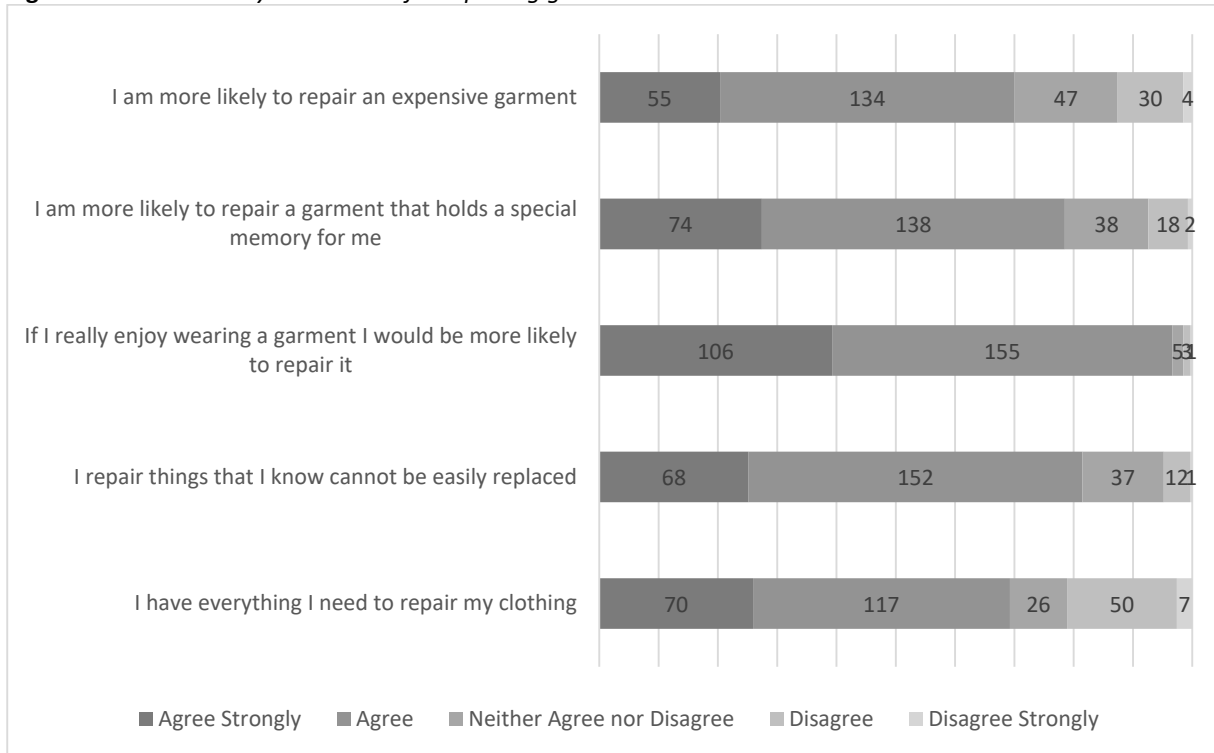
WS-P13: Because I don't wear it that often I don't think I'm going to make it look lovely and pristine

There was variation in how participants felt about damaged garments, most often linked to their lifestyle and social norms.

4.3.2 Online survey results

Figure 4-9 presents the responses to questions in the online survey regarding motivations for repairing garments.

Figure 4-9 Online survey: motivation for repairing garments



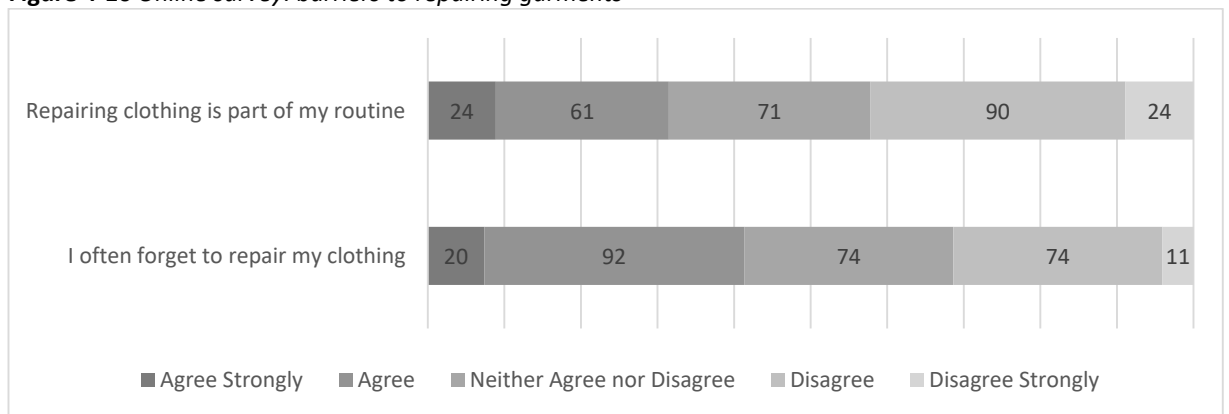
	Mode	Mean	Standard Deviation
I am more likely to repair an expensive garment	Agree	2.2	0.95
I am more likely to repair a garment that holds a special memory for me	Agree	2.0	0.86
If I really enjoy wearing a garment I would be more likely to repair it	Agree	1.7	0.61
I repair things that I know cannot be easily replaced	Agree	2.0	0.77
I have everything I need to repair my clothing	Agree	2.3	1.12

Results regarding the motivation for repairing garments indicated that the value of the garment to an individual made them more likely to repair it. This value could be based on economic factors, emotional factors, the ease of replacement, and enjoyment of wear. This indicates that some garments in the wardrobe inventory are more likely to be repaired than others.

A majority of participants agreed that they had everything they needed to repair their garments, but there is higher variance in this result, and some participants consider themselves not to have the tools and means to undertake garment repair. This finding does indicate that access to tools for repair is not a significant barrier to repair, but can affect some individuals.

Figure 4-10 presents the responses to questions in the online survey regarding barriers to repairing garments

Figure 4-10 Online survey: barriers to repairing garments



	Mode	Mean	Standard Deviation
Repairing clothing is part of my routine	Disagree	3.1	1.12
I often forgot to repair my clothing	Agree	2.9	1.03

These questions were intended to establish if the findings of the wardrobe study, which indicated that forgetting to repair garments was common. The results indicate that this can be an issue for some, and not for others. Routine repair, again, was part of some participants' practices, but not others. The standard deviation is higher on these results indicated a broader

spread of results. As previously mentioned, variation between individuals is a common characteristic of garment use behaviour.

4.3.3 Integrated results

For the participants of the wardrobe study, forgetting to undertake repairs was leading them to discard their damaged garments. The online survey indicated a broader range of behaviours. Forgetting to repair garments was an issue for some participants, but not for others, suggesting variance in behaviour. Forgetting remains a barrier for some participants. Those that are not forgetting are engaging in the desirable behaviour, so would not be the focus of behaviour change strategy.

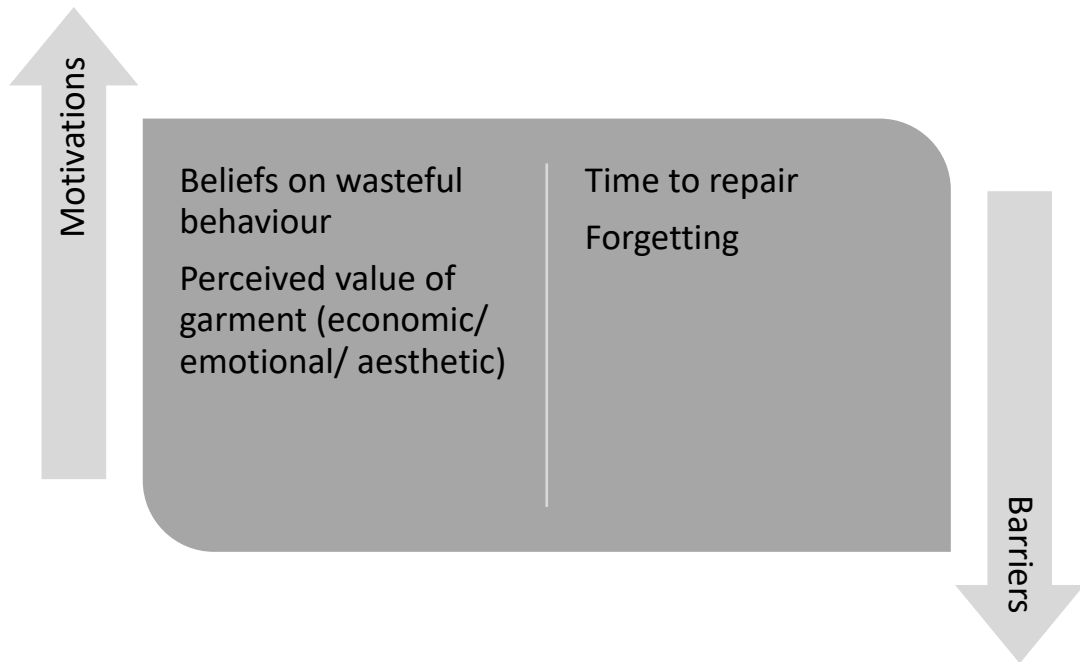
The online survey findings added an understanding of the motivations influencing repair behaviour. These findings contributed to understanding why particular garments may be prioritised for repair. Factors such as how much the participant valued the utility of the garment and the economic value of the garment motivated repair.

Figure 4-11 shows the integrated results from the wardrobe study and online survey for repairing garments. The integrated results are quite different to the wardrobe study results.

Unlocking use potential was taken out of the integrated results as it was a factor that was specific to one participant in the wardrobe study. It has potential to inform behaviour change strategy for a target group of individuals who have an interest in vintage clothing but was very specific. Beliefs on wasteful behaviour were added as participants in the online survey predominantly agreed that it was wasteful to discard a garment because it is damaged.

Having a positive attitude to damaged garments was taken out of the integrated results as, although it was a barrier to repair, the individuals participating in this behaviour did not necessarily need to change their behaviour. Forgetting to repair garments was added as a separate factor to lack of time, as this was a barrier for some participants in the online survey. Forgetting is distinct to lack of time, but there does appear to be a relationship between them as lack of time can lead to forgetting about garments that need repairing.

Figure 4-11 *Integrated results: Motivations and barriers for repairing garments*



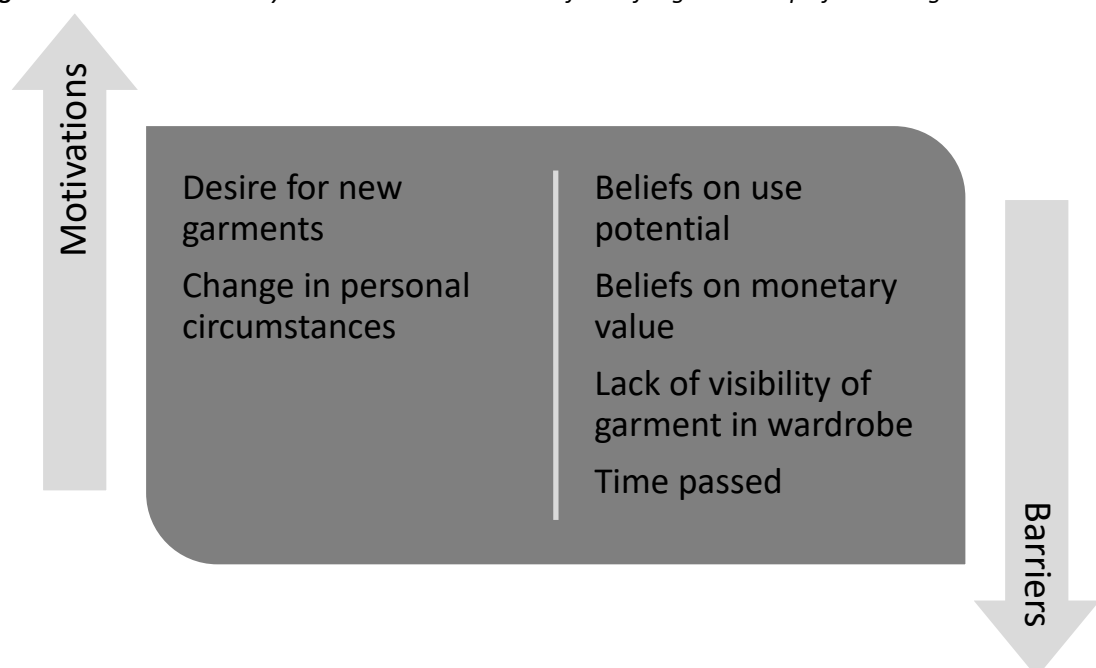
4.4 Motivations & Barriers: Shifting Ownership of Inactive Garments

The environmentally desirable behaviour would be to shift ownership of inactive garments. The wardrobe study and online survey explore motivations for and barriers to this desirable behaviour.

4.4.1 Wardrobe study results

Motivations for, and barriers to shifting ownership of inactive garments are shown in Figure 4-12. Each is explored in more detail in the following section.

Figure 4-12 *Wardrobe study: motivations and barriers for shifting ownership of inactive garments*



Many of the participants described having large quantities of inactive garments.

WS-P1: I've got a drawer full of t-shirts I never wear, and I found two pairs of shorts I bought in Australia ten years ago that I haven't worn since I moved back

WS-P7: I knew I had that many clothes, I hadn't realised how little I wear some of them

Participants did express that they thought holding onto garments they did not wear was silly or illogical to, but this did not always motivate a shift of ownership. The embarrassment caused by having lots of inactive clothing seemed to come from a dislike of unused utility. Participants did not consider the environmental impact of this clothing.

WS-P14: I may end up having to give it away because it's silly them being sat in my wardrobe and not being worn when someone else could just put it on, and it could just be perfect.

Most of the participants would clear their wardrobes out at a regular interval. The frequency of the clear out varied; but clear outs tended to be prompted by another factor rather than a routine behaviour. The frequency of which participants discarded garments ranged from weekly to annually, with the largest proportion of participants estimated that they discarded garments every six months. Some participants would clear out multiple garments at once, whereas others discarded one item at a time. Some garments will be discarded of straight from the active use stage. The two participants who regularly attended a clothes exchange discarded inactive clothing on a monthly basis.

Some inactive garments had value for the participants other than for wear. Although these garments were inactive, they served a purpose and had values other than function, such as emotional, symbolic or aesthetic value. These garments were artefacts from an individual's personal history, and they prompted memories and emotions. It was felt that these garments should be categorised differently to garments that were inactive and kept for less meaningful reasons. It would not be in the self-interest of individuals to shift ownership of these valued, but inactive, garments; they were still contributing to their identity. This study, therefore, does not consider it appropriate to target such garments when encouraging individuals to shift ownership of unworn garments.

Some of these 'valued' inactive garments had been inherited, and were imbued with memories of the previous owner; these were significant objects in the participant's lives, and they could not imagine getting rid of them. Other garments had become tokens of the memories of the participant's life, reminding them of emotions associated with time, place or person.

WS-P14: *It's because it was my boyfriend's when we were getting together, and I kind of stole it off him at the time... And I wore it for a fair while like, because he moved to uni not long after we got together and I think I got really sentimental with it because it reminded me of us being together and I could wear it and feel close to him. Now I live closer to him so I kind of don't need the hoody anymore, but I don't want to throw it away because it's got nice memories.*

Some garments were kept for a future self. This optimistically imagined future self may have gained or lost weight; garments in the wardrobe may be there to motivate this change. Inactive, but ready to be worn by the future-self when they have fulfilled their goals. Their purpose is to inspire behaviour change in other areas of the individual's life. One participant had a garment that functioned as a measuring device; this garment was not worn but put on occasionally to measure if they had gained weight.

WS-P8: *So they're something that I keep just to put on occasionally just to check that my weight's not going up too much, so that's their purpose.*

These garments which serve functions other than traditional wear have a use which is often very valued by the individual and, therefore, should not be viewed as materially redundant. It was often the participant's intention to keep these garments long term.

WS-P2: *... I'll probably just keep it forever, to be honest. I don't think I'd ever chuck it, even if I couldn't wear it I'd still keep it.*

It would be complex to assess the environmental impact of such garments. When considering behaviours which may be attainable to change, storage of valued garments would be difficult to overcome, especially given the complex emotional relationships individuals have with them.

Many of these garments were ordinary mass-produced garments, but memories of acquisition or use had built an emotional relationship. Designers could not have predicted which of these ordinary garments would become keepsakes (Chapman, 2005). These findings are at odds with the thinking that designers can in some way inspire emotional attachment with products. They also question how useful emotional attachment is in prolonging wear, as most of these garments were inactive keepsakes.

4.4.1.1 Motivations for shifting ownership of inactive garments

The decision to shift ownership an inactive garment seemed to be motivated by two underlying factors; to access new garments, or because a change in personal circumstances results in a garments use potential becoming a less significant barrier.

The desire for new garments motivated discard in two ways; individuals clear out their wardrobe to make space for new garments or to sell garments, for example on online sites such as eBay, to make money to acquire new garments. The desire for new garments itself is motivated by a complex range of factors. For one participant the desire for access to new garments meant inactive garments were quickly identified and sold; they saw exchange value in the inactive garments in their wardrobe.

WS-P4: I'm very big on buying and selling on eBay. Because I don't earn a great amount, I do buy most of my clothes on eBay second hand. Once I get bored of them, or it starts to fade a bit, I will put it on eBay and sell it and use the money to buy new clothes.

This participant seemed to have a different relationship to her clothing than the other participants; she embraced her desire for the novel and constant change within her wardrobe.

WS-P4: I'm quite eager to sell them and buy new stuff. It's getting the new clothes that I get the buzz out of, rather than having sentimental value.

Within this fast-paced model of behaviour, environmental impact was limited by the individual's purchase of used garments, and the resale of their inactive garments to a subsequent user.

WS-P5 had implemented an informal 'one in, one out' replacement system, to manage her wardrobe inventory so that it did not become too crowded.

WS-P5: I think just going through, and because I bought a few things recently, and I don't buy new things very often, to be honest, and I think if I'm going to put new stuff in I need to take out things that I don't wear very often.

As previously mentioned, two participants attended a monthly clothes exchange event and, therefore, were prompted to discard a few garments every month; those garments being exchanged for garments that were 'new' to them. This meant inactive garments would not remain in their wardrobes for long.

The lifestyle, occupation, financial situations, hobbies and relationships of participants impacted on garment use and, therefore, storage. A change in circumstances can lead to an individual developing a new understanding of their identity (Kaiser, 1997), which may result in inactive garments being cleared out. Belief in the use potential of a garment is revoked by another motivating factor; these motivators appeared to be very specific to individual situations.

One participant had recently ended a long-term relationship, and this had changed her lifestyle. She had bought new clothes as she was participating in more social activities, such as going out to bars and clubs. She had also cleared out any potentially embarrassing old items from her underwear drawer.

WS-P3: I've got a pair of pants that I had at university, that were white once and are now grey, and I had a bra along similar lines. And I just looked at that, and I thought I would be appalled if the new man ever saw me in these.

Moving house is a widely acknowledged prompt for discard of household items, and this also applies to clothing (Hibbert, Horne and Tagg, 2005; Cluver, 2008).

WS-P13: Because we're gonna [sic] move house, so I had a bit of a sort, and yeah kind of tidy stuff up really.

The packing and unpacking of the contents of the wardrobe gives visibility to garments and time for reflection and decision making. Whether an inactive garment has enough use potential to warrant moving it is questioned. One participant who had moved frequently felt that this had made her less likely to accumulate inactive garments.

WS-P12: Because I've moved a lot in my life, so I don't really tend to accumulate clothes and plus I like to set clothes free into the world.

Change in personal circumstances as a motivating factor is very specific to the individual and unworkable as a potentially replicable motivating tool.

4.4.1.2 Barriers to shifting ownership of inactive garments

Compared to the motivations for shifting ownership of inactive garments, there appear to be more barriers to the behaviour.

Inactive garments were kept for potential future use; some beliefs on future use potential were more realistic than others.

WS-P7: I just thought 'No, it's not me, it's just not me.' I can't wear it, but I really love the material, and I can't bear to part with it, and I keep thinking 'one of these days I will wear it!'

Some inactive garments had more purpose in the wardrobe than others; garments with a specific function such as sportswear, eveningwear and holiday clothing were ready for the eventuality of engaging in these activities and were therefore temporarily inactive. They may have been used very rarely, but the possibility of future use was likely.

WS-P6: I've got quite a lot of holiday clothes that I wouldn't probably wear, or I very rarely wear, so I'll only take it on holiday. And then I've got things like ski clothes that I only wear once a year...

The belief of what the future-self might need is driving the storage of inactive garments; the individual's perception of what situations might arise in their future and, therefore, the types of garments they may need. Many of the participants had experienced regret after disposing of a garment; often this was delayed regret when they looked for a garment then remembered they had discarded it. This made them cautious when discarding garments.

Hoarding is an exaggeration of this perceived need to keep garments, which makes it difficult for individuals to discard them (Mayo Clinic, 2014). Despite compulsive hoarding being recognised as a medical condition, many people use the term hoarding informally to refer to their habit of keeping things instead of throwing them away. WS-P3 used her habit of hoarding to explain why she kept a pair of trousers she never wore.

WS-P3: I am a hoarder, and there is nothing wrong with them, and you know, it's not like they're kind of falling apart or old and grey or anything. And I just vaguely kind of think maybe I'll want to wear them again at some point!

For those participants who classed themselves as hoarders the use potential of the garments only needed to be very small for the individual to keep it. One of the participants who considered herself a hoarder also mentioned that as long as she had space, she was happy to hold onto garments with very little use potential.

WS-P3: And I've got loads of space in my wardrobe. So, I've got no incentive to clear things out really.

WS-P3: I think I'll keep them while I've still got room in my wardrobe. I think at the point where I either move house or for some reason- like somebody else moves in with me, and I have to make some room- these would probably be one of the things that would go.

The participant understood that the garments were of no use, but no action would be taken until a prompt occurred. Lovgren also found that inactive garments would be kept as long as there was space to store them (Lovgren, 2015). Garments are relatively compact products, compared to an old sofa for example, and are therefore easier to retain (Haws *et al.*, 2012). As long as there is a perception that use potential of inactive garments outweighs the benefits of discard, ownership will not be shifted. Individuals with product retention tendencies tend to

think of themselves as disliking waste, rather than recognising the wasteful attributes of unused utility.

Participants were more likely to hold onto expensive garments for longer, and when they do discard them, they may choose a discard channel that can glean back some of the perceived value of the garment, for example, sale through internet auction sites such as eBay, or passing the garment onto friends or family.

WS-P6: If it had been a lot cheaper it might have gone out six months ago. But because I paid a bit more for it, and because its good quality and I've not worn it much it sort of stayed in there. I've finally cleared it out- this will probably go to the family before it goes in the charity bag.

The guilt of not using a garment can be acuter when the garment was expensive. This is linked to beliefs about unused utility but suggests that for garments, economic loss may be a more compelling consequence of waste. When individuals are dissatisfied with their purchasing behaviour, they may look for a way to conclude the situation in a more satisfying way than shifting ownership.

Inactive garments could end up clustered together in one part of the wardrobe. This was often at the back, or in a less visible place than the active garments due to the active garments being frequently worn and returned to a visible location.

WS-P4: I'll open the door, and put stuff in when it's washed and ironed, and it will just get pushed down. So, the far end of the rail I can't really reach because there's a boiler in front of it. So, that's that kind of stuff that you get, its right down the bottom and I won't wear it.

In some instances, the grouping of inactive garments meant that it was easy for individuals to locate garments when motivated to remove garments for discard.

WS-P6: Yeah they are usually at the back most of it's hung up, so they're right at the back at the far end, and then every now and again I will play about usually when I've bought new stuff that won't fit in the wardrobe anymore, then I have to have a clear out and then I'll go straight to that section first

The lack of visibility of inactive garments sometimes resulted in them getting lost or forgotten. Lost and forgotten items are not fulfilling their material potential in either the individual's wardrobe or others.

For some participants, time had to have passed before they were prepared to shift ownership of inactive garments. This passage of time allowed individuals to assess the use potential of a

garment, or to ritually separate themselves from a garment. Typically, these decision making processes could take years unless accelerated by a motivating factor where the benefits of shifting ownership outweigh the benefits of storage.

Many of the garments the participants brought to the interview that were destined for discard had spent a period of time inactive before the decision was made to discard them. This time allowed the participant to test the belief that they 'might need it' or to try and integrate the garment into their active wardrobe inventory. Some inactive garments would end up back in the active inventory of the wardrobe.

Individuals may put a time limit on how much longer they will keep inactive garments for.

WS-P6: I'll keep for another year or two years, and if after two years I've never worn it or I've worn once or twice and not worn it again then I'll probably give it away

Such time limits gave individuals the opportunity to fully assess the use potential of a garment, allowing for changes in their context and personal situation. Some participants went through a separation ritual before finally deciding on whether to keep or discard of a garment.

WS-P8: It has been on the charity bag pile, and so it does need to go. I'm emotionally removing myself from it.

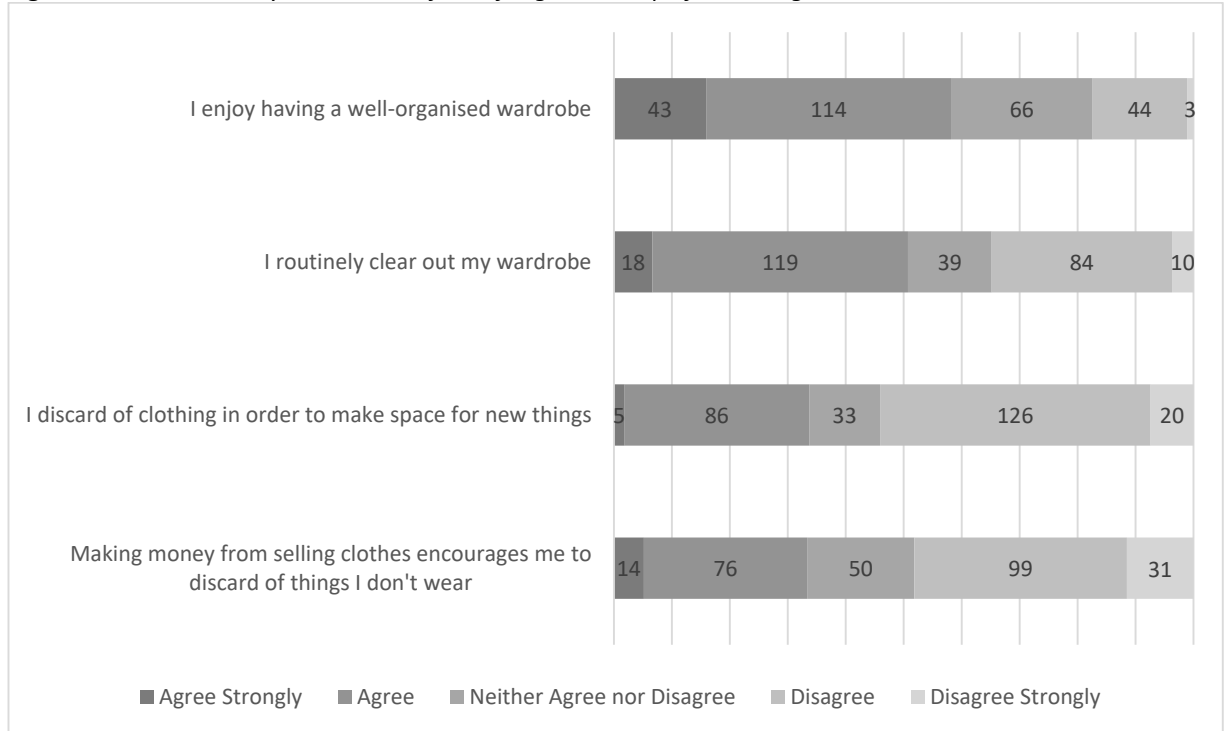
WS-P8: It's a long process. I'm not... I can't just think 'oh yep, that's going' and then take things to the charity shop. What I'll do is think 'oh yeah I've not worn that for time, do I really want to wear it?' and I'll pop it in a charity pile, and then when I come to sort the charity pile out it might go back in the wardrobe, or it might not. If I'm brave enough, it'll go to the charity shop.

Other participants described a similar process; picking out garments that they do not wear or no longer want to wear, removing these garments from the wardrobe and putting them in a pile, after a certain amount of time returning to the pile and making a decision whether to keep or shift ownership of garments. This process allowed the individuals to test how they feel without the garment in their wardrobe, separating themselves from it. This process may involve an individual letting go of a former self or an identity that they no longer identify with. Nostalgia for this identity, especially when associated with happy times, may make the decision process more complicated.

4.4.2 Online survey results

Figure 4-13 presents the responses to questions in the online survey regarding motivations for shifting ownership inactive garments.

Figure 4-13 Online survey: motivations for shifting ownership of inactive garments

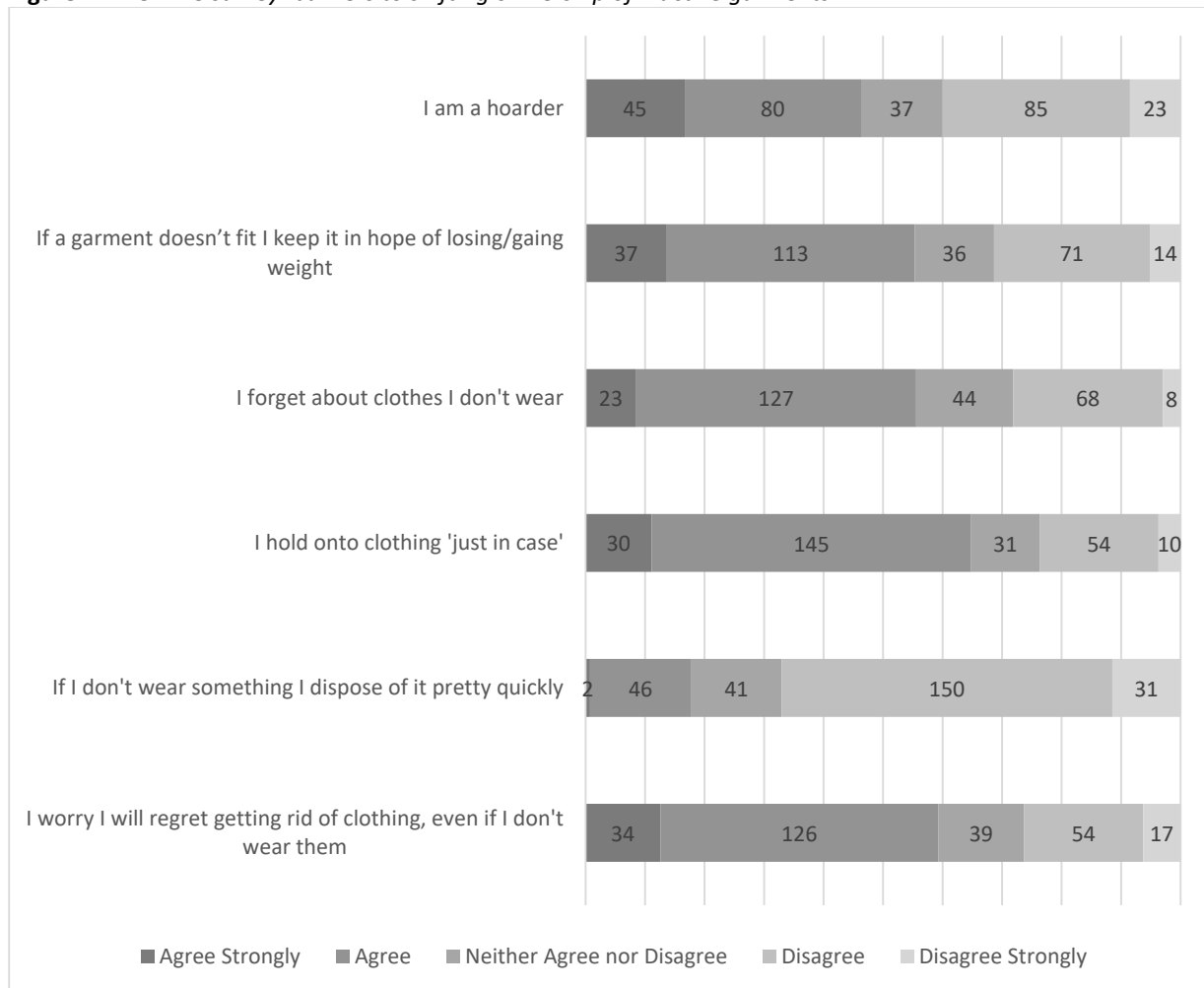


	Mode	Mean	Standard Deviation
I enjoy having a well-organised wardrobe	Agree	2.4	0.98
I routinely clear out my wardrobe	Agree	2.8	1.06
I discard of clothing in order to make space for new things	Disagree	3.3	1.04
Making money from selling clothes encourages me to discard of things I don't wear	Disagree	3.2	1.13

Similar to some of the influences on repair behaviour, there is variation in the responses to questions on motivations to shifting ownership of inactive garments. This indicates that a range of strategies would be needed to engage individuals in shifting ownership of inactive garments. The results do slightly support wardrobe organisation as a motivation. Interestingly, despite the desire for new garments being a significant motivation for discard in the wardrobe study, it does not appear as significant in the online survey.

Figure 4-14 presents the responses to questions in the online survey regarding barriers to shifting ownership of inactive garments.

Figure 4-14 Online survey: barriers to shifting ownership of inactive garments



	Mode	Mean	Standard Deviation
I am a hoarder	Disagree	2.9	1.26
If a garment doesn't fit I keep it in hope of losing/gaining weight	Agree	2.7	1.15
I forget about clothes I don't wear	Agree	2.7	1.04
I hold onto clothing 'just in case'	Agree	2.5	1.05

If I don't wear something I dispose of it pretty quickly

I worry I will regret getting rid of clothing, even if I don't wear them

Disagree	3.6	0.92
Agree	2.6	1.13

The responses to these questions suggest participants had a range of reasons for holding onto inactive garments, which were predominantly situated in the use potential of a garment. This represents a significant barrier to shifting ownership of inactive garments. There was variation in whether participants considered themselves a hoarder. Despite this, a majority of participants engaged in keeping garments 'just in case', which suggests product retention tendencies.

The majority of participants did not get rid of garments quickly as they did not wear them. This supports the findings of the wardrobe study; individuals like to have a period of time in which to assess the use potential of a garment before discard.

4.4.3 Integrated results

In relation to shifting ownership of inactive garments, the online survey supported the claim that use potential acts as a significant barrier to the behaviour.

Discarding garments to make space for new garments appeared to be a reliable finding from the wardrobe study, which was supported by literature on discard behaviour. Unexpectedly, the majority of participants in the online survey disagreed with the statement '*I discard of clothing in order to make space for new things*'. This discrepancy is problematic to explain. It could be that the participants have an abundance of space in which to store clothing.

However, this could be an example of failings in the research design leading to divergence; the design of the statement may have led to misinterpretation. A clearer and more definitive statement would have been '*I discard of old clothing in order to make space in my wardrobe for new clothing*'. Due to this divergence making space for new garments has been taken out of the integrated results.

Figure 4-15 shows the integrated results from the wardrobe study and online survey for shifting ownership inactive garments. Beliefs of wasteful behaviour were added as a motivation because a majority of participants in the online survey agree that it was better for garments to be used than sat in a wardrobe. In contrast, the participants did not seem to understand whether this constituted an environmentally desirable behaviour. Although, this is

not necessarily a barrier to behaviour it has been included in the barriers, as increasing understanding has the potential to promote shifting ownership of inactive garments.

Figure 4-15 *Integrated results: motivations and barriers for shifting ownership of inactive garments*



4.5 Motivations & Barriers: Discard Channel Selection

The environmentally desirable behaviour when selecting a discard channel is to discard used clothing through reuse or recycling. The wardrobe study and online survey explore motivations for and barriers to this desirable behaviour.

4.5.1 Wardrobe study results

Motivations for, and barriers to selecting an environmentally desirable discard channel are shown in Figure 4-16. Each is explored in more detail in the following section.

Figure 4-16 *Wardrobe study: motivations and barriers to selecting discard channel*



The majority of participants already engage in the environmentally desirable behaviour in the discard phase. Very few garments were discarded via landfill; these garments tended to be garments that participants perceived to have no reuse value, for example, two participants reported putting used underwear in the bin. This is in contrast to a recent study by Sainsbury's that found that 75% of consumers had discarded garments via landfill (Smithers, 2017). Self-reported recycling behaviour was high amongst participants via a range of reuse/recycling streams including informal channels such as giving to friends and family, exchanging, re-using and repurposing, and selling. Donation to charity was the most reported discard behaviour; it appeared to be a norm for many. In 2012, WRAP found that 73% of individuals had donated some clothing to charity in the last year, indicating that charity donation could be the social norm in the UK, but not for the entire discard inventory (WRAP, 2012b). Compared to the other behaviours examined, discard appears to have a greater variety of accessible channels available that have an environmentally desirable outcome. Although they are not all motivated by pro-environmental intent, these options allow a greater diversity of individuals to practice desirable behaviour.

4.5.1.1 Motivations for selecting desirable discard channel

This section examines the factors motivating discard channel selection. Almost all garments were being reported as being discarded by environmentally desirable routes. This extends beyond charity donation to include re-sale, re-use, swapping and gifting. Therefore, motivations may refer to a range of behaviours.

The decision on how to discard a garment was largely based on its perceived monetary value, for example, WS-P6 gave items she deemed as higher value to family members above donating to charity.

WS-P6: But because I paid a bit more for it, and because it's good quality and I've not worn it much it sort of stayed in there. I've finally cleared it out- this will probably go to the family before it goes in the charity bag.

Other participants sold items that they deemed to be too valuable to donate to charity, based on their assessment of its monetary value.

WS-P15: It sort of depends, it's normally like charity shop, and if it's anything I think kind of maybe has a bit of value to it, then I sell it on eBay.

There seemed to be a hierarchy where valuable garments were sold, passed on to friends or family, whereas less valuable items could be donated to charity without concern about economic loss.

WS-P6: I wouldn't be bothered to throw it away because of the price, and style changes so often that I might be you know, I might not like it by the end of the summer or next year anyway, it might go in the charity bag anyway so...

It is clear that the perceived monetary value of garments impact on the discard channels that are selected. The higher the value, the more an individual wants to glean back some economic value or make sure the garment goes directly to a new owner. Decisions are based on an individual's norms and values, which may result in inaccurate valuations. Garments estimated to have no monetary value may go to landfill. The belief of some value in a garment is essential to keep garments out of landfill.

The perceived convenience and accessibility of donating to charity meant one participant could not understand why individuals may put garments into domestic waste bins.

WS-P7: I mean I can't bear it when people just throw stuff away because you just think 'no, there's a charity shop, take it to the charity shop!'

Participants did not frequently refer to a dislike of waste, but it was inferred from some of their comments. There is potential to explore further how a dislike of waste motivates behaviours.

4.5.1.2 Barriers to selecting desirable discard channel

Resale is one of a range of discard channels that are environmentally desirable, but barriers to engaging in resale emerged from the study. This section will also examine the barriers to reuse and recycling in the two examples that were given by participants engaging in undesirable discard behaviour.

Four of the participants sold their unwanted garments, but the rest did not, claiming that they found it difficult to do, didn't have the time, or couldn't be bothered. For them, the financial rewards did not compensate for the effort involved in the selling process. This is supported by similar findings in a study into the use of eBay (Clausen *et al.*, 2010). To attain the most value from selling, participants had to develop skills in valuation, marketing, packaging and organisation; this could be prohibitive to some individuals.

Only one participant enjoyed using eBay, and her competency in selling allowed her access to new clothes; she would only allow herself to buy new things when she had earned money through selling.

WS-P4: I seem to be posting stuff on eBay weekly! So I would say weekly. I'm always selling something on eBay, and I'm always buying something.

Resale does not offer individuals the convenience of other discard channels, such as charity donation. This can prevent participation in this behaviour.

The physical condition of the garment at the point of discard impacted on the individual's perception of its reuse value.

WS-P12: I take the wearable things to the exchange, and then the things that are maybe not suitable for the exchange I would either [sic] put into a fabric collection for various craft groups

For this participant, garments that are in poor condition were still be recycled, but for some individuals, these low-quality garments will be discarded via landfill. This in some part explains why two participants discarded used underwear via landfill; it's used condition led them to perceive it to have no reuse value. Many consumers do not know that worn or dirty garments can be recycled (Smithers, 2017). They may feel embarrassment in giving such personal items to recycling businesses. Finding a second recycling channel for garments, in addition to charity donation, may begin to inconvenience the individual.

Donation to charity seemed to be the social norm amongst participants. Charity shops promote reuse through resale and often encourage individuals to donate good quality items. This compounds the belief that damaged or spoiled goods should not be donated to charity, as

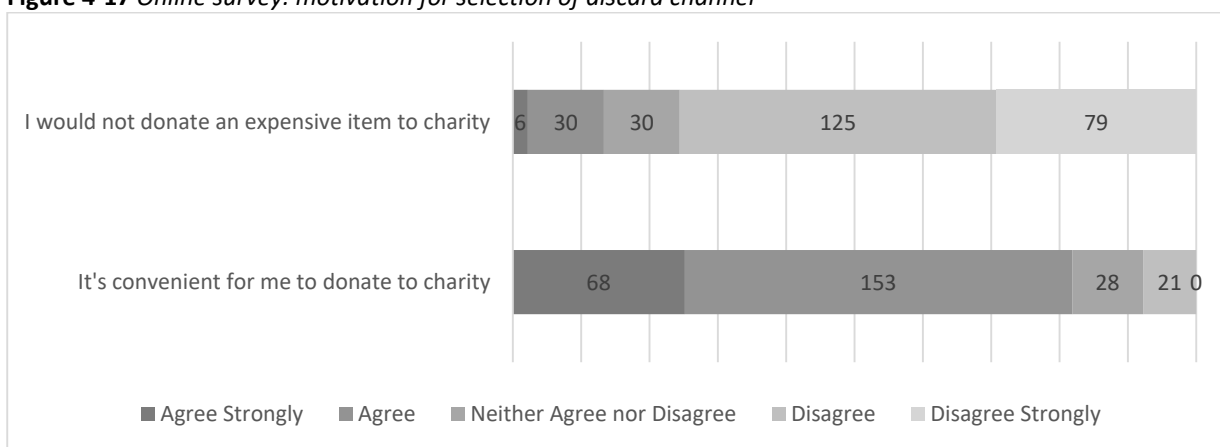
they would not provide good quality stock for the shop. This could leave individuals unsure of how to discard such garments.

Understanding that there is recycling value even in the most damaged garment is essential to keeping damaged and spoiled garments out of landfill and, therefore, to meet the European Clothing Action Plan targets. Individuals also need to be informed on appropriate discard channels for such garments.

4.5.2 Online survey results

Figure 4-17 presents the responses to questions in the online survey regarding motivations to discard channel selection.

Figure 4-17 Online survey: motivation for selection of discard channel

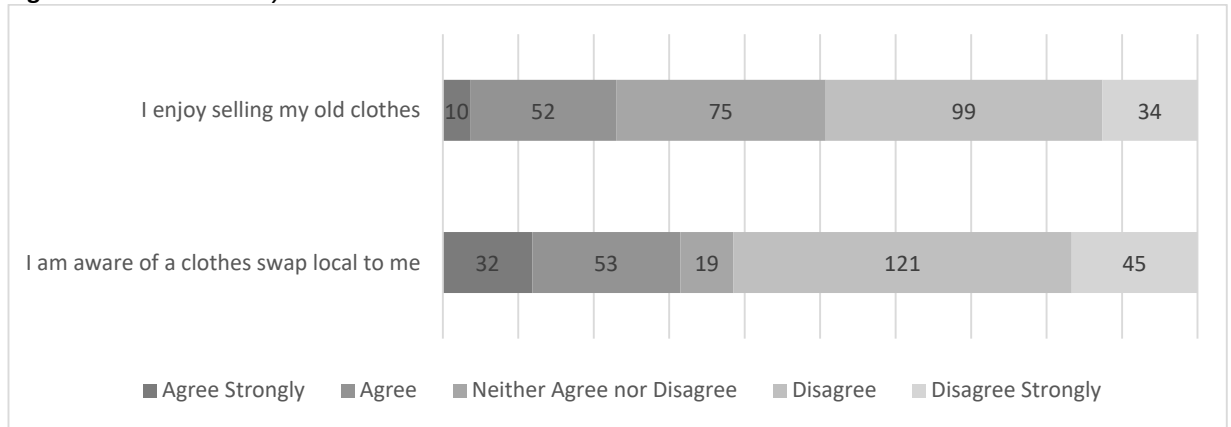


	Mode	Mean	Standard Deviation
I would not donate an expensive item to charity	Disagree	3.9	1.02
It's convenient for me to donate to charity	Agree	2.0	0.82

It was expected that the majority of participants would find it convenient to donate garments to charity, as this appeared to be the social norm from the wardrobe study. Unlike the wardrobe study, the majority of participants disagreed in that they would not donate an expensive garment to charity.

Figure 4-18 presents the responses to questions in the online survey regarding barriers to discard channel selection.

Figure 4-18 Online survey: barriers to discard channel selection



	Mode	Mean	Standard Deviation
I enjoy selling my old clothes	Disagree	3.4	1.04
I am aware of a clothes swap local to me	Disagree	3.3	1.29

The questions above focused on alternatives to charity donation and found barriers to these behaviours. As found in the wardrobe study, many participants felt negative towards selling their unwanted garments. Advantageously, two of the participants in the wardrobe study regularly attended a clothes exchange. This allowed analysis of how this changed their garment use behaviour, which showed potential for promoting environmentally desirable behaviour. However, a majority of participants in the online survey were not aware of a clothes exchange in their locality.

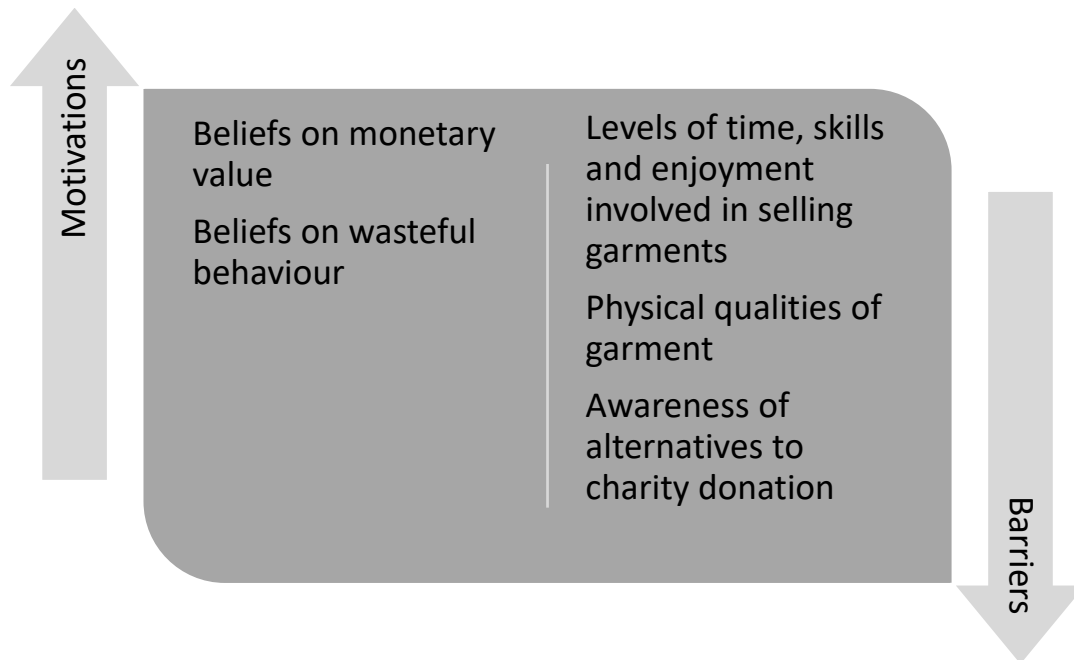
4.5.3 Integrated results

The online survey supported the finding of the wardrobe study that a large proportion of individuals do not enjoy selling their unwanted garments.

The online study found that participants were willing to donate expensive garments to charity. This is in contrast to the wardrobe study, where participants tried to find alternative discard channels for expensive items such as gifting to family members or selling. Both of these behaviours result in an environmentally desirable outcome; the shifting of ownership. Recognising the economic value of a garment remains a motivation for passing on a garment, rather than discarding it.

Figure 4-19 shows the integrated results from the wardrobe study and online survey for selecting a discard channel. The barriers and motivations largely remained the same. The only addition was the barrier of the awareness of alternatives to charity donation, such as clothes exchanges.

Figure 4-19 *Integrated results: motivations and barriers for discard channel selection*



4.6 Dislike of waste

A dislike of wasteful behaviour was a theme that emerged from the wardrobe study, and was, therefore, explored further in the online survey. The aim was to uncover some of the nuances in the dislike of waste, and how it relates to behaviour.

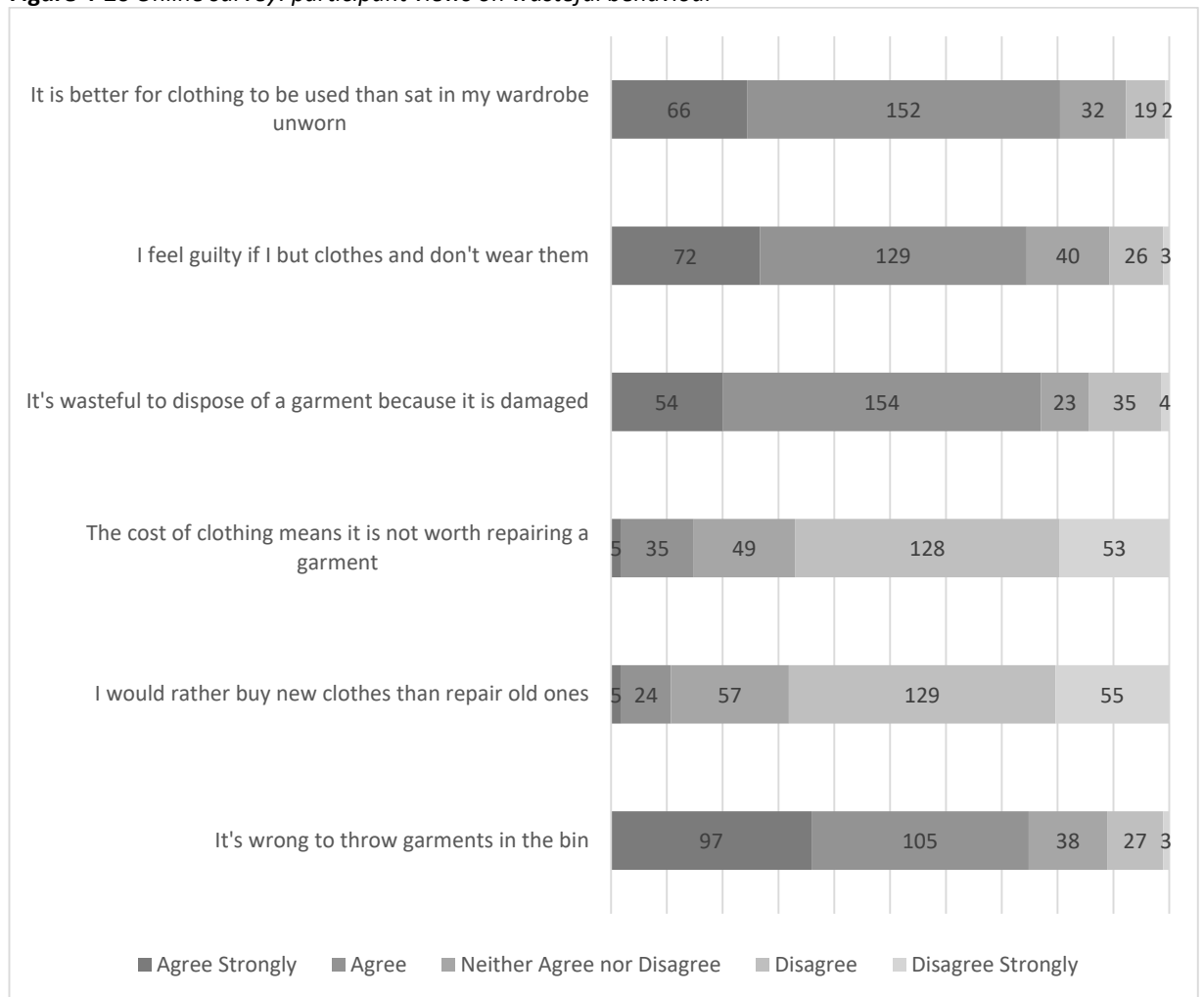
4.6.1 Wardrobe study results

Dislike of waste was identified in the wardrobe study as being a motivation for repairing garments, and selection of discard channel

4.6.2 Online survey results

Dislike of waste is a belief that can be, but is not always, related to pro-environmental beliefs. Figure 4-20 presents the responses to questions in the online survey regarding wasteful behaviour.

Figure 4-20 Online survey: participant views on wasteful behaviour



	Mode	Mean	Standard Deviation
It is better for clothing to be used than sat in my wardrobe unworn	Agree	2.0	0.83
I feel guilty if I buy clothes and I don't wear them	Agree	2.1	0.94
It's wasteful to dispose of a garment because it is damaged	Agree	2.2	0.95
The cost of clothing means it is not worth repairing garments	Disagree	3.7	0.99

I would rather buy new clothes than repair old ones	Disagree	3.8	0.94
It's wrong to throw garments in the bin	Agree	2.0	1.00

From the responses, it can be concluded that the majority of participants in the online survey had a dislike of waste and unused utility. However, there were exceptions, which give a compelling insight into consumer attitudes. Fourteen percent of the sample agreed or strongly agreed that the low cost of replacing clothing made it unworthy of repair. For some participants, the low cost of clothing is a barrier to repair.

A majority of the participants agreed that throwing garments in the bin was wrong, yet a quarter of the sample either disagreed or were unsure. This supports the assumption that garments are ending up in landfill as some consumers are not aware that this behaviour is undesirable.

Interestingly, a larger proportion of participants responded positively to the question *'it is better for clothing to be used than sat in my wardrobe unworn'* than *'It is better for the environment to keep clothes for a long time, even if you do not wear them'* from the previous section. The contrast in the questions is between unused utility and environmental impact. Participants appear more confident of the shortcomings of wasted utility, than environmental impact.

4.6.3 Integrated results

The online survey also supported the assumption for the wardrobe study that a dislike of waste may be a more pervasive attitude than pro-environmental attitudes. Despite high instances of dislike of waste, participants disclosed that they put some garments in the bin, or that they did not think it was wrong to put garments in the bin. There may be gaps between understanding, attitude and behaviour.

4.7 Summary

The results have expanded the understanding of the four focus behaviours. Pro-environmental intent was not found to be a significant motivating factor for any of these behaviours. In fact, environmentally desirable behaviours were often motivated by factors of self-interest. However, this self-interest was contextualised by social, economic factors.

5 Discussion

The results conclude that pro-environmental intent was not an influencing factor for the participants. Therefore, trying to encourage a pro-environmental attitude may be misplaced as a method of promoting environmentally desirable behaviour. However, the four environmentally desirable target behaviours were occurring without the need for a pro-environmental attitude; they were influenced by other motivating factors. The motivating factors were set out in the last chapter. This chapter will consider the implications of these factors on the design of behaviour change strategy.


The first topic for discussion is the application of the results into a behavioural model. The rest of the chapter then examines the other issues identified in the results which would need to be taken into account when developing a behaviour change strategy, including variation in garment consumption behaviour, cycles of consumption, gaps in consumer knowledge and the conflict between behaviours. Finally, the methods of data collection are critiqued.

5.1 Modelling behaviour

Theoretical models of behaviour change are widely utilised within social and environmental sciences. Despite this, there has been relatively little interest in using these models within the field of fashion and garment research. Behaviour models are useful as they offer insight into the hierarchy of influences on behaviour. This insight is invaluable when considering mechanisms for creating change. To consider the implications of the results, it was decided that they should first be applied to a behaviour model.

The model was adapted from Sterns' ABC theory. According to the ABC theory (see Table 5-1), behaviours are reliant on a supportive context and personal capabilities (Stern, 2000). This allows us to give priority to certain barriers to behaviour; barriers that come from context or personal capabilities are likely to override motivational factors. In many cases an individual's context and capabilities are not something that can be easily influenced or changed; this may give us an indication of situations in which it is improbable behaviour change will occur.

Table 5-1 Causal variables from Stern's Attitude-Behaviour-Context theory

Habits	Routinely undertaken behaviours	Most influence  Least influence
Context	Community expectations, social norms, material costs, laws, social context, political context, economic context, capabilities of technology	
Personal capabilities	Behaviour specific skills and knowledge, availability of time, social status, income, age	
Attitudes	Values, norms, beliefs	


Some of the results of the study are in keeping with this model. For example, personal capability, in the form of time available, acted as a barrier to repairing garments, which in some cases resulted in an attitude-behaviour gap. However, other motivations did not quite fit into the existing model.

When considering participants' personal circumstances (which acted as a barrier to wearing garments for longer, and a motivation for shifting ownership of inactive garments) it was often difficult to categorise these influences into either context or personal capabilities. The context variable in the ABC theory refers predominantly to a wider societal context. Personal context, such as occupation, does not relate to behavioural skills, knowledge or capability, making it unsuitable for inclusion in the personal capability variable. Therefore, in the adapted model Sterns' definition of context has been expanded to include personal context factors, such as age, occupation, family situation, relationship status and recreational activities (see table 5-2). Regarding the hierarchy of influence of the sets of variables, personal context had a significant influence on the participants and was felt to, therefore, have as much influence as context. It was therefore considered appropriate to include it as a subset of the existing context variable, without any need to reposition the variable within the model.

For motivations and barriers that were influenced by the physical properties of a garment, such as fit and ease of care, it was difficult to place this within attitude, context, personal capabilities and habits. Another set of variables- garment characteristics- needed to be added to the model. Careful consideration was given as to where to place this variable set in the model. Garment characteristics influence behaviour, but this could be superseded if the participants' personal capabilities, personal context or context were not favourable. An example of this is when individuals want to sell a garment, because of the amount of money they originally paid for it (*garment characteristics*), but this behaviour will only occur if the individual has the time and skills available (*personal capability*) to sell the garment. It was therefore decided that garment characteristics should be positioned between attitudes and personal capabilities, as shown in Table 5-2.

As the ABC theory was designed to model pro-environmental behaviour in a range of behaviours, including service behaviours which may not include material products, material properties of products are an understandable omission. In disciplines such as fashion, which are currently product focused, material considerations need to be factored into such behavioural models.

Table 5-2 Adapted causal variables for garment use and discard behaviour

Habits	Routinely undertaken behaviours	Most influence  Least influence
Context	Community expectations, social norms, material costs, laws, social context, political context, economic context, capabilities of technology Personal context: occupation, family situation, relationship status, recreational activities, housing situation, physical characteristics	
Personal capabilities	Behaviour specific skills and knowledge, availability of time, social status, income, age	
Garment characteristics	Size of garment, style of garment, age of garment, condition of garment	
Attitudes	Values, norms, beliefs	

5.1.1 Potential influence for change

The model can be used to consider where behavioural influences occur, and therefore where behaviour change could be strategically implemented. It is critical, therefore, to consider what the model discloses regarding the level of influence each set of variables could potentially have on behaviour compared to the ease of influencing change within that variable. The following section considers the application of the model in this way.

Habits are considered to have the most influence on behaviour. However, they are very challenging to change (Verplanken and Wood, 2006); the opportunity for influence is limited by the complexity of habit formation.

Changes in **context** could offer significant influence on consumer behaviour change. However, most aspects of personal context, such as occupation are established, and enduring; there is little potential or necessity for change. As some context factors cannot be influenced, it must be accepted that context may act as a resilient barrier to the long-term objectives of sustainable fashion. There are some opportunities for influencing change in context within the variable of social norms, costs, economic and political contexts.

Context is also vulnerable to change due to unpredictable external influences; any shifts in the social, political or economic landscape could potentially influence behaviour. For example, this study was conducted before the UK voted to leave the European Union. Following this vote, new trade agreements must now be negotiated with the world; these agreements are likely to impact on the cost of textiles and clothing. Also, the fall in the value of sterling after the Brexit vote led to garment prices rising as much as 20% (UK Fashion & Textile Association, 2017). This is likely to have a significant impact on context for individuals in the UK, altering consumption habits.

Personal capabilities would only influence behaviour if the context was supportive. Also, some aspects of personal capabilities are fixed, for example, age, and are therefore impervious to external influence for change. However, behaviour specific skills and knowledge have potential to be developed. Change in personal capabilities may also come about for other reasons, such as a change in health, occupation or financial status.

Changes in **garment characteristics** would need to be supported by personal capabilities and context to bring about change in behaviour. Again, some garment characteristics are fixed. For example, the material the garment is constructed from. However, many garment characteristics are open to adaption. Garment size and style can be re-tailored and updated, and damage can be repaired. Regarding encouraging individuals to wear garments for longer, some of the findings of this study could be beneficial in the design of new garments; more research could be conducted into what the terms *comfort, quality, good fit and easy care* mean to consumers. This understanding could be shared with fashion designers with an interest in creating longevity in their garment designs.

Attitudes are open to change. However, the influence of this change on behaviour is minimal unless all other variables are supportive. The results showed that environmentally beneficial behaviours can occur when motivated by other factors, and not supported by pro-environmental attitudes. Efforts in changing attitudes may be misplaced if other influential factors are not considered. Strategies to change behaviour would benefit from focusing on other, more influential, factors, rather than attitudes. Despite this, the study did identify that a dislike of waste was a prevalent attitude, which could be exploited further to change behaviour. For example, a dislike of waste could be utilised in encouraging individuals to recycle all textiles, including damaged and stained items.

5.1.2 Responsibility for promoting behaviour change

The adapted model of behaviour raises the question of responsibility for behaviour change. When considering solutions to the environmental costs of fashion, the strategies that have dominated the discourse are design strategies. These strategies are based on the assumption that the designer influences the consumer through their design decisions on the physical characteristics of a garment. However, this study indicates that these strategies are likely to have a relatively modest influence on consumer behaviour. Therefore, many current approaches to 'sustainable fashion' may be misplaced.

A large number of garments exist in the nations' collective wardrobe. From examining the wardrobes of seventeen women, the utility of this collective inventory became apparent. It seems that the problem is not with creating garments, it is with influencing how these

garments are used and discarded. We have enough clothes; we just need to manage this resource better.

The fashion designer has less responsibility for consumer behaviour than perhaps previously thought, whereas individuals who have an influence on context and personal capabilities have perhaps more responsibility. Those individuals who are much more likely to be able to change the general context of behaviour are those in charge of legislation. For example, legislation could make it a legal requirement to recycle textiles, change the cost of garments, or add garment repair skills into school curricular

Educators could play a role in bringing about changes in behaviour. Several personal capabilities relating to garment consumption, such as repair skills and knowledge of textile recycling, could be learned. This could be delivered through formal education, or through an informal service economy.

Retailers could also play a role in promoting change in behaviour. This could conflict with their primary goal, which is to sell garments. However, there is an opportunity to change the consumer experience, which several retailers are starting to pick up on. For example, the Stella McCartney brand produced a 'Clevercare' infomercial advising consumers how to care for their garments (Stella McCartney Ltd, 2017). Unlike traditional fashion marketing, the Stella McCartney video utilises ideas from social marketing; a strategy to promote ideas or services that are beneficial to society, rather than to sell products (Brennan *et al.*, 2014). Social marketing campaigns are more commonly funded by government bodies or charitable organisations. The Love Your Clothes campaign in the UK is one such campaign, which promotes behaviours which reduce the impact of clothes on the environment (WRAP, 2015a). This kind of social marketing activity could begin to change social norm towards environmentally desirable behaviours. Further exploration of how the findings could be utilised in a behaviour change strategy is explored as a toolkit in Appendix 12.

5.2 Variation in individual behaviour

The wardrobe study revealed the relationship between personal circumstances and behaviour; through the process of interviewing seventeen women about their garments, a picture of seventeen different lives and personalities emerged. Their garments were a representation of their lifestyle, experiences and identity. This has been identified previously by researchers in social sciences (Tseelon, 1992; Guy and Banim, 2000, 2001). Lots of different behaviours were presented, alongside lots of different variables supporting these behaviours. Similarly, the results of the online survey showed variance.

This variation is valuable to consider for several reasons, but in particular, it highlights the importance of considering the influences on behaviour, alongside the behaviour itself. The same behaviour can be undertaken for very different reasons. Researchers examining garment use need to be mindful not to segregate garment behaviour, and to understand it in the context of other practices in the individuals' life (Woodward, 2015). This can make the study of garment use behaviour difficult to undertake, as it is bound with so many variables from the participants' personal circumstances. Finding consistent themes in the data can be difficult.

When considering the application of the behaviour model in behaviour change strategy, it is important to consider that most individuals would have a different 'starting point' and their own unique set of context and capability variables. Each individuals' collection of garments within their wardrobe will also vary greatly. It is important that strategies for behaviour change do not rely on generalisations, as this will prove ineffective and could result in misplaced efforts. Strategies for behaviour change should be nuanced, adaptable and varied. The behavioural model allows for this because it considers the influences on behaviour, including personal context and capabilities.

The variance in consumer behaviour also has implications for life cycle assessment of garment use and discard behaviour. As discussed in the literature review, life cycle assessment is based on models of typical behaviour. The results of this study indicate that these 'typical' behaviour models may be limited in how accurately they represent the vast variations in consumer practices. This has further implications for our understanding of what classifies as environmentally desirable behaviour, which has often been determined utilising data from life cycle analysis.

5.3 Cycles of consumption

Two activities are inevitable in the wardrobe; garments will be acquired, and garments will be discarded. This is a cycle of consumption. Within the wardrobe study, it was found that the desire for new garments sometimes motivated discard; to make space in the wardrobe, or to generate funds to purchase new garments. This supports findings from previous studies into garment acquisition and disposal (Ha-Brookshire and Hodges, 2009). Ceasing to wear garments could lead to either storage or discard. As time passes many different factors contribute to garments no longer being worn; the likelihood of a garment being identified with a 'former self' increases. It is clear that not all garments will be suitable for long-term wear, and not all individuals will be interested in wearing garments for longer. Effective strategies for environmentally desirable apparel behaviour should aim to work with the inevitabilities of consumption and discard rather than against them.

The cycle of acquisition and discard of garments demonstrates similar characteristics to a habit; it is possible that it is a collective habit shared by society. These acts are unquestioned, repeated, offer an inherent personal reward, and are therefore difficult to change. To attempt to disrupt the cycle, it may be useful to look to habit change literature. Verplanken and Wood (2006) suggest that it can be more effective to target individuals who are yet to develop habits, or who are going through a period of change. This indicates that it may be beneficial to target under 18's, whose garment consumption habits are not formed. It also supports the results of this study, which indicate times of change in personal circumstances can lead to change in behaviour.

There is potential to modify this consumption habit, but alternatives may have to offer a reward to incentivise change. Many of the participants in the study exhibited a dislike of waste; knowing that they were avoiding creating waste could be rewarding feedback for consumers. Existing, successful, approaches, such as high street take-back schemes, have utilised financial rewards. Carefully designed schemes could promote consumer engagement with donations of unwanted garments, without promoting the consumption of new garments.

Clothing exchanges offered participants the reward of removing inactive garments from their wardrobes, while acquiring second-hand garments. The participants of the wardrobe study that attended a regular clothing exchange event had a positive attitude to passing on inactive garments. They also enjoyed experimenting with garments for short-term use, as there was no financial risk and they could take the garment back to be exchanged again without loss of value. Instead of holding onto garments that they did not wear because of feeling guilty for not wearing it, they were able to pass it onto someone else. They are not participating in the acquisition of new garments, and therefore this activity offered a genuine alternative to the cycle of consumption. There was a social aspect to the clothing exchange, adding another element of reward to this activity.

The alternative to rewarding desirable behaviour is to restrict undesirable behaviour. Again, this may be most effective when it involves financial disincentive. In the past, economic restrictions have led to a scarcity of garments, which, in turn, led to less unused utility and increased re-use. It appears that the recent financial crisis in the UK did not have the same impact on garment consumption. The cost of clothing remained low due to the import of garments from developing countries with low wages. These factors are the context for consumption. To artificially create a situation where consumers are encouraged to prioritise re-use, restrictions may have to be imposed. This could take the form of rationing, regulating markets with tariffs or restricting trade. This may appear to be a radical suggestion, but this

kind of approach would change the context of behaviour, potentially having a significant influence on behaviour. The positive impacts of restriction could include an invigoration of garment care and the second-hand market.

However, this approach is likely to be unpopular. Any attempt to restrict consumption could be seen as an attack on free will, and, what is often considered to be a fundamental right, the right to consume. Also, restrictions such as a 'fashion tax' are likely to have the most significant impact on, and therefore, potentially discriminate against the lower economic classes.

An example of where restriction has previously been successfully applied is the five pence charge for a plastic bag in England, which was introduced in October 2015 (DEFRA, 2017). Since the charge, the use of plastic bags has gone down by over 80% (ibid), and public support for the charge has increased by 10% amongst English consumers (Poortinga *et al.*, 2016). The success of this restriction is potentially based on three factors; the cost of the charge is low, the alternative behaviour (reusing a bag) is a relatively low effort activity, and the widely accepted view that single-use plastics have a negative impact on the environment. This suggests that restrictions on behaviours may be more effective if they take small steps towards the desired behaviour, and the public understands the benefits of the restriction. A restriction has not been tested as a behaviour change strategy for garment consumption.

5.4 Gaps in participant knowledge

Consumer understanding of environmentally desirable behaviour is variable. This supports the suggestion that provision of information is needed to improve public understanding of what constitutes environmentally desirable garment behaviour. Pro-environmental attitudes are low on the scale of behavioural influences. However, subject-specific knowledge adds to personal capabilities and could be supportive of environmentally desirable behaviour change.

Solely providing individuals with information is not enough to motivate changes in behaviour. But, when used with other behaviour change strategies, information can be useful in encouraging engagement in environmentally desirable behaviours. In the study, participants understanding of, and participation in, environmentally desirable garment behaviours was fairly limited to their selection of discard channels. Participants were making incorrect assumptions as they had limited knowledge of environmental impacts. They were able to identify some behaviours as wasteful, such as the storage of inactive garments, but did not infer an environmental impact from this. In the study, it was surmised that environmental concern is not currently a significant motivator for the four target behaviours. The online survey highlighted the uncertainty about how to behave in an environmentally desirable manner. This highlights the scope for education and encouragement.

Despite the attitude of having a relatively limited impact on behaviour, it could still be useful to increase consumers' knowledge of environmentally desirable behaviour as part of behaviour change strategy. Our current understanding of the environmental impact of garment use are still in the exploratory stages, but consumers could still be provided with the current understanding of 'best practice'. Any information provided should be simplified, and easy for the individual to understand how the knowledge could be applied to their own behaviour (Lehner, Mont and Heiskanen, 2015).

Lack of clarity on the impacts of garment consumption could lead to individuals acting on assumptions about environmentally-desirable behaviours, which may be inaccurate. This is an unfortunate waste of good intention. Information could engage individuals with previously unquestioned behaviours, and help to develop an interest in the relationship between garment consumption and the environment. However, the development of understanding into environmental impacts, which often changes what constitutes environmentally desirable, could be frustrating for individuals. It may appear that 'goal posts' are constantly changing, and provision of information is inconsistent. This could disengage individuals from engaging with adapting their behaviour based on current understanding.

One behaviour that has been recognised as having the potential to be targeted through information provision is the selection of the discard channel. To prevent garments from finishing their lives in a landfill, it is vital that consumers understand that all garments have some value for reuse or recycling. It appears the more value, either exchange or monetary, that a garment is perceived to have, the less likely it is to go to landfill. Therefore, the perception of value could have an impact on reuse and recycling behaviour. Like many aspects of the fashion industry, the current transparency of the recycling industry is limited and, therefore, the public has little understanding of its process and function. They do not know what happens to their garments after donation, how garments are sorted and categorised, or where they end up. The public could be given more information on what discard channels to use for damaged garments, what happens to damaged garments, and how they can be of use in recycling industries. The dislike of waste reported in the study indicates that consumers may be receptive to this provision of information.

Although the wardrobe study found that reuse and recycling behaviour is high, textile waste is still reaching landfill. There appears to be a discrepancy between reported behaviour and actual behaviour. The sample for the wardrobe study was not representative and claimed to be environmentally concerned, so some bias towards environmentally desirable discard may be present in the results. Two participants did concede that they discard of underwear via

landfill. It is likely that individuals are recycling some textiles, but are not recognising the reuse value of others so are disposing of them via landfill. This theory supports the need to provide consumers with more information on the value of their waste textiles. More research is needed to understand fully why so many individuals are still sending waste garments to landfill.

The results identified a gap in understanding of what to do with worn garments, such as underwear, which consumers were inclined to dispose of via landfill. The lingerie brand Intimissimi have been involved in several in-store take-back schemes to encourage their customers to recycle (Intimissimi, no date). These schemes make it clear that items such as bras and underwear are welcomed. Despite the previous critique of take-back schemes, this particular scheme offers the additional benefit of raising awareness and changing the social norms around recycling underwear. This kind of scheme could be tested on a bigger scale with major high street retailers, or supported with additional advertising.

As outlined in the results, more participants engaged in environmentally desirable discard behaviours than the other target behaviours. There are several possible explanations for this; there are a variety of discard channels that can be utilised and still be environmentally desirable. Individuals can engage with formal and informal discard channels and still behave favourably, and general recycling behaviours are increasingly the social norm in the UK.

It would be useful for there to be further research into best practice for garment reuse. Reuse is preferential to recycling, but further distinctions could be made, for example, whether it would be more desirable to pass a garment directly to a new user or to undertake anonymous transitions between users.

5.5 Conflict between behaviours

In the results, it is apparent that some factors that motivate a desirable behaviour might be a barrier to another desirable behaviour and vice versa. For example, change in personal circumstances was a barrier to wearing garments for longer but could motivate a shift in ownership of unworn clothing. Beliefs about the monetary value of a garment was a barrier to shifting ownership of inactive garments, but a motivation for selecting an environmentally desirable discard channel.

This conflict highlights the difficulties in motivating environmentally desirable consumer behaviours; each positive change may have repercussions on another behaviour which may have negative environmental impacts. It is necessary to study behaviours in isolation to manage and understand the subtle nuances involved. However, all garment consumption

behaviours are situated within an individuals' whole life, and therefore the behaviour relating to every facet of that life including food, work, relationships, etc. Change in garment consumption behaviour could impact on any of these other behaviours, possibly resulting in problem shifting. When developing behaviour change strategy, it would be important to consider the potential impact on both other garment consumption behaviours, and other behaviours more broadly. This may require researchers from different disciplines to work together to share knowledge and experience.

5.6 Critique of method

Methods for studying product use are a relatively recent development. To continue to advance this area of research practice, it is important that new methods are critiqued to identify successes and determine areas for improvement.

The wardrobe study was conducted using a grounded theory approach, which allows the themes to emerge from the data through thematic analysis. Some themes were not as complete as others, and would have benefitted from further investigation; more information on motivations for repair and beliefs on wasteful behaviour could have strengthened findings.

One of the aims of the wardrobe method was to capture material characteristics, in addition to interview data, in order to obtain a broader impression of garment use practice. The themes that emerged from the wardrobe study were not heavily reliant on the material knowledge captured through the wardrobe audit task. Although the data was occasionally utilised, the most useful data came from the interviews with the participants. However, the act of auditing the worn regularly garments within the wardrobe still contributed to the study as it prepared participants for the interview by giving them the motivation to examine and assess their wardrobes.

As described in the research method (page 48), the online survey utilised a Likert based scale, which assesses attitudes towards behaviours rather than actual behaviours. Therefore, an individual may agree that repairing garments is good for the environment, but that does not mean that they are engaged in garment repair behaviour. The online survey results are unable to reveal where there may be an attitude-behaviour gap.

On reflection, the design of the online survey missed out some questions that could have been useful in further exploring the findings of the wardrobe study. The importance of the wording of the statements became apparent during analysis; subtle changes could have improved the clarity of the results. Statements that could have been utilised in the online survey have been identified, including:

If a garment fits me well, I will wear it more

If a garment is difficult to launder, it puts me off wearing it

Changes in my personal circumstances have resulted in me wearing a garment less

Changes in my personal circumstances have resulted in me discarding garments

A lack of space in my wardrobe prompts me to clear out my wardrobe

I have time to repair my garments

Missing these aspects of the wardrobe study findings in the online survey represents a failing of the survey design. Any statements that gave ambiguous findings were accounted for in the results so as not to affect the validity of the study. In most cases, the statements included in the online survey were beneficial in developing the understanding of consumer garment use behaviour from the wardrobe study.

The wardrobe study indicated potential benefits to the participants. Ethical research practice dictates that participation in research should have a low risk of harm for the participant. The benefits of participation in research tend to be less closely scrutinised, and sometimes difficult to predict (Wiles, 2013). Some accounts of positive behaviour change were reported by the participants as a result of completing the wardrobe audit task. The purpose of the task was to enable the study of their behaviour, not to prompt any change. But, many of the participants had used the task as an opportunity to reflect on their behaviour and change it in accordance with their beliefs on what was 'wrong'. The biggest realisation was that they had a lot of inactive garments.

WS-P8: Well undertaking the audit helped me to view my wardrobe

WS-P7: I knew I had that many clothes, I hadn't realised how little I wear some of them

WS-P1: Well, you might have spurred me on to start getting rid of things!

This had motivated many of them to re-order their garments, try and wear forgotten items, and clear out unwanted items. This dialogue demonstrated that the participants felt it was problematic to have so many inactive garments. The positive impact comes from their decision to act to change the situation, which was dependent on the garments being removed from the wardrobe in an environmentally desirable way.

One participant felt positively re-assured by the task; she was comfortable with her wardrobe behaviour and was going to continue as before.

WS-P13: Just made me realise that I keep things for quite a long time, and I repair things rather than throw them out. Or I make them into something else. Made me realise that I've got quite a few things through friends, or borrowed, or loaned, or whatever. And it made me realise that I think I... As and when I buy things, I do think about what I'm buying

Most of the participants cleared out their wardrobes regularly between every six months and a year; the participants that benefited most from the audit had a less routine system. This unexpected benefit could be useful when considering behaviour change tools.

5.7 Summary

The discussion has outlined that garment consumption behaviours are individualistic and highly variable. Despite this, it has been possible to begin to model the influences on behaviour. Two significant changes have been made to Sterns' ABC theory; the inclusion of personal circumstances and physical characteristics of the garment. Attitudes remain in the position of lowest influence suggesting that intent should not be the sole focus of behaviour change strategy. Further implications of the model were discussed, including the critique of the focus on garment design as a tool for behaviour change. The next chapter concludes how this information contributes to the field.

6 Conclusions

In conclusion of the thesis, this chapter outlines the potential impact of the research. First, the research objectives are considered, alongside the outcomes of the research. The contribution of the thesis to the research field is then discussed. The limitations of the research are then considered. The chapter concludes by reviewing the potential for future work.

6.1 Meeting research objectives

The overarching aim of the research was to provide a more strategic approach to promoting environmental benefits through behaviour change in the context of garment use and discard. The environmentally desirable behaviours that were targeted for investigation were: wearing garments for longer, repairing garments, shifting ownership of inactive garments and discarding garments through reuse channels. After reviewing prior studies into the wardrobe habits of consumers, a multi-method consumer study was undertaken to fulfil this aim. This included a qualitative wardrobe study, which provided valuable insights into the complex factors influencing garment use, and a quantitative online study which developed and validated those findings.

The research had three objectives:

- To identify the current state of consumer garment use behaviour and to explore a range of appropriate behaviour change strategies
- To provide a better understanding of the practicalities of consumer garment use behaviour, and identify potential for modes behaviour change
- To investigate the implications and significance of this further developed understanding in order to substantiate the strategies for consumer garment use behaviour change

The first objective was addressed in the literature review (Chapter 2). Through this review, it was apparent that existing research into garment use and discard was limited. This limited the impact of sustainable fashion solutions, as they were often based on assumptions about consumer behaviour. The second objective was undertaken through primary research, which is documented in the methodology and results chapters (Chapters 3 & 4). The understanding of behaviour was utilised to develop frameworks of barriers and motivations influencing each of the target behaviours. The third objective was met in the discussion chapter (Chapter 5), where, a model of influences on garment use and discard behaviour was presented. This model has implications for behaviour change strategy, allowing for the understanding of where the most influence could occur, and highlights the need to look beyond the design of garments as a potential solution.

6.2 Conclusions of the thesis

This section covers the main conclusions of the thesis and the implications of these. The conclusions can be grouped into three main themes: environmentally desirable behaviour, modelling the influences on behaviour, and behaviour change strategy. Each theme is explored in more detail below.

6.2.1 Environmentally desirable behaviours

The current understanding of what constitutes an environmentally desirable behaviour is limited by the assessment process. The variation in consumer garment use and discard behaviour, highlighted by this study, makes it problematic to create a model of typical practices. As a result, it becomes difficult to assess the true environmental cost of an individual's behaviour. This lack of clarity on environmentally desirable behaviour could prove prohibitive to consumers engaging in behaviour change. It is also possible that as an understanding of the use phase of garment consumption develops, our evaluation of environmentally desirable behaviour may change. Researchers need to be aware that they are only working with current best judgement on environmentally desirable behaviour.

It was identified that pro-environmental intent was not significant in motivating environmentally desirable behaviour. This stresses the importance of going beyond providing information to change behaviour.

Prior to this study, the discussion of discard of inactive garments as an environmentally desirable behaviour has been relatively limited in the literature. Through this research, the argument for the inclusion of this behaviour in what is considered 'ideal' garment consumption behaviour has been carefully considered. The obstacles to the acceptance of this behaviour have also been discussed. This provides a platform for the development of further research in this area. 'Liberating' products to maximise utility could also be investigated in other product areas.

6.2.2 Modelling the influences on behaviour

The results of the study were used to adapt Sterns' Attitude- Behaviour- Context theory into a model of influences on behaviour. As this model focuses on the influences affecting behaviour, it allows for the variation in individual behaviour due to personal circumstances, and differing itinerates of garments.

The model is a significant development in the area of sustainable fashion research, which seldom utilises the insights into behaviour developed in the fields of social and environmental science. This could lead to other researchers in the area of sustainable fashion applying

behavioural models in a similar way; strengthening the fields empirical understanding of consumer practices.

The model of influences on behaviour also allows for consideration of where there may be opportunities to influence change in consumer behaviour. Variables that constructed the context of an individuals' behaviour were some of the most resilient influences. It may prove very difficult, or impossible, to change some of these variables. It is also possible for these variables to change suddenly, due to external factors, creating a change in behaviour. This change could be a desirable or undesirable change.

It was identified that attitudes and physical characteristics of garments have low levels of influence compared to other factors, and were, therefore, not best suited as a means of influence. Further to this, the effectiveness of one design strategy: 'design for emotional attachment' was disputed. In the wardrobe study, it was found that emotional attachment had limited connection to the material properties of the garment, and emotional attachment tended to motivate long-term storage, rather than prolonged wear.

Despite the limited influence of attitudes and garment design, these are the two variable groups that have been predominantly utilised in existing strategies to promote sustainable fashion. This will be discussed further in the next section.

6.2.3 Behaviour change strategy

The model of influences of behaviour highlights that changes in garment design are likely to have limited impact on consumer behaviour. Solutions to issues of fashion and the environment should not be the sole responsibility of the fashion designer. Other agencies need to look at how they can contribute to promoting environmentally desirable behaviour in the fashion sector. The model of influences on behaviour created in this thesis is open to being used by a range of individuals. This study underscores the need for legislators to utilise their influence on the context of society to bring about change. There is potential for individuals from a range of fields to contribute to changing garment consumption practices, which offer an opportunity for collaboration and innovation.

Two factors that were identified as influencing behaviour throughout the study, and across a range of behaviours; desire for new garments, and the variation that an individual's personal circumstances create. The desire for new garments will be a persistent barrier to sustainable fashion unless more consumers can be encouraged to wear second-hand garments.

6.3 Contribution to the field

A series of guidelines are suggested for the outcomes of grounded theory research. Theoretical developments should:

- Enable prediction and explanation of behaviour
- Be useful in theoretical advances in sociology
- Be applicable in practice
- Provide a perspective on behaviour
- Guide research on particular areas of behaviour
- Provide clear categories and hypotheses so that critical ones can be verified in future work (Glaser and Strauss, 1967)

The theory developed throughout this thesis fits with these criteria, and therefore offers a significant contribution to the field.

Sustainable fashion is a burgeoning area of research. The breadth of topics within this area means that there are elements which are still underdeveloped, and lacking in theoretical understanding. The consumer use phase of the garment life cycle is one such element; transparency in the life cycle is obscured by practices which occur privately, behind closed doors. While more visibility is sought in the manufacturing phase, consumer use has been neglected as a research topic. This thesis aimed not only to examine how individuals were interacting with their garments, but why those interactions were occurring. This contributes to the understanding of consumer use within the field.

The overarching problem that this thesis is trying to address is garment consumption causing damage to the environment. To reduce this damage, behaviour will have to change. As human behaviour is motivated by a complex framework of variables, it is necessary to understand these for behaviour change strategy to be meaningful and influential. Studies into garment consumption need to build an understanding of the motivations to behaviour, rather than outcomes. This study uniquely adapted Sterns' Attitude-Behaviour-Context model to apply it to garment consumption. This has allowed the development of new perspectives on the most appropriate approaches to behaviour change.

Although this thesis is theoretical, the aim has always been to generate an understanding that can be put into practice in the real world. The outcomes of the research, including the motivations and barriers for each behaviour, and the model of influences, allow for the research to have real implications for behaviour change strategy in the UK. The discussion considers the results in terms of how they may influence behaviour change strategy.

6.4 Limitations of research

The research utilised a non-representative sample of adult women living in the UK. As a result, the findings cannot be generalised to the wider population. The limits that the inferences can be made from the results. However, as an exploratory study, the sample suited the aims of the research. The wardrobe study and online survey were slightly limited by the design of the method; this was discussed in Chapter 5 (Section 5.6).

There are still gaps in knowledge, which warrant further studies that integrate material knowledge more effectively into the results. Laitala and Klepp (2015) recommend using non-verbal data to gain a deeper understanding of product use behaviour. Although the wardrobe study included garment characteristics, this was recorded as written descriptions from verbal accounts. Photographs were taken of all of the garments brought to interview. However, these were not used in the analysis. Collaborations between disciplines may be necessary to analyse fully and integrate the two different categories of findings; this could be considered for further research.

Attitudes, motivations and barriers to consumption behaviours can vary significantly between product types (Gullstrand Edbring, Lehner and Mont, 2015). Apparel is uniquely situated, in that it is one of the most visible forms of consumption. The motivations and barriers to environmentally desirable behaviour in my research are focused on garment consumption behaviour, which limits their application to the consumption of other product types. The development of theory in this research has been substantive; it does not aim to explain anything outside the immediate field of study (Goulding, 2002). However, it is likely that personal circumstances act as an influence on interactions with other material objects, and this could be acting as a barrier to environmentally desirable behaviour. The culpability of those in charge of legislation is also likely to be a significant factor in other product areas.

6.5 Further research

The research sample could be expanded; further consumer research could be undertaken to extend the research beyond a female population. Similarly, consumer studies could be done in different geographical locations. This would be particularly interesting in countries with differing economic and social contexts to the UK. This would allow a comparison of the results, which could offer further insight into the influence of context on behaviour.

Beyond researching existing behaviour, there is potential for future research which utilises the model to develop behaviour change tools and strategies, which could then be tested with consumers. This would allow the theory to put tested in practice.

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8 Appendices

8.1 Appendix 1: Pre audit questionnaire



UNIVERSITY OF LEEDS

This study is being undertaken as part of Jade Smith's PhD research at the University of Leeds. The study consists of three sections; this questionnaire, a worksheet for you to fill in regarding your wardrobe (this is to be completed at home), and an interview with Jade Smith. If you are NOT willing to take part in all three sections of the study it is not necessary for you to fill this questionnaire.

About you...

Please tick the appropriate box

How old are you?

18-24	<input type="checkbox"/>	50-54	<input type="checkbox"/>	Prefer not to say	<input type="checkbox"/>
25-29	<input type="checkbox"/>	55-59	<input type="checkbox"/>		
30-34	<input type="checkbox"/>	60-64	<input type="checkbox"/>		
35-39	<input type="checkbox"/>	65-69	<input type="checkbox"/>		
40-44	<input type="checkbox"/>	70-75	<input type="checkbox"/>		
45-49	<input type="checkbox"/>	75+	<input type="checkbox"/>		

Which of the following best describes your ethnic background?

White British	<input type="checkbox"/>	Indian	<input type="checkbox"/>
White Irish	<input type="checkbox"/>	Pakistani	<input type="checkbox"/>
Other White background	<input type="checkbox"/>	Bangladeshi	<input type="checkbox"/>
Mixed- White and Black Caribbean	<input type="checkbox"/>	Other Asian background	<input type="checkbox"/>
Mixed- White and Black African	<input type="checkbox"/>	Caribbean	<input type="checkbox"/>
Mixed- White and Asian	<input type="checkbox"/>	African	<input type="checkbox"/>
Other mixed background	<input type="checkbox"/>	Other black background	<input type="checkbox"/>
Chinese	<input type="checkbox"/>	Other (please write)	<input type="checkbox"/>
Prefer not to say	<input type="checkbox"/>		

If you were NOT born in the UK when did you move here?

Prefer not to say



What is your occupation?

Prefer not to say

What is your working status?

- Working full time (30+ hours)
- Working part time (1-29 hours)
- Studying full time
- Studying part time
- Non working
- Prefer not to say

What is your annual income?

- | | | | |
|---------------|--------------------------|-------------------|--------------------------|
| Under £10,000 | <input type="checkbox"/> | £30-35,000 | <input type="checkbox"/> |
| £10-15,000 | <input type="checkbox"/> | £35-40,000 | <input type="checkbox"/> |
| £15-20,000 | <input type="checkbox"/> | £40-45,000 | <input type="checkbox"/> |
| £20-25,000 | <input type="checkbox"/> | £45-50,000 | <input type="checkbox"/> |
| £25-30,000 | <input type="checkbox"/> | £50,000 + | <input type="checkbox"/> |
| | | Prefer not to say | <input type="checkbox"/> |

Do you own or rent your accommodation?

- Own outright
- Own with a mortgage or loan
- Part own and part rent (shared ownership)
- Rent (with or without housing benefits)
- Live rent free
- Prefer not to say

If you are a student, do you reside in Leeds during term time only?

- Yes
- No
- Prefer not to say

Do you own a car?

- Yes
- No
- Prefer not to say



About you and clothes...

How often do you purchase clothing for yourself?

- More than once a week
- At least once a week
- At least once a fortnight
- Once a month
- At least 4 times a year
- At least 2 times a year
- Only once a year
- Less than once a year
- Someone else normally buys clothing for me
- Prefer not to say

Do you agree with the statement?

I follow fashion

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree
- Prefer not to say

Do you agree with the statement?

I decide on clothing purchases from reading magazines

- Strongly agree
- Agree
- Neither agree or disagree
- Disagree
- Strongly disagree
- Prefer not to say



Please give a few examples of the kinds of shops you use to buy clothes

--

Prefer not to say

Do you wear second hand clothing?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Prefer not to say	<input type="checkbox"/>

If Yes, where do you obtain it from? (You may tick more than one)

Charity Shops	<input type="checkbox"/>
Vintage Shops	<input type="checkbox"/>
Clothes swaps/exchanges	<input type="checkbox"/>
EBay	<input type="checkbox"/>
From friends/relatives	<input type="checkbox"/>
Other (please specify)	<input type="text"/>
Prefer not to say	<input type="checkbox"/>

Do you share clothing?

Yes, at least once a month	<input type="checkbox"/>
Yes, at least once every three months	<input type="checkbox"/>
Yes, at least once a year	<input type="checkbox"/>
Never	<input type="checkbox"/>
Prefer not to say	<input type="checkbox"/>

Who do you share clothing with?

Family	<input type="checkbox"/>
Friends	<input type="checkbox"/>
Other, (please specify)	<input type="text"/>
Prefer not to say	<input type="checkbox"/>

Do you feel comfortable sharing clothes?

Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Prefer not to say	<input type="checkbox"/>

Why?

--

Prefer not to say



About you and the environment...

How strongly do you agree or disagree with the following statements?

	AGREE STRONGLY	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	DISAGREE STRONGLY
I don't pay much attention to the amount of water and energy I use in my home					
If things continue on their current course we will soon experience a major environmental disaster					
It is only worth doing environmentally friendly things if they save you money					
I would like to do a lot more to help the environment					
We are close to the limit of the number of people the earth can support					
The so-called 'environmental crisis' facing humanity has been greatly exaggerated					
I sometimes feel guilty about doing things that harm the environment					
It's not worth me doing things to help the environment if others don't do the same					
I don't know much about carbon footprints or carbon offsetting					
For the sake of the environment, car users should pay higher taxes					



Your contact details...

I am looking for specific categories of people to take part in my study, if I feel you are suitable I will contact you to see if you wish to further participate in the wardrobe audit. If you wish to participate I will need to post a worksheet to you, hence the necessity to take your address. This information will be kept confidential.

FIRST NAME	
SURNAME	
ADDRESS	
POSTCODE	
TELEPHONE NUMBER	
EMAIL ADDRESS	

Further to the section of the study when you will examine your own wardrobe I will interview you regarding your clothing. When would be an appropriate time or day for you to take part in an interview?

--

8.3 Appendix 3: Audit help sheet

Audit Help Sheet

Please read this sheet before complete the audit worksheet. If there is anything you do not understand please do not hesitate to contact Jade Smith, 07753289145, j.whitson-smith@hotmail.com. You have been asked to complete the worksheet for the clothing you have sorted into 'worn regularly'.

Garment:

Describe the garment; top, trousers, skirt, hoody, cardigan, jumper, jeans, coat, etc. Shoes, underwear and accessories DO NOT need to be audited.

Brand:

Look at the label for the brand. If there is no label, then write 'unknown'. If the garment is vintage or second hand write 'vintage- brand' or 'second hand- brand', for example 'second hand- Marks & Spencer's

Fibre:

Look at the care instructions for fibre content. Percentages need not be included, but please list the fibres in order of the highest to lowest percentage. For example, 90% Cotton, 10% polyester would become 'cotton/polyester'.

Fabric:

This may take some guess work. Stretchy t-shirt fabrics are likely to be jersey. Jeans are likely to be denim. Fabrics without stretch such as suit trousers are likely to be woven. Jumpers are likely to be knit. There are also other fabrics such as velvet and corduroy which can be identified by their textures.

Colour:

If the garment is more than 2 colours state 'multi'

Pattern:

If the fabric the garment is made from has a pattern it will either be printed, or the pattern is made during the knitting or weaving process, for example 'tweed', 'check', 'argyle', 'fairisle'. For printed fabrics summarise the pattern, eg. 'Printed- floral'

Details:

In this section describe any details that do not describe the cut of the garment, for example: beads, sequins, trims, buttons, cables in knitwear, pin tucks, pleats, shirring, ruffles, rouches, pockets etc.

Damage:

In this section describe any damage to the garment, such as tears, ladders, pilling, stains etc. Also note if you have ever repaired the garment.

Cut:

In this section describe the cut of the garment; examples of terms you may use are listed below. The more information given in this section allows the researcher to build up an accurate picture of your wardrobe. Some images have been included at the back of the help pack to help you with these descriptions.

Collars- Peter Pan, sailor, mandarin, roll neck, granddad, button down, cowl neck

Sleeves- set in, cuffs, shoulder pads, roll up, cap, puff, half circle, bell, petal, leg of mutton, bishop, raglan, dolman

Skirts- straight, a-line, pencil, mini, knee length, midi, ankle length, floor length, bell shaped, high waisted, gathered waist, gore flare, tiered, peplum, pleated, slits, godet flare, wrap over, circle, Elasticised waist

Trousers- jeans, flared, bootleg, shorts, utility, Capri, culottes, pleated, cigarette, skinny, drawstring, jogging trousers, tracksuit

Tops- Empire line, wrap over, off the shoulder, halter neck, kimono, batwing, peasant blouse, smock, handkerchief hem, tunic

Dresses- Empire line, wrap over, off the shoulder, halter neck, kimono, bias cut

Coats- Double breasted, single breasted, hood, lapels, lined, pea coat, parker, anorak, blazer, bolero, duffle, bomber jacket

Please note these descriptions are based on Western clothing; if you wear clothing from your own, or another culture, and have a more appropriate description for your clothing please use it. For example, Shalwar kameez.

Occasion:

Define what type of occasion you think the garment is suitable for, 'casual', 'smart', 'party', 'sport' etc.

Age:

Estimate how long you have had this garment (in months/years)

8.4 Appendix 4: Wardrobe study interview questions

Questions regarding the wardrobe audit:

Tell me about the audit?
How did you go about it?
Did you do it all at once or over time?
Did you find you had to think about it, or was it straightforward?
Did it make you think about your clothing differently?
How?

Could you easily identify all the locations your clothes are kept in?
So, what places did you identify where you store clothing? (Laundry baskets, airing cupboards, storage boxes, etc.)
Which of these areas did you pick to audit? How did you make that decision?
Were you surprised by the amount of different place you store clothing?
Did you have more or less clothing that you expected?
Were you reminded of clothing that you had forgotten about, perhaps that was in storage?
How do you feel about that clothing now you have remembered it? Will you wear it again?

Do you normally order your clothing in your wardrobe? How?
Did you order your clothing into the four categories (new purchase/worn regularly/worn occasionally/never worn)? Was this easy to do? What difficulties did you encounter?
Did any of the categories have a larger amount of clothes in it than the others?
Which one(s)?
Did that surprise you?
Did you have a lot of clothing you never wear?
Why do you think that is?
Did you have new purchases?
Do you feel differently about your new purchases in comparison to the clothing you never wear? How? Why do you think that is?
Do you like the clothing you wear regularly?
If not, why do you wear it?
How often do you sort through your clothing?
How often do you dispose of clothing?

During the audit did you notice any reoccurring patterns in the types of clothing you wear regularly?
Why do you think that is?
Did you notice anything about your clothing you haven't thought about before, for example fibre content?

Ok, thank you for that, now we'll move onto the garments you've brought with you today...

Questions regarding the selected garment:

A garment they have owned for a long time

Describe the garment for me
How long have you had the garment?
Do you have any older garments in your wardrobe?
How often do you wear it?
Do you like the garment?
What do you like/dislike about the garment?
How do you feel when you wear it?
How long do you think you will keep it?

When imagining how long you'll keep it what factors are you taking into consideration?
Do you feel sentimental about it? Why?
For what reasons, if any, could you imagine disposing of it?
How would you feel if you had to dispose of it now?
Is the garment damaged?
Have you ever repaired the garment?
Approximately how many times do you wear the garment between each wash?
Would you describe the garment as good quality? Why?
How does this affect how you feel about it?
Is the garment easy or difficult to look after? Why?
How does this affect how you feel about it?
Is it a good reflection of your personal style? Why?
How does this affect how you feel about it?
Do you have many garments like this in your wardrobe?

A garment they are emotionally attached to

Describe the garment for me
How long have you had the garment?
Why are you emotionally attached to this garment?
Is that the reason that you keep it?
How long do you think you will keep it?
When imagining how long you'll keep it what factors are you taking into consideration?
How often do you wear it?
How do you feel when you wear it?
Do you like the garment?
What do you like about the garment?
For what reasons, if any, could you imagine disposing of it?
How would you feel if you had to dispose of it now?
Is the garment damaged?
Have you ever repaired the garment?
Approximately how many times do you wear the garment between each wash?
Would you describe the garment as good quality? Why?
How does this affect how you feel about it?
Is the garment easy or difficult to look after? Why?
How does this affect how you feel about it?
Is it a good reflection of your personal style? Why?
How does this affect how you feel about it?
Do you have many garments like this in your wardrobe?

A garment they never wear (never worn, if applicable/ used to wear but have stopped)

Describe the garment for me
How long have you had the garment?
Have you ever worn the garment?
When was the last time you wore the garment?
Why do you no longer wear it?/ Why have you never worn it?
Why do you keep the garment?
Did you used to like it?
Why don't you like it anymore?/Why did you buy it?
How long do you think you will keep it?
When imagining how long you'll keep it what factors are you taking into consideration?
Do you feel sentimental about it? Why?
For what reasons, if any, could you imagine disposing of it?
How would you feel if you had to dispose of it now?

Is the garment damaged?
Have you ever repaired the garment?
Approximately how many times do you wear the garment between each wash?
Would you describe the garment as good quality? Why?
How does this affect how you feel about it?
Is the garment easy or difficult to look after? Why?
How does this affect how you feel about it?
Is it a good reflection of your personal style? Why?
How does this affect how you feel about it?
Do you have many garments like this in your wardrobe?

A garment that they wear frequently

Describe the garment for me
How long have you had the garment?
How often do you wear it?
Do you like the garment?
What do you like about the garment?/ Why don't you like the garment?
How do you feel when you wear it?
How long do you think you will keep it?
When imagining how long you'll keep it what factors are you taking into consideration?
Do you feel sentimental about it? Why?
For what reasons, if any, could you imagine disposing of it?
How would you feel if you had to dispose of it now?
Is the garment damaged?
Have you ever repaired the garment?
Approximately how many times do you wear the garment between each wash?
Would you describe the garment as good quality? Why?
How does this affect how you feel about it?
Is the garment easy or difficult to look after? Why?
How does this affect how you feel about it?
Is it a good reflection of your personal style? Why?
How does this affect how you feel about it?
Do you have many garments like this in your wardrobe?

A garment they have recently purchased

Describe the garment for me
How long have you had the garment?
Is it your most recent purchase?
Have you worn it yet?
How do you feel when you wear it?
What motivated you to purchase it?
What will you wear it with?
Does it go with other with things in your wardrobe?
Is it a good reflection of your personal style? Why?
How does this affect how you feel about it?
Do you have many garments like this in your wardrobe?
How long do you expect to keep the garment?
When imagining how long you'll keep it what factors are you taking into consideration?
How would you feel if you had to dispose of it now?
Would you describe the garment as good quality? Why?
How does this affect how you feel about it?
When you purchased it did you give any thought to the fibre content, or care label? Why?

A garment they are likely to dispose of soon

Describe the garment for me

How long have you had the garment?

How long since you last wore it?

What made you keep it until now?

What made you decide to dispose of it?

Do you feel you have made the right decision to dispose of it, or are you unsure?

Have you ever regretted the decision to dispose of a garment? What happened?

How will you dispose of it?

Is the garment damaged?

Have you ever repaired the garment?

Would you describe the garment as good quality? Why?

How does this affect how you feel about it?

Is it a good reflection of your personal style? Why?

How does this affect how you feel about it?

Do you have many garments that you plan to dispose of soon?

8.5 Appendix 5: Online survey questions

Clothing Use Study

Page 1: About the Study

This study is being carried out as part of Jade Whitson-Smith's PhD research at the University of Leeds. The aim of this study is to further understanding of consumer clothing use. This includes how you wear, store, repair and sort your clothing.

Please only take part in this study if you are female, over the age of 18, and currently living in the UK.

Your answers are anonymous, and by completing the questionnaire it is assumed that you consent to your answers being used in this PhD study, and subsequent publications.

The questionnaire should take about 15 minutes of your time. Thank you for volunteering to take part.

Page 2: About you

1 How old are you?

- 18-24
- 25-29
- 30-34
- 35-39
- 40-44
- 45-49
- 50-54
- 55-59
- 60-64
- 65-69
- 70-75
- 75+
- Prefer not to say

2 Which of these best describes your ethnic background?

- White British
- White Irish
- Other White background
- Indian
- Pakistani
- Bangladeshi
- Other Asian background
- Caribbean
- African
- Other black background

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- Mixed- White and Black Caribbean
- Mixed- White and Black African
- Mixed- White and Asian
- Other mixed background
- Chinese
- Prefer not to say
- Other (please state)
- Other

2.a If you selected Other, please specify:

3 What is your working status?

Please select at least 1 answer(s).

- Working full time (30+ hours)
- Working part time (1-29 hours)
- Studying full time
- Studying part time
- Non working
- Prefer not to say

4 What is your annual income?

- Under £10,000
- £10-15,000
- £15-20,000
- £20-25,000

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- £25-30,000
- £30-35,000
- £35-40,000
- £40-45,000
- £45-50,000
- £50,000 +
- Prefer not to say

Page 3: The environment

5 How strongly do you agree or disagree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 11 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
I don't pay much attention to the amount of water and energy I use in my home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If things continue on their current course we will soon experience a major environmental disaster	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is only worth doing environmentally friendly things if they save you money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to do a lot more to help the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
We are close to the limit of the number of people the earth can support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The so-called 'environmental crisis' facing humanity has been greatly exaggerated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I sometimes feel guilty about doing things that harm the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It's not worth me doing things to help the environment if others don't do the same	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I don't know much about carbon footprints or carbon offsetting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
For the sake of the environment, car users should pay higher taxes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know how to behave sustainably with my clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 4: Clothing Use

6 How strongly do you agree or disagree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 5 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
I try to buy clothing for a specific activity or occasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer clothing I can use for lots of different occasions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My more expensive clothing only gets worn if it is a special occasion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would not wear a garment if I thought it was out of fashion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoying sharing clothes with friends or family	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 5: Clothing Organisation

7 How strongly do you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 4 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
I enjoy having a well-organised wardrobe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I don't have time to organise my wardrobe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to have an organised wardrobe but I wouldn't know where to start	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having an organised wardrobe makes it easier to get dressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 6: Clothing Storage

8 How strongly do you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 11 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
I am a hoarder	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I store expensive clothing more carefully	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If a garment doesn't fit I keep it in hope of losing/gaining weight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is better for clothing to be used than sat in my wardrobe unworn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I forget about clothes I don't wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I hold onto clothing I don't wear 'just in case'	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is better for the environment to keep your clothes for a long time, even if you don't wear them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I feel guilty if I buy clothes and don't wear them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I keep clothing that I associate with good memories even if I don't wear them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would keep clothing that was a gift even if I did not wear it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would like to pass certain garments onto future generations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 7: Clothing Damage

Please note, clothing damage can include rips, stains, broken components, holes, etc.

9 How strongly do you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 6 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
My clothes get damaged a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I need my clothes to look smart and flawless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I separate my damaged clothing from the rest of my wardrobe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I tend to notice my clothing is damaged when doing the laundry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is wasteful to dispose of a garment because it is damaged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It would not occur to me to repair damaged clothes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 8: Clothing Repair

10 How strongly do you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 12 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree Strongly
I feel capable of repairing my clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The type of clothes I wear are easy to repair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would know how to repair a damaged garment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repairing clothes involves sewing, and this is something I enjoy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like repairing things generally	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have everything I need to repair my clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Some clothing repairs are too difficult for me to do myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would know where to go for a clothes repair service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know where to look for information on how to repair my clothes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repairing clothing is part of my routine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often forget to repair my clothing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would repair some garments, others are less important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 9: Clothing Repair

11 How strongly do you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 11 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
Repairing your clothes is good for the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The cost of clothing means it's not worth repairing a garment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would rather buy new clothes than repair old ones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more likely to repair an expensive garment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am more likely to repair a garment that holds a special memory for me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I really enjoy wearing a garment I would be more likely to repair it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14 / 19

If the repair is going to change how a garment looks I might not do it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repaired clothes do not look as smart	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Repairing my clothes means I buy less new clothing and save money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I repair things that I know cannot be easily replaced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I wouldn't bother repairing something that was out of fashion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page 10: Clothing Disposal

Please note, where the word 'disposal' is used this study it is referring to removal from the wardrobe regardless of the method of disposal

12 How strongly would you agree with the following statements?

Please don't select more than 1 answer(s) per row.

Please select exactly 16 answer(s).

	Agree strongly	Agree	Neither agree nor disagree	Disagree	Disagree strongly
I routinely clear out my wardrobe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I sort clothing for disposal when doing the laundry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If a garment were damaged I would dispose of it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I don't wear something I dispose of it pretty quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I dispose of clothes in order to make space for new things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry I will regret getting rid of clothing, even if I don't wear them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I get rid of clothing that is out of fashion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Making money from selling clothes encourages me to dispose of things I don't wear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know how to make money from my old clothes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy selling my old clothes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I don't have time to sell my old clothes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I would not donate an expensive item to charity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When I give my clothing to charity I expect that to be good for the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It's wrong to throw garment in the bin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It's convenient for me to donate to charity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I am aware of a clothes swap local to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Page 11: Thank You

You have now completed the questionnaire. Thank you for taking part.

8.6 Appendix 6: Participant consent sheet



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Wardrobe Study (Wardrobe Audit)

Participant Consent Form

You have volunteered to take part in the Wardrobe Study wardrobe audit. Thank you. Before you commit to participating it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully, and discuss it with others if you wish. Please ask if anything is unclear or if you would like more information.

Activity consents

I understand that I have given my consent for the following to take place:

- To record selected contents of my wardrobe in a wardrobe audit that will involve completing a worksheet (instructions will be provided) in my own time
- To take part in an informal interview regarding my clothing with the primary researcher, and for this discussion to be audio recorded

Data Consents

I understand that I have given approval for my audit and images of my garments to be held, stored, used, published and exhibited by the Jade Smith, and that they may be used in future research, reports, publications and exhibitions.

I understand that my name and personal details will remain strictly confidential throughout this research project.

It has been explained to me what will happen to the data once the data has been gathered. I understand that the data will be shared with limited third parties in order to facilitate the printing, publishing and exhibiting of the findings.

Statements of understanding

I have read the information sheet about the wardrobe study, which I have volunteered to take part in, and have been given a copy of this information sheet to keep.

I have understood what is going to happen and why it is being done and I have been given the opportunity to discuss the details and questions.

Right of withdrawal

Having given this consent I understand that I have the right to withdraw from the participatory process at any time without disadvantage to myself and without having to give any reason.

Statement of consent

I hereby fully and freely consent to participation in the wardrobe study, the details of which have been fully explained to me. I am 16 years old or older.

Participant's name (BLOCK CAPITALS):			
Participant's signature:		Date:	
Name of person taking consent (if different from principle investigator)			

(BLOCK CAPITALS):			
Signature of person taking consent: <i>(if different from principle investigator)</i>		Date:	
Principal investigator's name (BLOCK CAPITALS):			
Principle investigator's signature:		Date:	

Participants Record

A duplicate copy of the signed consent form will be given to you to keep for your own records.

8.7 Appendix 7: Participant information sheet



UNIVERSITY OF LEEDS

Wardrobe Study (Wardrobe Audit)

Project Information Sheet

You have volunteered to take part in a Wardrobe Study wardrobe audit. Thank you. Before you commit to participating it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully, and discuss it with others if you wish. Please ask if anything is unclear or if you would like more information.

Purpose of the Wardrobe Study

- To identify categories of clothing in relation to the length of time they are kept in women's wardrobes
- To examine the wearer's relationship with these garments

What are my rights as a participant?

Participation in this research is voluntary and you may discontinue participation at any time, and withdraw from the process, without prejudice.

If you decide to take part in this research, you will be given this information sheet to keep and be asked to sign a consent form.

What will happen if I take part?

- You will be asked to record selected contents of your wardrobe in a wardrobe audit that will involve completing a worksheet (instructions will be provided) in your own time at home
- You will be asked to take part in an informal interview regarding your clothing with the primary researcher, and this discussion will be audio recorded

Are there any potential risks in taking part?

The risks are very low. But the process will require you to give up an agreed amount of time which may be a little inconvenient.

Will my participation be kept confidential?

As part of the consent process, we will need to record your name. This will be kept strictly confidential and will not be shared with any other party. You will not be identified by name in any publication or exhibition of the research project findings. The primary researcher will also need to temporarily record the details of your address, after the audit this information will be deleted.

We ask that you give us consent to hold, store, use, reproduce, and disseminate your comments gathered by us during the participation process. We also ask that you agree to us passing them to a third party to make print-ready, print and disseminate. All information held in digital files will be stored on a secure server. Information held on paper will be stored in a locked filing cabinet.

What will happen to the wardrobe audit research?

The research results will be used in Jade Smith's PhD thesis. It may also be used for subsequent research, publications and exhibitions.

Who is organising and funding the research?

This research is being undertaken by Jade Smith as part of a PhD at the University of Leeds. Jade is funded by a University of Leeds fashion department scholarship.

Contact for further information about the research.

Jade Smith 07753289145 Email j.whitson-smith@hotmail.com

8.8 Appendix 8: Wardrobe study sample data

Descriptions for participants involved in wardrobe study

User Code	Age Group	Working Status	Annual Income	Clothing Purchase	Environment Segment
WS-P1	60-64	Retired	Under £10,000	At least 4 times a year	Honestly Disengaged
WS-P2	18-24	Non Working	-	Once a month	Waste Watcher
WS-P3	35-39	Full Time	£45-50,000	Once a month	Positive Green
WS-P4	30-34	Full Time	£25-30,000	At least once a week	Positive Green
WS-P5	35-39	Full Time	-	At least 4 times a year	Positive Green
WS-P6	35-39	Full Time	£40-45,000	At least once a fortnight	Positive Green
WS-P7	40-44	Part Time	Under £10,000	Once a month	Sideline Supporter
WS-P8	40-44	Full Time	£20-25,000	At least two times a year	Honestly Disengaged
WS-P9	18-24	Student	£10-15,000	Once a month	Positive Green
WS-P10	30-34	Full Time	£35-40,000	At least two times a year	Cautious Participant
WS-P11	25-29	Full Time	£20-25,000	At least once a fortnight	Concerned consumer
WS-P12	35-39	Full Time	£25-30,000	At least four times a year	Sideline Supporter
WS-P13	30-34	Full Time	-	At least four times a year	Concerned consumer
WS-P14	18-24	Student	Under £10,000	Once a month	Concerned consumer
WS-P15	18-24	Student	Under £10,000	Once a month	Positive Green
WS-P16	35-39	Full Time	£25-30,000	Once a month	Positive Green
WS-P17	25-29	Part time/ part time student	Under £10,000	At least 4 times a year	Positive Green

8.9 Appendix 9: Online survey sample data

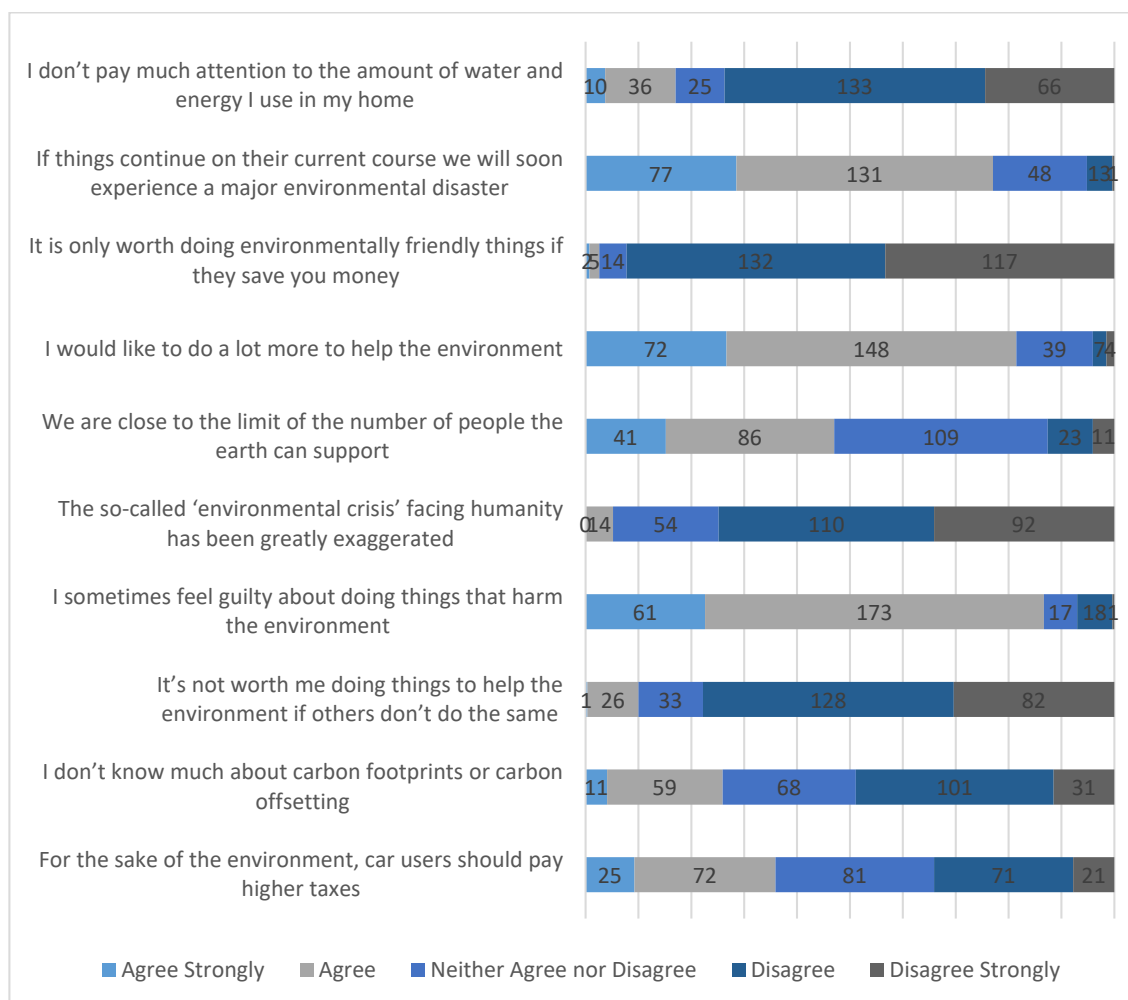
Online Survey Sample Data

No. of participants in each age group										
18-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-75
42	32	42	38	34	25	21	19	11	4	2

No. of participants in each working status group					
Working full time	Working part time	Studying full time	Studying part time	Non-working	Prefer not to say
150	57	37	11	33	3

No. of participants in each annual income group										
Under £10,000	£10,000-£15,000	£15,000-£20,000	£20,000-£25,000	£25,000-£30,000	£30,000-£35,000	£35,000-£40,000	£40,000-£45,000	£45,000-£50,000	£50,000+	Prefer not to say
62	35	25	36	36	14	17	9	8	8	20

8.10 Appendix 10: Online survey participant environmental attitude



	Mean	Standard Deviation
<i>I don't pay much attention to the amount of water and energy I use in my home</i>	3.8	1.07
<i>If things continue on their current course we will soon experience a major environmental disaster</i>	2.0	0.83
<i>It is only worth doing environmentally friendly things if they save you money</i>	4.3	0.72
<i>I would like to do a lot more to help the environment</i>	2.0	0.80
<i>We are close to the limit of the number of people the earth can support</i>	2.5	0.98
<i>The so-called 'environmental crisis' facing humanity has been greatly exaggerated</i>	4.0	0.86
<i>I sometimes feel guilty about doing things that harm the environment</i>	2.0	0.77
<i>It's not worth me doing things that help the environment if others don't do the same</i>	4.0	0.92
<i>I don't know much about carbon footprints or carbon offsetting</i>	3.3	1.06
<i>For the sake of the environment, car users should pay higher taxes</i>	3.0	1.10

8.11 Appendix 11: Online survey results



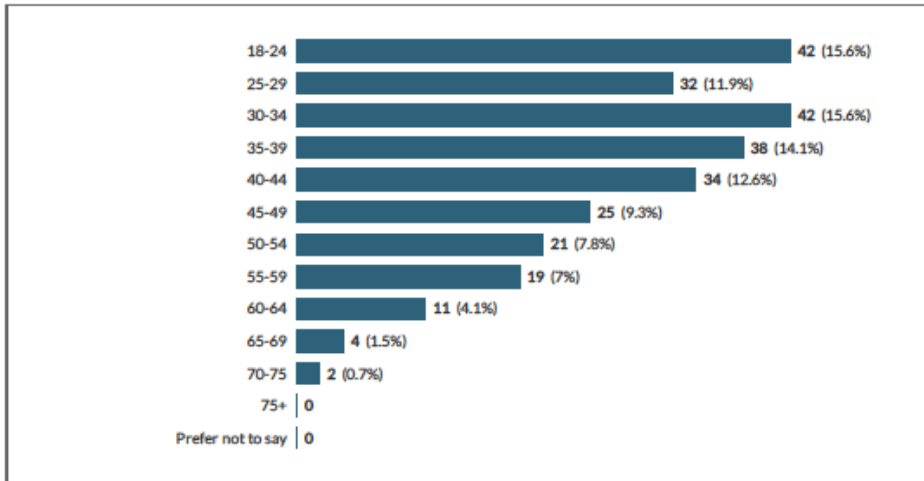
Clothing Use Study

Showing 270 of 270 responses

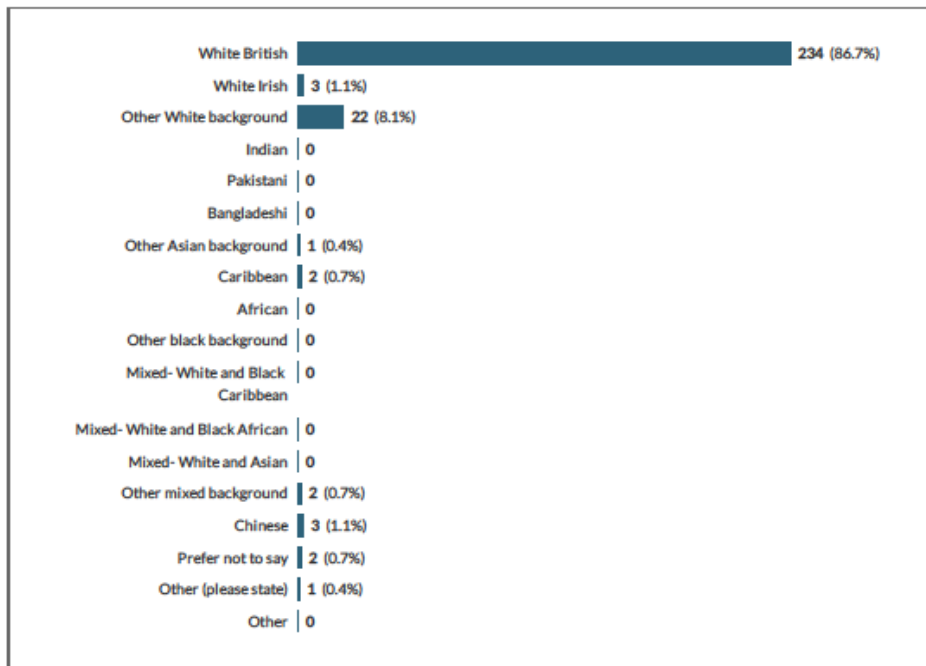
Showing all responses

Showing all questions

1 How old are you?



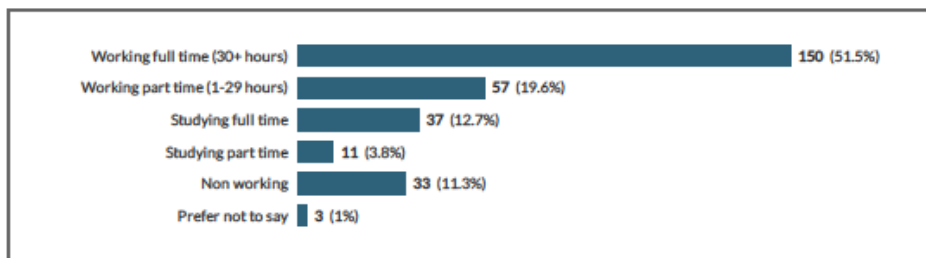
2 Which of these best describes your ethnic background?



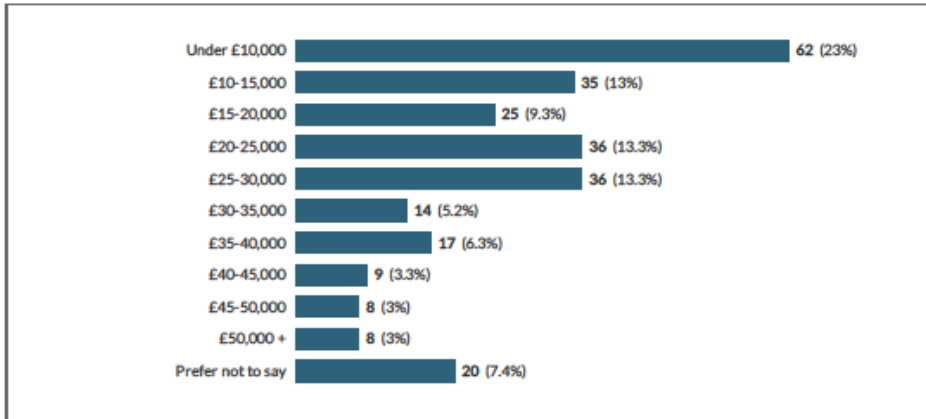
2.a If you selected Other, please specify:

No responses

3 What is your working status?

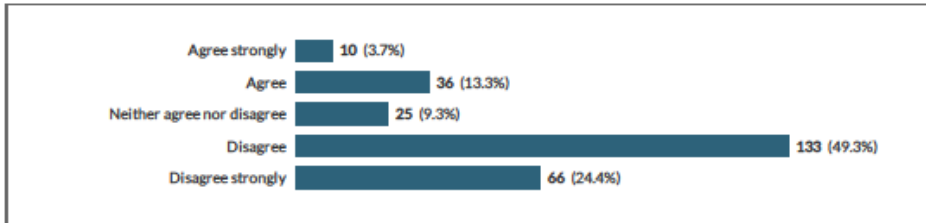


4 What is your annual income?

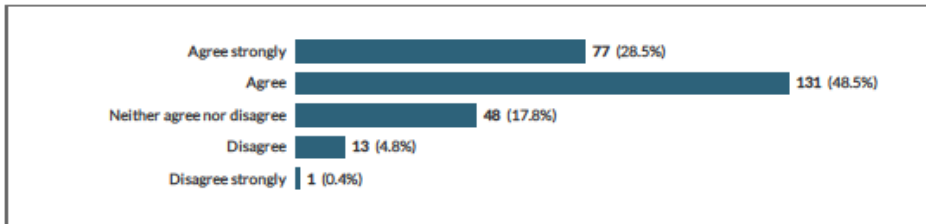


5 How strongly do you agree or disagree with the following statements?

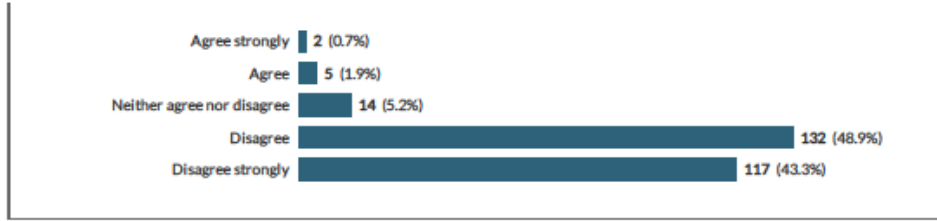
5.1 I don't pay much attention to the amount of water and energy I use in my home



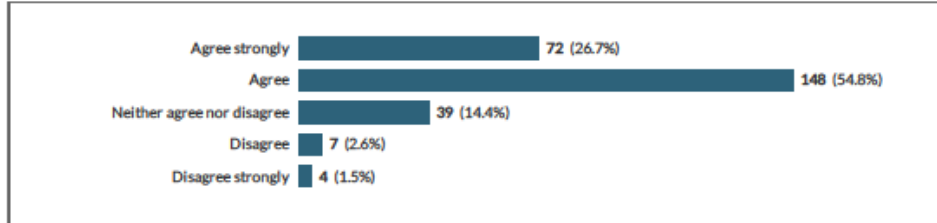
5.2 If things continue on their current course we will soon experience a major environmental disaster



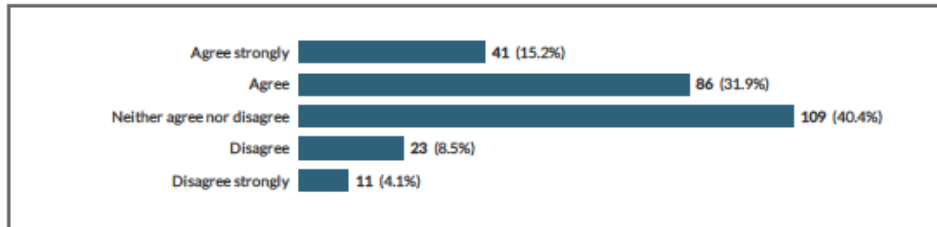
5.3 It is only worth doing environmentally friendly things if they save you money



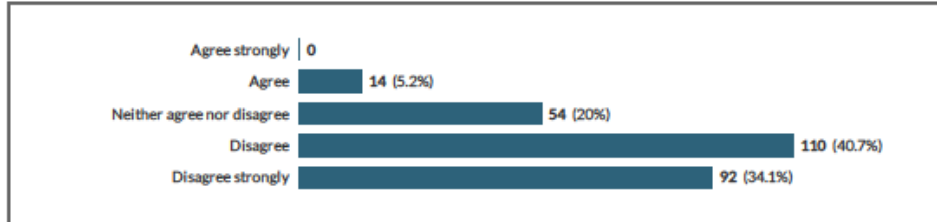
5.4 I would like to do a lot more to help the environment



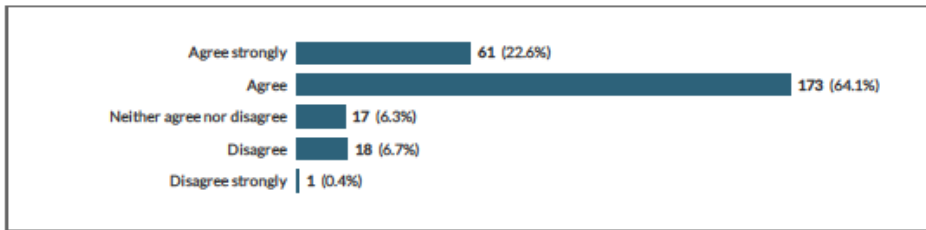
5.5 We are close to the limit of the number of people the earth can support



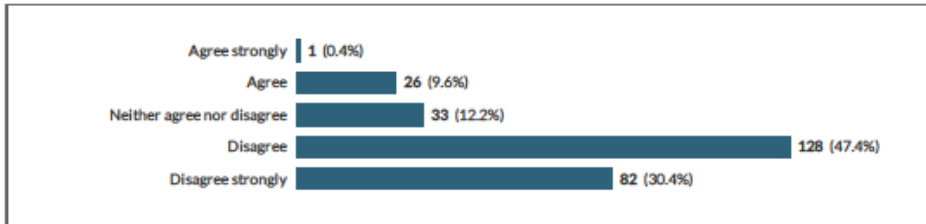
5.6 The so-called 'environmental crisis' facing humanity has been greatly exaggerated



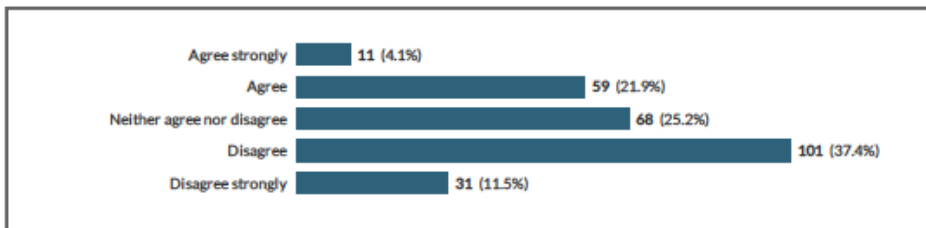
5.7 I sometimes feel guilty about doing things that harm the environment



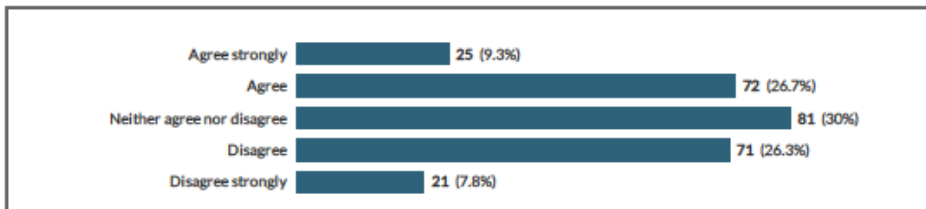
5.8 It's not worth me doing things to help the environment if others don't do the same



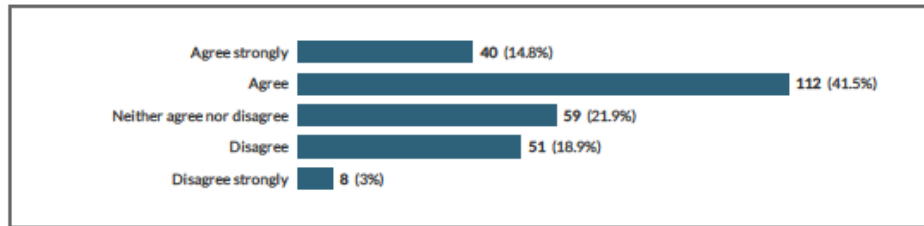
5.9 I don't know much about carbon footprints or carbon offsetting



5.10 For the sake of the environment, car users should pay higher taxes

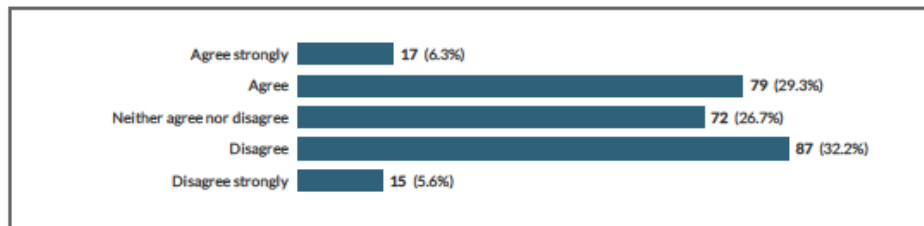


5.11 I know how to behave sustainably with my clothing

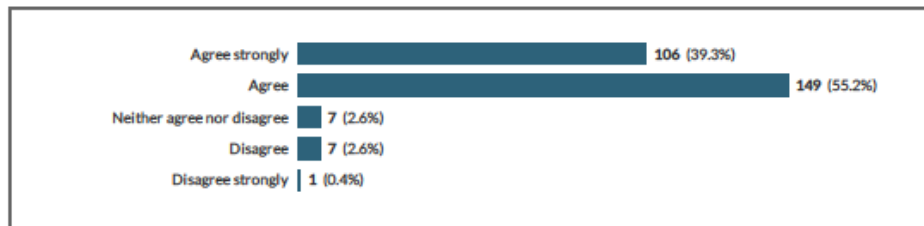


6 How strongly do you agree or disagree with the following statements?

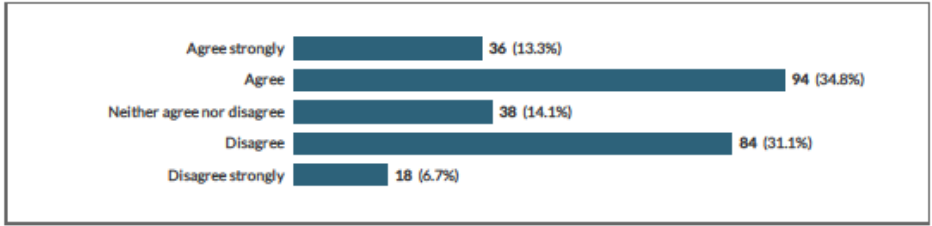
6.1 I try to buy clothing for a specific activity or occasion



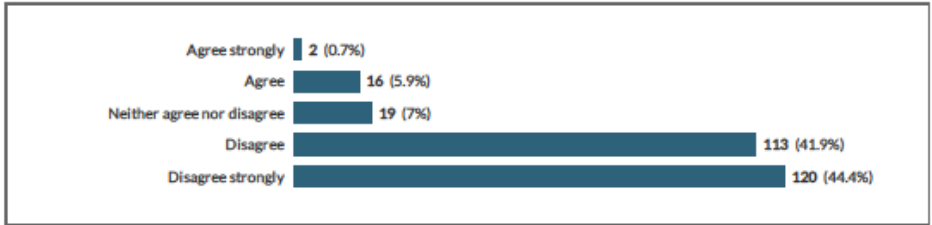
6.2 I prefer clothing I can use for lots of different occasions



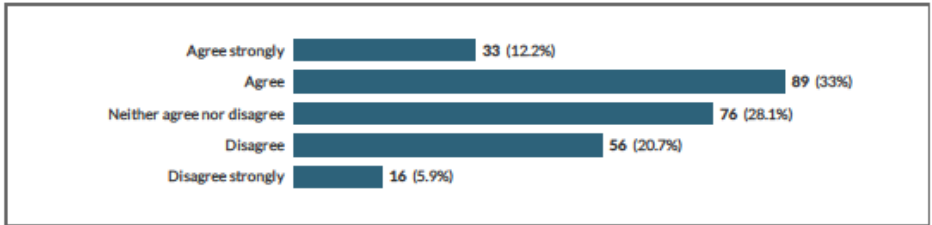
6.3 My more expensive clothing only gets worn if it is a special occasion



6.4 I would not wear a garment if I thought it was out of fashion

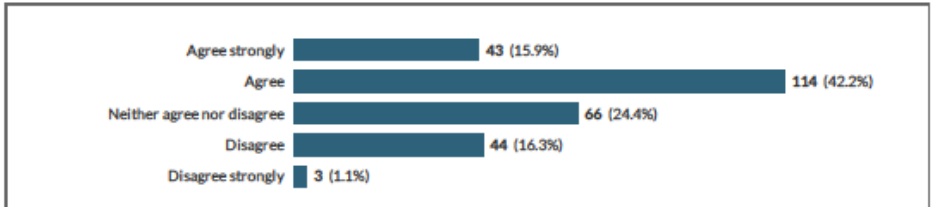


6.5 I enjoy sharing clothes with friends or family

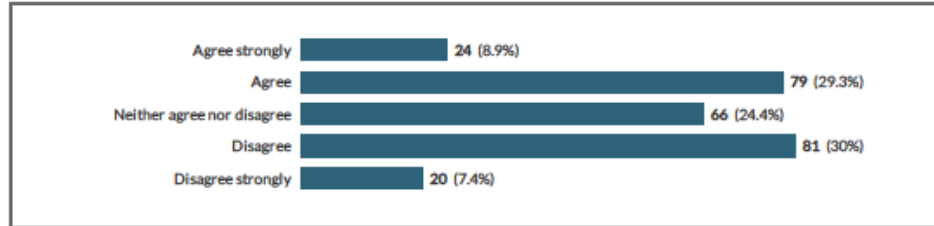


7 How strongly do you agree with the following statements?

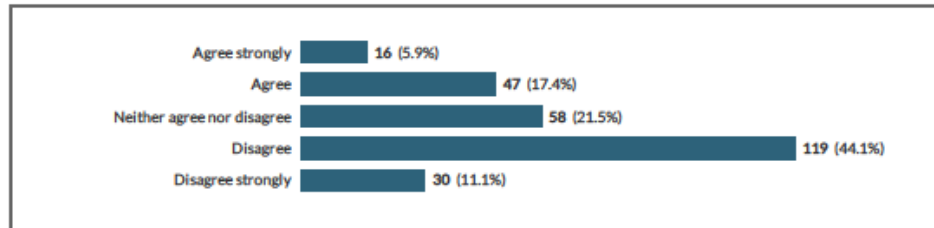
7.1 I enjoy having a well-organised wardrobe



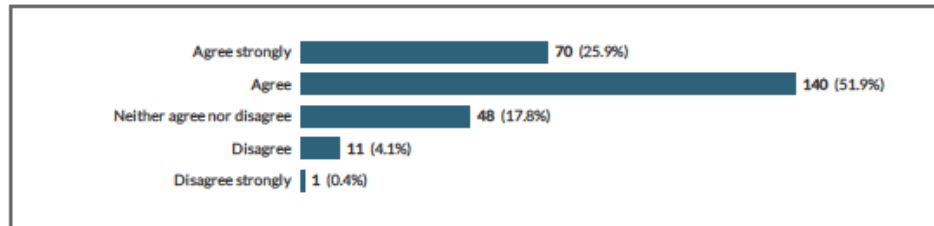
7.2 I don't have time to organise my wardrobe



7.3 I would like to have an organised wardrobe but I wouldn't know where to start

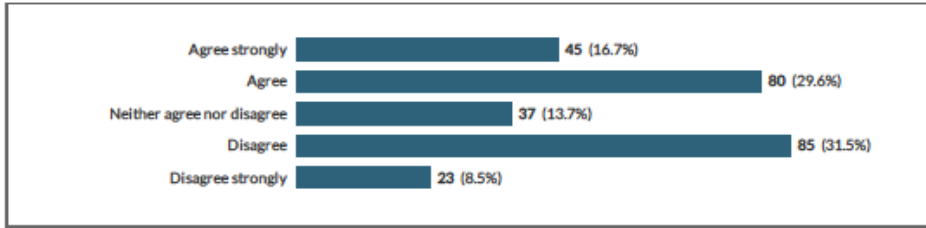


7.4 Having an organised wardrobe makes it easier to get dressed

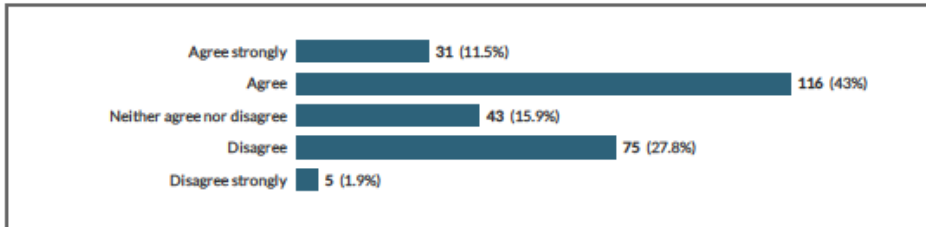


8 How strongly do you agree with the following statements?

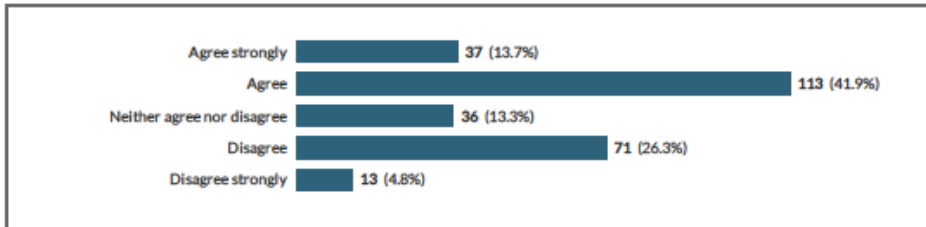
8.1 I am a hoarder



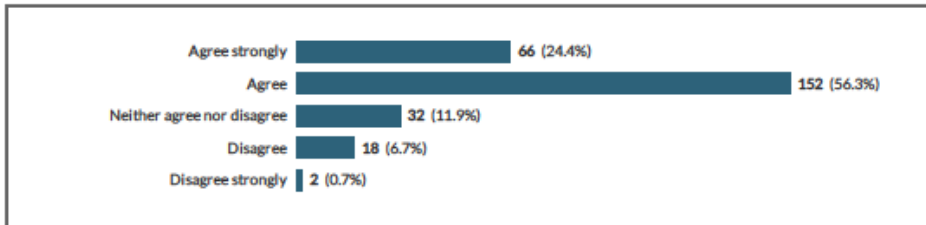
8.2 I store expensive clothing more carefully



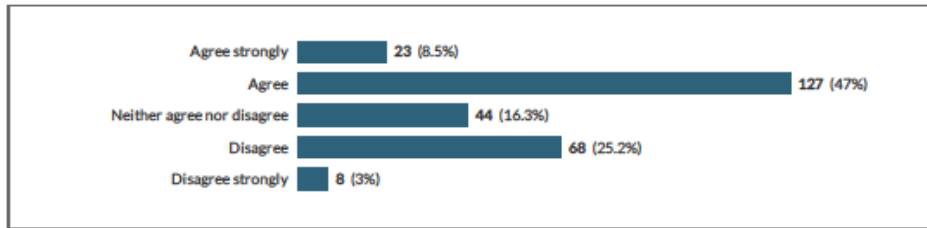
8.3 If a garment doesn't fit I keep it in hope of losing/gaining weight



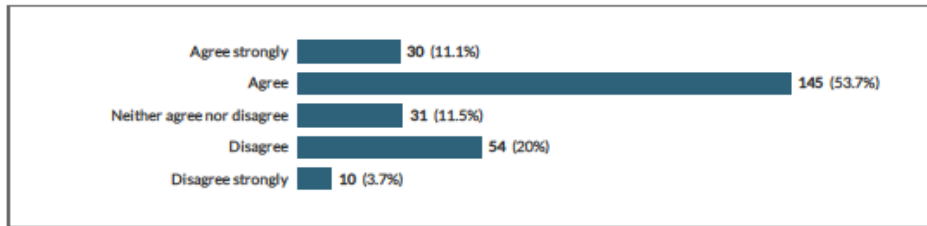
8.4 It is better for clothing to be used than sat in my wardrobe unworn



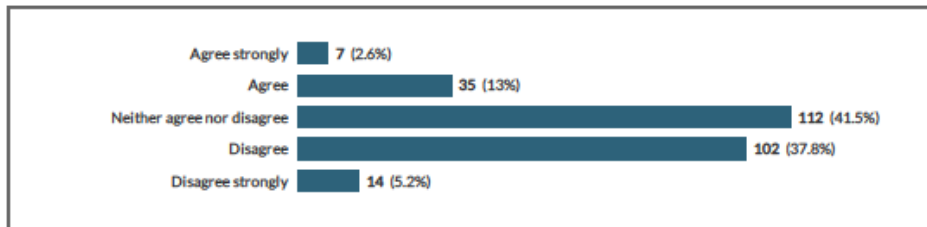
8.5 I forget about clothes I don't wear



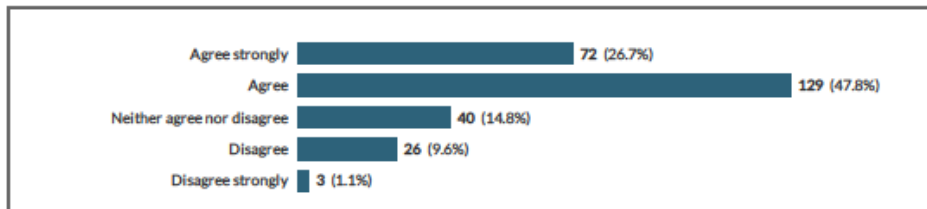
8.6 I hold onto clothing I don't wear 'just in case'



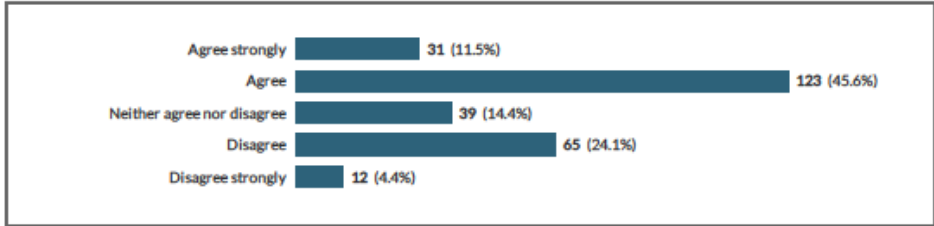
8.7 It is better for the environment to keep your clothes for a long time, even if you don't wear them



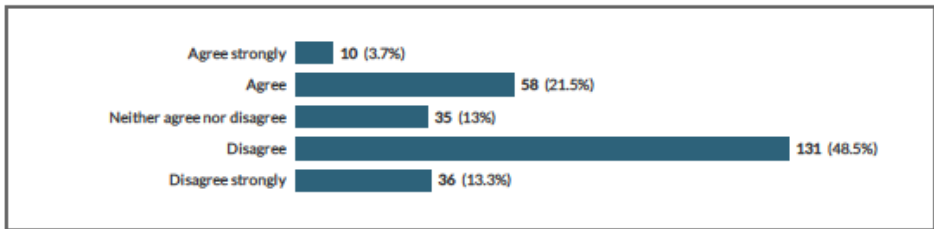
8.8 I feel guilty if I buy clothes and don't wear them



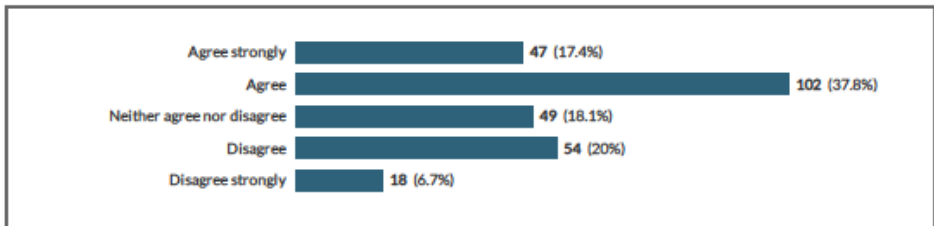
8.9 I keep clothing that I associate with good memories even if I don't wear them



8.10 I would keep clothing that was a gift even if I did not wear it

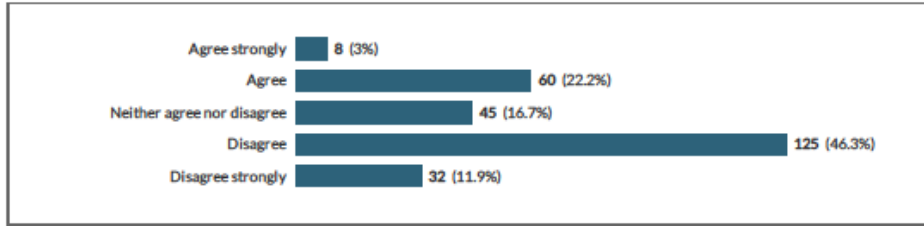


8.11 I would like to pass certain garments onto future generations

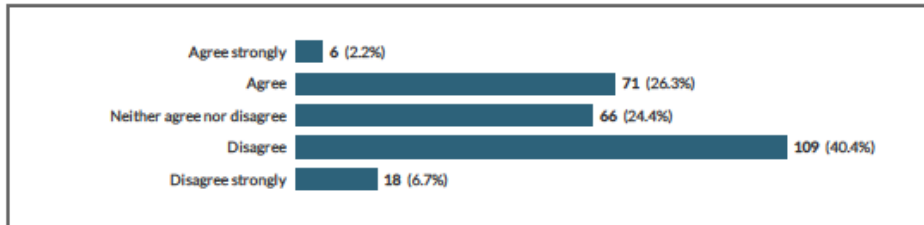


9 How strongly do you agree with the following statements?

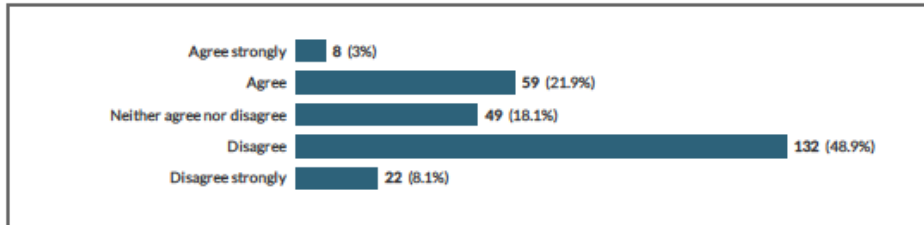
9.1 My clothes get damaged a lot



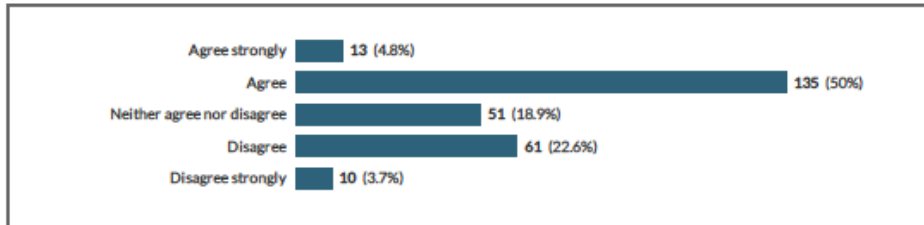
9.2 I need my clothes to look smart and flawless



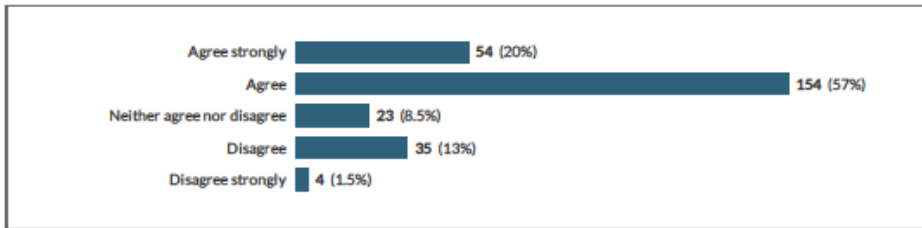
9.3 I separate my damaged clothing from the rest of my wardrobe



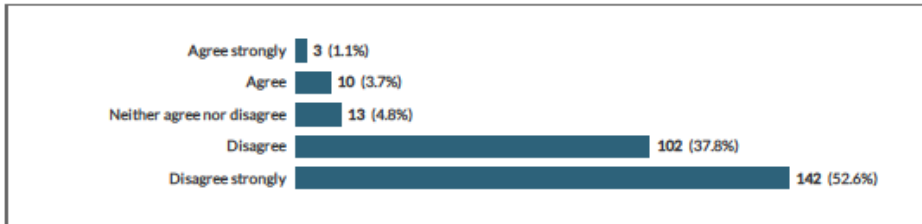
9.4 I tend to notice my clothing is damaged when doing the laundry



9.5 It is wasteful to dispose of a garment because it is damaged

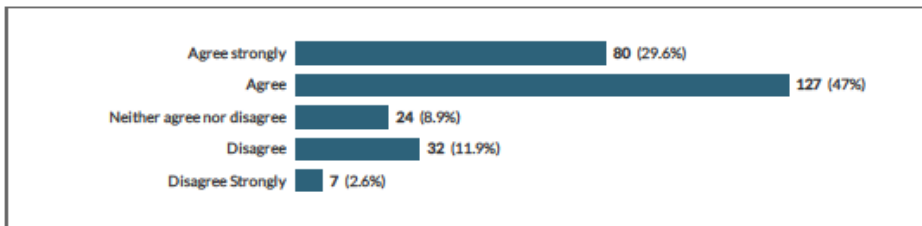


9.6 It would not occur to me to repair damaged clothes

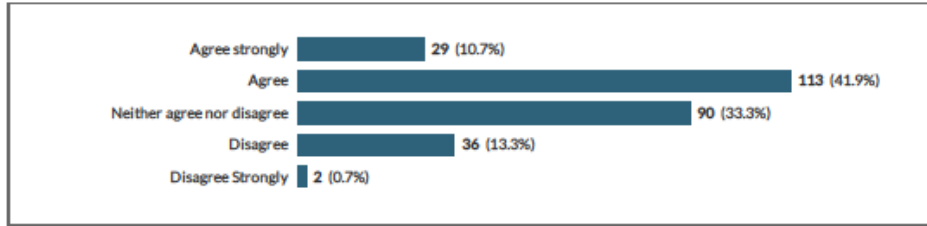


10 How strongly do you agree with the following statements?

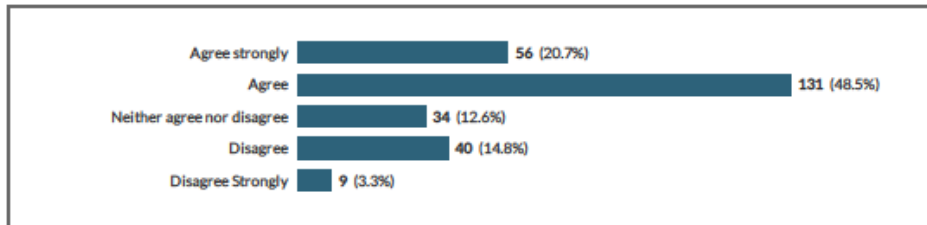
10.1 I feel capable of repairing my clothing



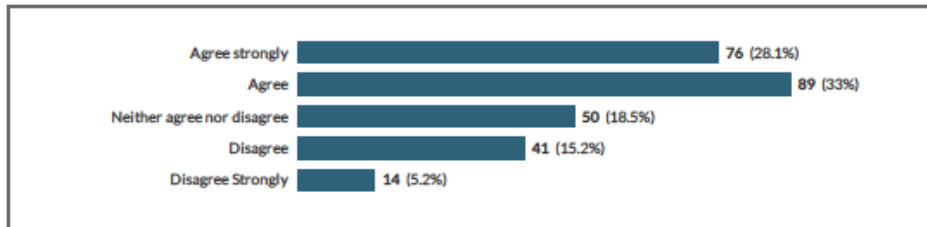
10.2 The type of clothes I wear are easy to repair



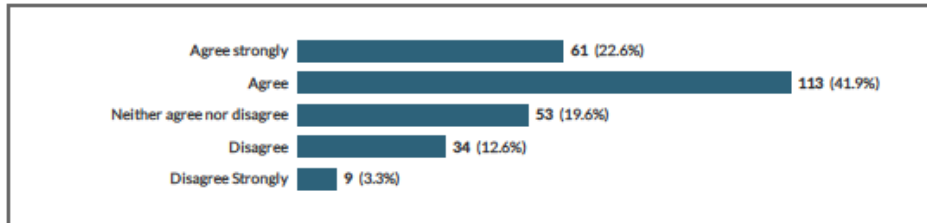
10.3 I would know how to repair a damaged garment



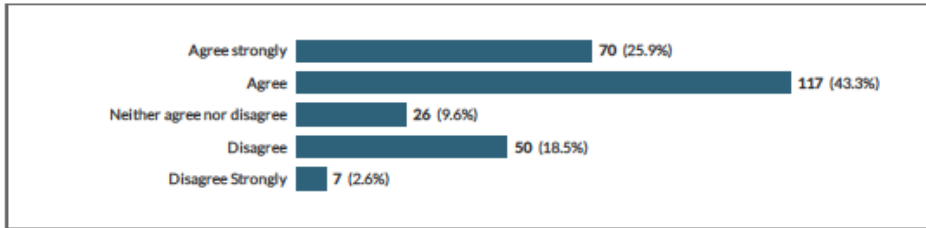
10.4 Repairing clothes involves sewing, and this is something I enjoy



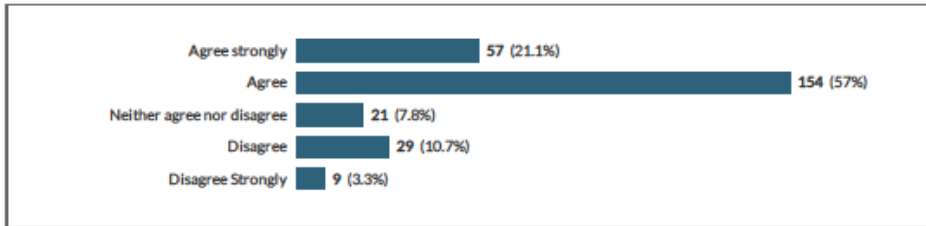
10.5 I like repairing things generally



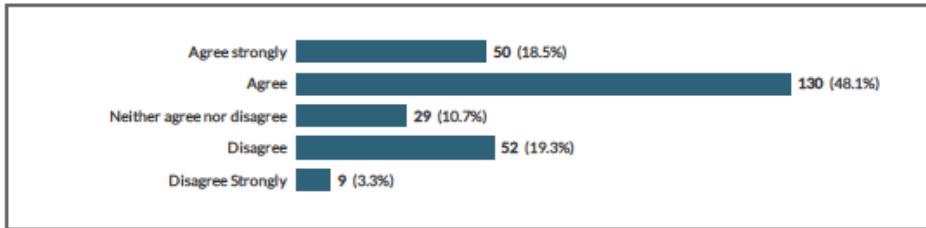
10.6 I have everything I need to repair my clothing



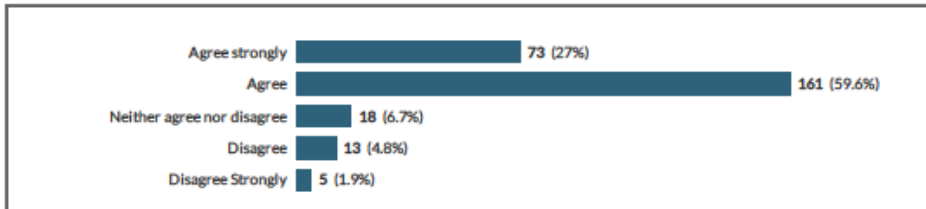
10.7 Some clothing repairs are too difficult for me to do myself



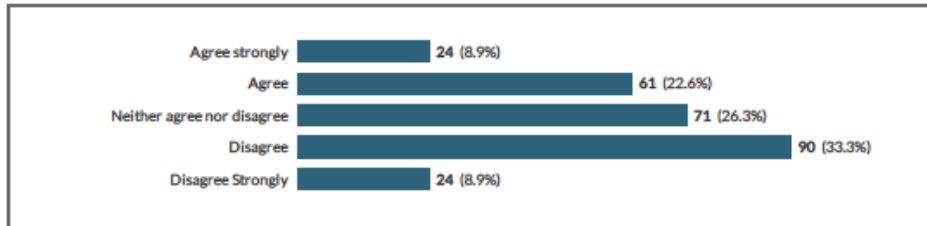
10.8 I would know where to go for a clothes repair service



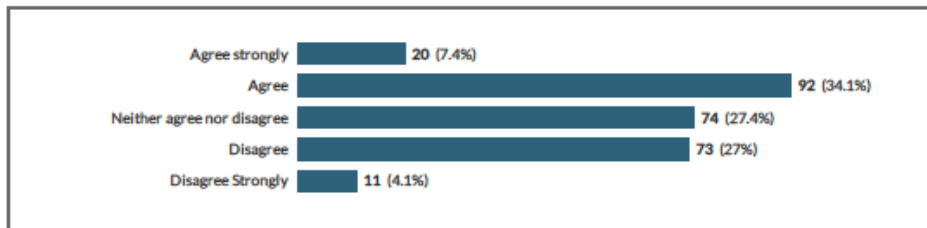
10.9 I know where to look for information on how to repair my clothes



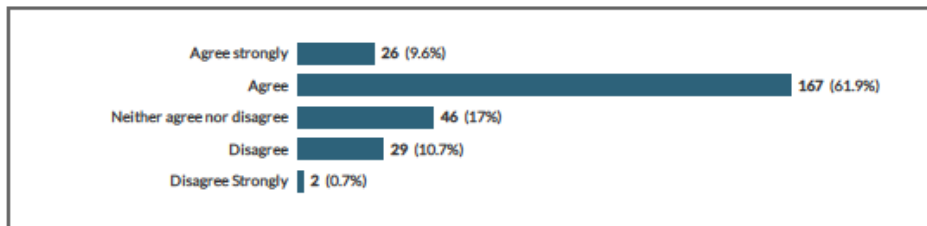
10.10 Repairing clothing is part of my routine



10.11 I often forget to repair my clothing

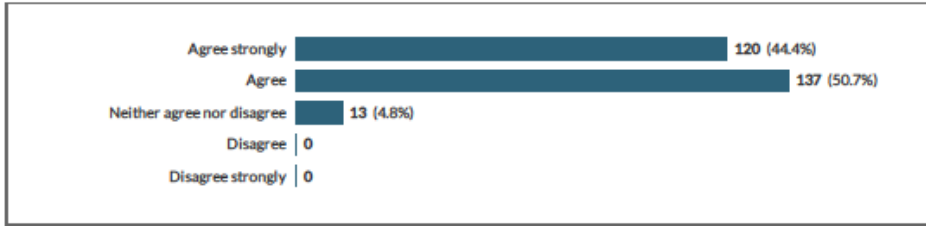


10.12 I would repair some garments, others are less important

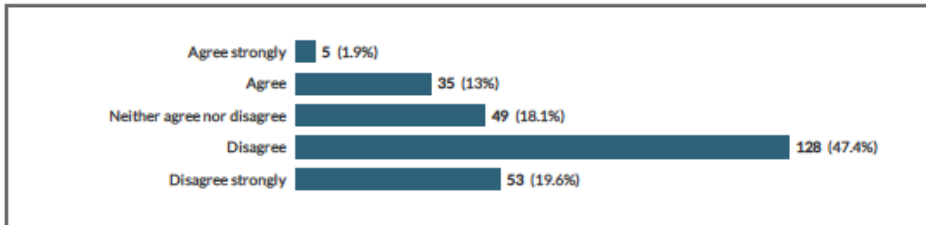


11 How strongly do you agree with the following statements?

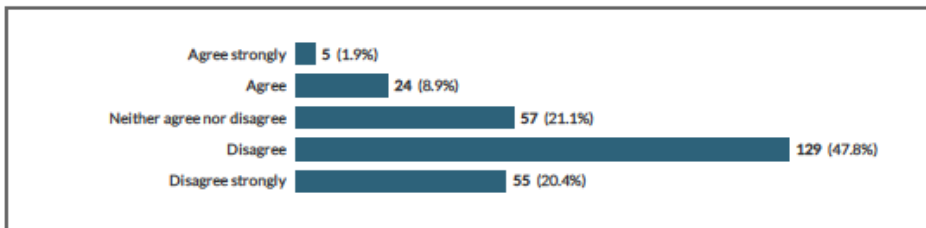
11.1 Repairing your clothes is good for the environment



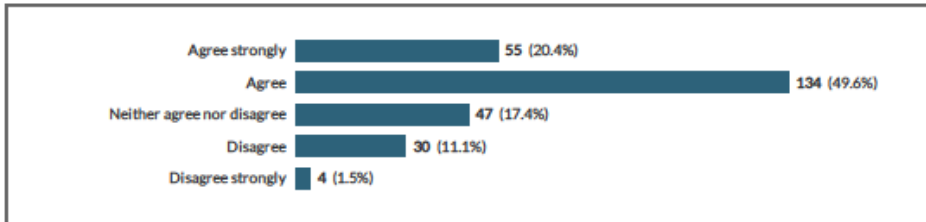
11.2 The cost of clothing means it's not worth repairing a garment



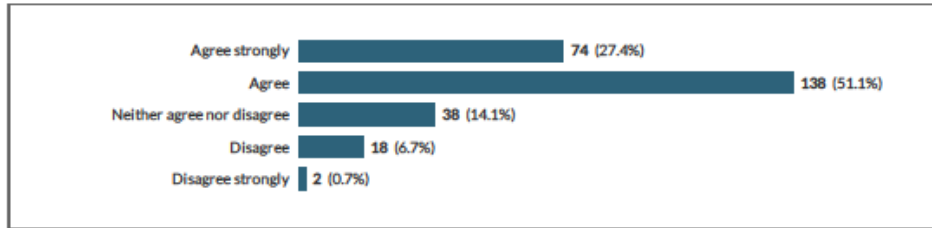
11.3 I would rather buy new clothes than repair old ones



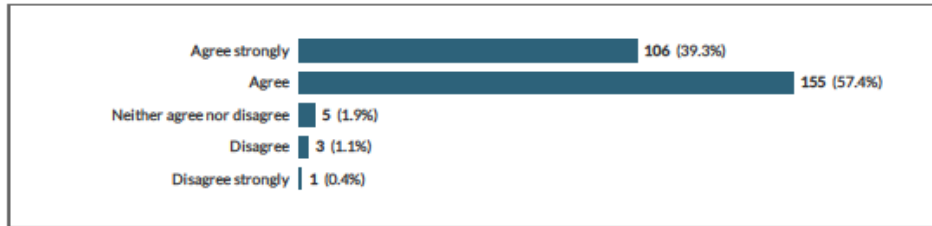
11.4 I am more likely to repair an expensive garment



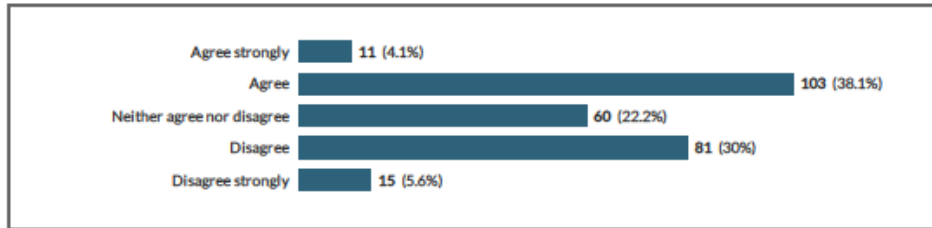
11.5 I am more likely to repair a garment that holds a special memory for me



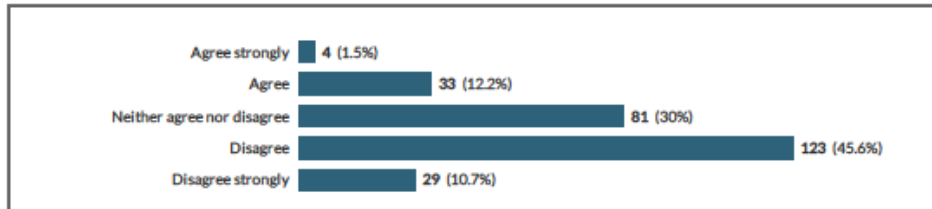
11.6 If I really enjoy wearing a garment I would be more likely to repair it



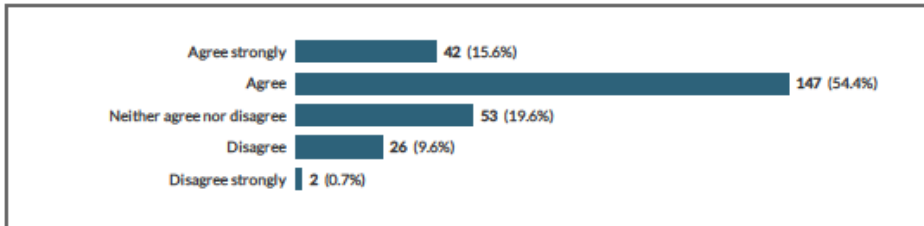
11.7 If the repair is going to change how a garment looks I might not do it



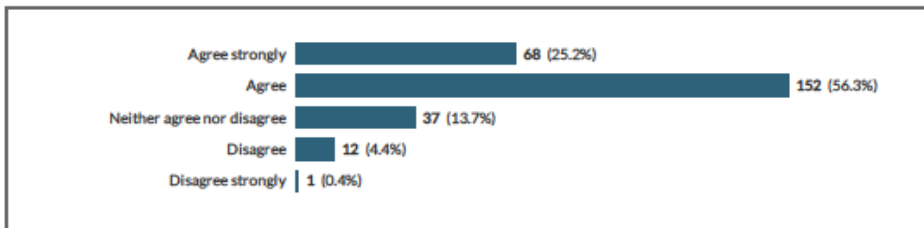
11.8 Repaired clothes do not look as smart



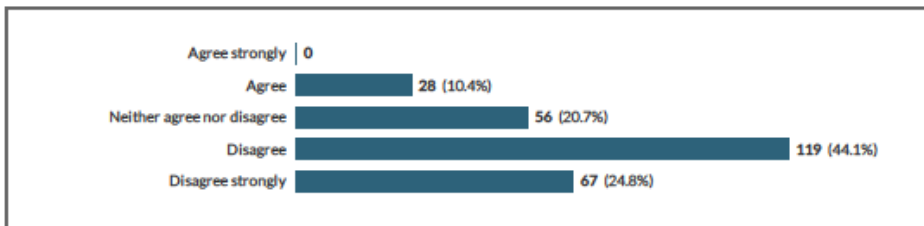
11.9 Repairing my clothes means I buy less new clothing and save money



11.10 I repair things that I know cannot be easily replaced

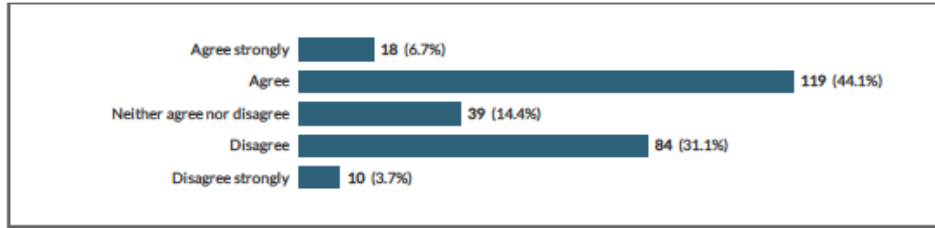


11.11 I wouldn't bother repairing something that was out of fashion

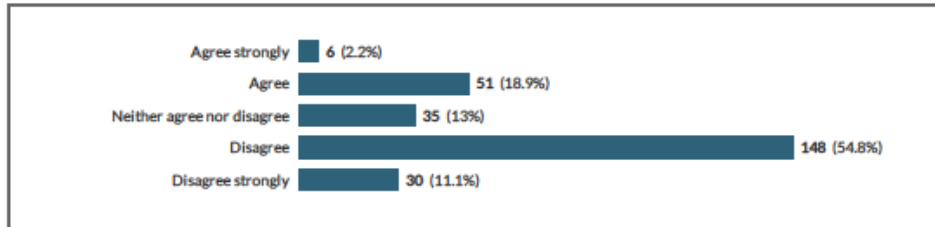


12 How strongly would you agree with the following statements?

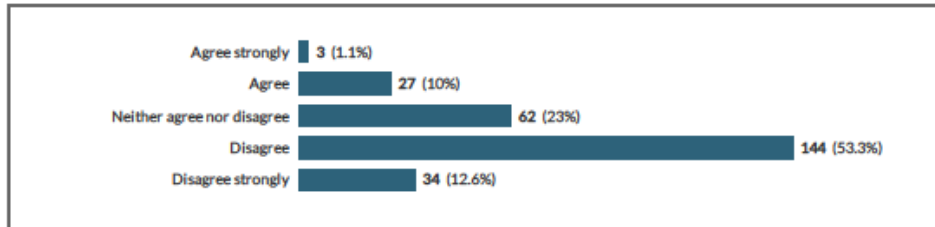
12.1 I routinely clear out my wardrobe



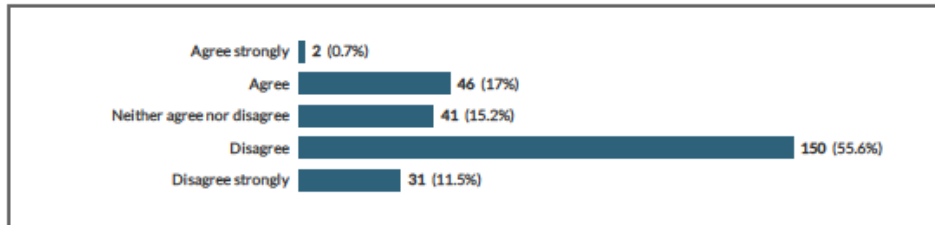
12.2 I sort clothing for disposal when doing the laundry



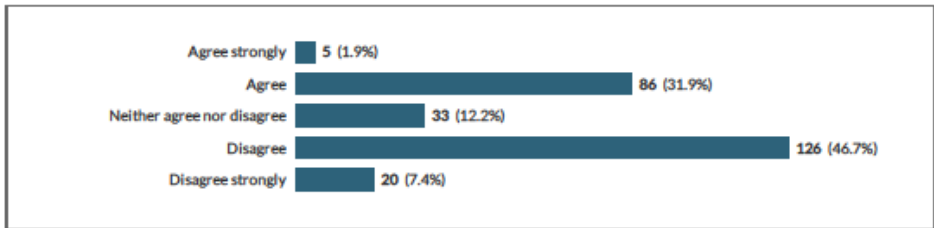
12.3 If a garment were damaged I would dispose of it



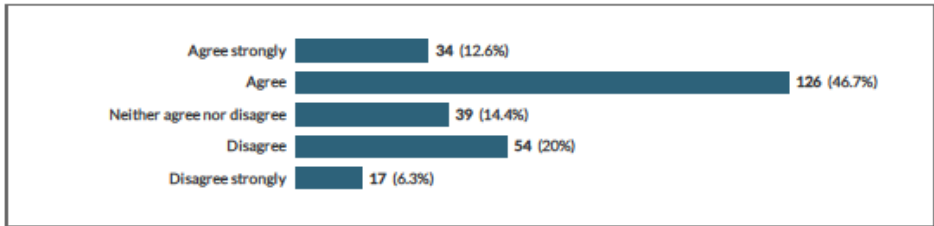
12.4 If I don't wear something I dispose of it pretty quickly



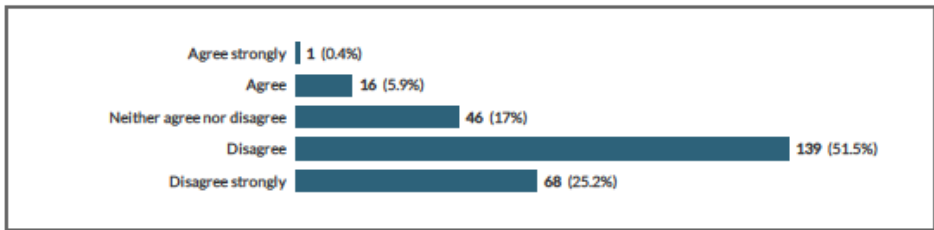
12.5 I dispose of clothes in order to make space for new things



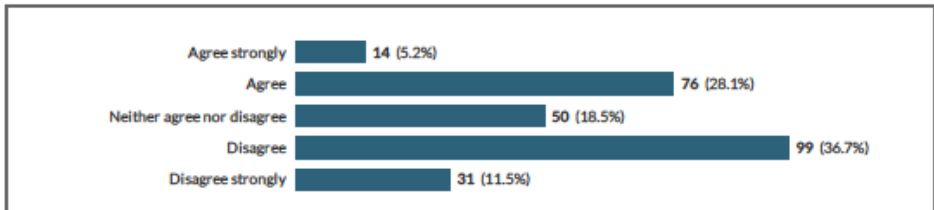
12.6 I worry I will regret getting rid of clothing, even if I don't wear them



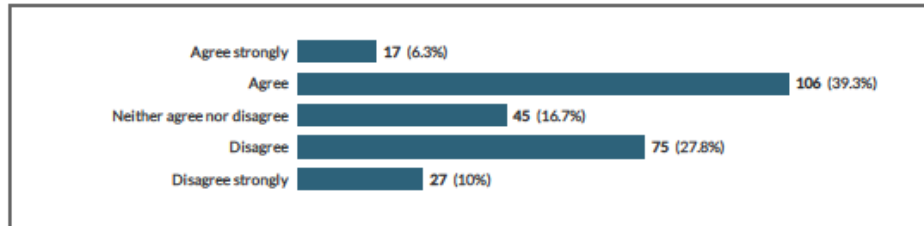
12.7 I get rid of clothing that is out of fashion



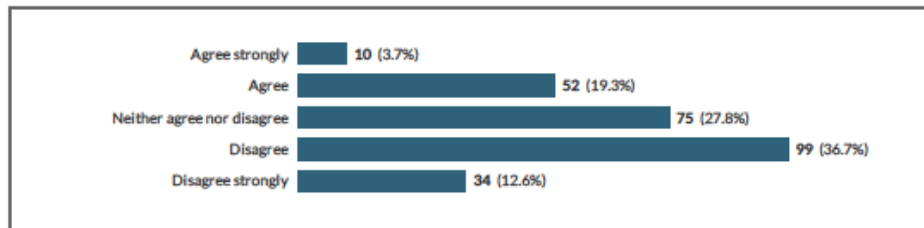
12.8 Making money from selling clothes encourages me to dispose of things I don't wear



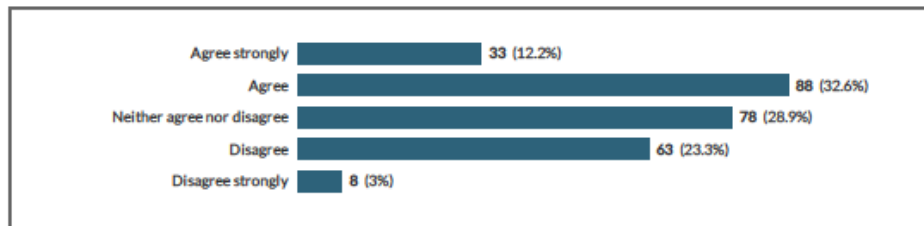
12.9 I know how to make money from my old clothes



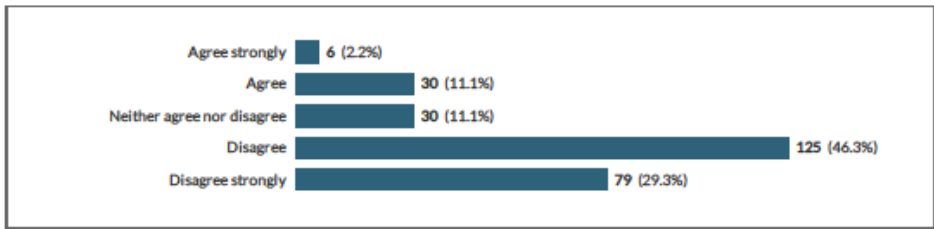
12.10 I enjoy selling my old clothes



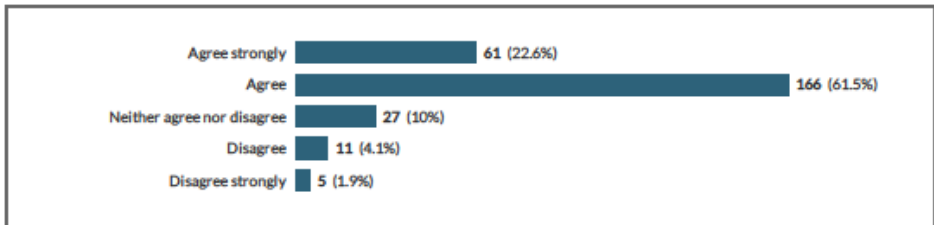
12.11 I don't have time to sell my old clothes



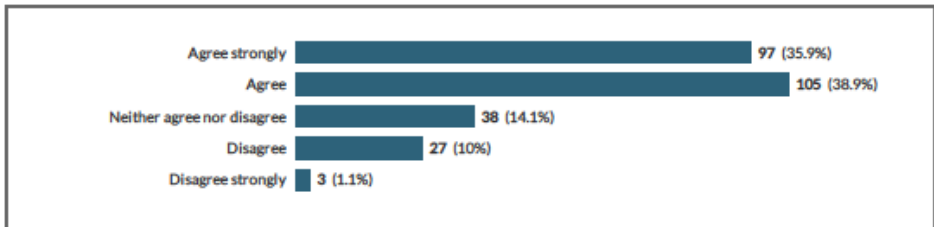
12.12 I would not donate an expensive item to charity



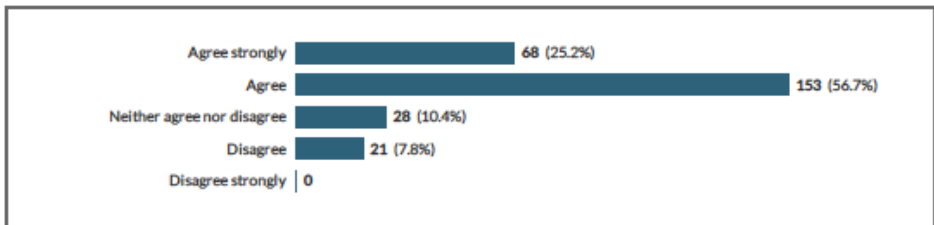
12.13 When I give my clothing to charity I expect that to be good for the environment



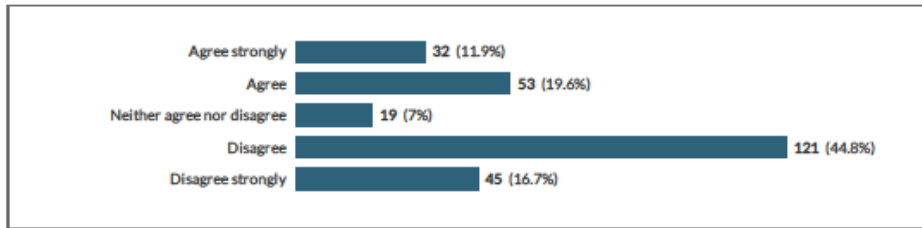
12.14 It's wrong to throw garment in the bin



12.15 It's convenient for me to donate to charity



12.16 I am aware of a clothes swap local to me



8.12 Appendix 12: Behaviour change strategy toolkit

This appendix explores the idea of utilising the findings of this thesis to develop a toolkit. The toolkit is intended to generate and develop strategies for promoting environmentally desirable behaviours. Within sustainable fashion the predominant approach to changing behaviour has been the design of new garments. However, this thesis has identified, through the modelling of behaviour, the limited impact of this approach. Existing sustainable fashion toolkits, such as the TED textiles toolkit (TED, no date), have also focused predominantly on the design of physical garments. Here, an alternative to this approach has been proposed.

The behaviour change strategy toolkit has been developed using the motivations for, and barriers to, environmentally desirable garment use behaviours. The four behaviours that the toolkit aims to promote are:

- Wearing garments for longer
- Extending the life of garments through repair
- Shifting ownership inactive clothing, rather than participating in long-term storage
- Discarding of used garments through reuse channels where possible, but otherwise recycling channels

In the development of a field, it is useful to look to other disciplines for guidance on how new approaches can be developed. This toolkit uses a Community-Based Social Marketing (CBSM) approach. Community-Based Social Marketing for a method for applying consumer understanding into behaviour change strategy; this allows consideration of how the knowledge generated by this thesis could be applied. Garment behaviours are influenced by a very personal set of circumstances, yet some factors have been identified as having the potential for use in behaviour change strategy.

Community Based Social Marketing

The principles of Community-Based Social Marketing were used to develop the toolkit. Social marketing promotes ideas and behaviours rather than material products (Geller, 1989). The focus of CBSM is reducing barriers to and promoting benefits of, environmentally desirable behaviour (McKenzie-Mohr and Schultz, 2014). In social marketing, the emphasis is on understanding barriers to behaviour and targeting specific segments of society (McKenzie-Mohr, 2000). CBSM does not employ punitive tools or deterrents to behaviours. Punitive behaviour change strategies would not be appropriate for garment consumption behaviours for two reasons; the scale of the environmental impact of garment consumption is not large enough to advocate a punitive approach, and public understanding of environmentally

desirable garment consumption behaviour is not extensive enough to punish those who do not partake in those behaviours. An intermediary approach, that focuses on the benefits to the individual, is needed to begin to change behaviour.

There are five steps to CBSM; which are outlined in Table 8-1 along with their application in this research.

Table 8-1 *The five steps of CBSM (McKenzie-Mohr and Schultz, 2014), and how these steps have been applied to this research*

1. Selecting behaviours to target for change	Identified in Chapter 2 (Literature Review)
2. Identifying barriers and benefits to these behaviours	Identified in Chapters 4 (Results)
3. Designing strategy to respond to barriers and benefits of behaviours, using behaviour change tools	Identified in Appendix 12 (Behaviour Change Strategy Toolkit)
4. Piloting	Potential for future work
5. Evaluation	Potential for future work

Tools for promoting behaviour change through social marketing include **commitment, social diffusion, goal setting, social norms, prompts, incentive, feedback** and **convenience** (McKenzie-Mohr and Schultz, 2014).

Commitment can be a useful tool for behaviours where there is an attitude-behaviour gap, and the individual already has the intention to engage in the behaviour. Commitment involves making some kind of pledge to undertake the behaviour. Commitment has been shown to be effective in changing behaviour due to its relationship with self-perception (Bem, 1972). Once an individual has committed to a behaviour, they begin to perceive themselves as the type of person who would undertake that behaviour. To not undertake the behaviour would then contradict their self-perception. Commitments made publicly are even more effective as they make individuals include public perceptions of themselves and their behaviour. Commitment has been shown to be an effective behaviour change tool across disciplines and has been effective even when barriers to behaviours are high (McKenzie-Mohr and Schultz, 2014).

Social diffusion occurs when individuals adopt a behaviour because others in their social networks partake in it. Individuals often learn about behaviour through friends and family (McKenzie-Mohr and Schultz, 2014). The challenge is to make environmentally desirable behaviours visible enough to use social diffusion to occur, resulting in behaviours becoming the social norm. Encouraging individuals to share their behaviours is one approach to utilising social diffusion as a tool for change; a cost-effective approach would be to utilise existing social media networks to share behaviour.

Goal setting is a very straightforward tool for promoting behaviour change. Simply setting a date for when a behaviour will occur can result in behaviour change (McKenzie-Mohr and Schultz, 2014). Goal setting can be supported by other tools, for example, a public or visible commitment to the goal date may further the likelihood of behaviour change.

Social norms as a tool for behaviour change are used to draw an individual's attention to how many people in their social demographic are already engaging in environmentally desirable behaviours. This aims to encourage them to also partake in the behaviour, as individuals tend to want to conform with the norm for their social demographic. Promotion of social norms has been most effective in changing the behaviours of individuals who are disengaged and have low motivation to participate in the behaviour (McKenzie-Mohr and Schultz, 2014).

Prompts as a tool should be used to promote environmentally desirable behaviours, rather than deter negative behaviour. A common barrier to engaging in environmentally desirable behaviours is forgetting (McKenzie-Mohr and Schultz, 2014); prompts are useful in reminding individuals and overcoming this. Prompts need to be designed so that they are noticeable, self-explanatory and located in proximity to where the behaviour occurs (McKenzie-Mohr and Schultz, 2014).

Incentives are a widely recognised tool for encouraging participation in behaviour. Incentives are more effective than punishments when promoting a behaviour (Gardner and Stern, 2002), and this fits with the CBSM approach to behaviour change. Incentives may involve a range of benefits to the individual, one example being financial incentives. Environmentally desirable behaviours that involve a high time or money cost to the individual may be difficult to promote. These kinds of behaviours may be more successfully changed with a financial incentive (Stern, 1992; McKenzie-Mohr and Schultz, 2014). Money has universal value and is, therefore, more generalizable as a motivating factor than personal values and beliefs (De Young, 2000).

Incentives do not necessarily result in durable behaviour change (Schultz and Kaiser, 2012), and once an incentive is removed, individuals may return to previous behaviours. Incentives are not appealing to an individual's moral reasoning, but their self-interest. Incentives are an example of a behaviour change strategy that works well when used in combination with other motivations.

Feedback is about providing information to individuals about the difference their behaviour change has made. As feedback can only be provided post behaviour change, feedback as a strategy to promote change does not work in isolation (McKenzie-Mohr and Schultz, 2014), but it can encourage individuals to continue a behaviour. Feedback is much easier for behaviours

where usage is monitored, such as energy use. As mentioned in Chapter 2 (Literature Review), it is difficult to monitor the impact and usage of garments making it difficult to give accurate feedback on behaviour, which could have negative consequences. Other factors, such as money saved, garments saved from landfill, garments exchanged, could be used in feedback.

Convenience is a widely recognised motivation for participating in behaviours. Convenience as a behaviour change strategy is about making it easier to undertake a behaviour. In most cases environmentally desirable behaviours are less convenient than the status quo (McKenzie-Mohr and Schultz, 2014), making undesirable behaviour resilient (Mellick Lopes and Gill, 2015). Making behaviours more convenient encourages participation. Interestingly, convenience doesn't always seem to apply to garment consumption behaviour. Wearing a garment for a long time, rather than buying a new garment, would be the convenient behaviour; it appears in this circumstance self-interest precedes convenience.

The toolkit followed the principles of Community-Based Social Marketing, in that it aims to promote the personal benefits of behaviours and encourage individuals to overcome barriers.

Development of behaviour change scenarios

Behaviour change scenarios were developed from the understanding gained from the research results. The scenarios are intended to be used in a toolkit in ideas generation workshops; they are the starting point for debate and concept creation. This section examines the development and rationale behind the scenarios.

The term scenario was used because they are focused on the behaviours that could be promoted to bring about change or the ideal scenarios. The scenarios do not involve promoting the target behaviour directly, except repair, but focus on promoting other behaviours that could lead to the target behaviours.

The Behaviour Change Strategy Toolkit will comprise of four sets of cards; *information cards*, *scenario cards*, *tools for change cards* and *bonus cards*. The scenario cards were developed from the research results, and the tools for change cards utilise Community-Based Social Marketing tools for behaviour change.

In the next section, specific examples of how the toolkit could be developed into strategies have been given. The scenarios are founded on being used to develop strategies that guide and enable (Lehner, Mont and Heiskanen, 2015) individuals to participate in environmentally desirable behaviours with their existing garments, and the intended outcomes are social marketing strategies.

Social marketing promotes ideas and behaviours rather than products. In some ways, this makes it similar to service design, in that service design provides a service to the consumer as opposed to a product.

The scenarios for encouraging individuals to engage in the four target behaviours need to support each other rather than conflict. There may appear to be contradictions in the target behaviours, such as promoting both wearing garments for longer and shifting ownership of inactive garments, but all of the environmentally desirable behaviours involve obtaining the maximum utility out of a garment. Maximising utility is especially important for products that have a high production impact (Gullstrand Edbring, Lehner and Mont, 2015), such as garments. The research results identified a dislike of waste amongst participants, which is strongly related to the use of utility; this has contributed to the design of the scenarios.

Six behaviour change scenarios were developed:

- Promote considerate garment consumption
- Promote wardrobe organisation
- Promote reflection on garment use potential
- Develop and promote the exchange value of garments
- Promote fast and fun garment repair
- Promote reuse and recycling of all qualities of garments

Each of these scenarios is discussed in more detail below. Where examples of how the scenarios could be used are given, the scenario is paired with a 'tool for change' taken from the principles of behaviour change social marketing.

Scenario one: considerate garment consumption

The first behaviour change scenario is considerate garment consumption. The environmentally desirable behaviour that this scenario aims to encourage is reducing the number of inactive garments an individual owns. Thoughtless consumption can lead to a build-up of inactive garments. Considerate consumption may result in longer-lasting relationships between individuals and garments

Promoting more considerate garment consumption would include encouraging individuals to reflect on:

- How a potential new purchase would fit with their existing wardrobe inventory

- Whether a potential new purchase is a duplicate of a garment already in their existing wardrobe inventory
- The ease of care of a potential new purchase, relative to their lifestyle
- The fit and comfort of a potential new purchase
- The adaptability of a potential new purchase for different occasions
- Whether a potential new purchase is intended as a long-term or short term addition to wardrobe inventory
- How considerate consumption benefits consumers; money saved and wardrobe efficiency
- How the garment may eventually be discarded in an environmentally desirable manner

Participants in the wardrobe study mentioned that not considering their existing wardrobe inventory at the point of purchase was a significant cause of the number of inactive garments they owned. A dislike of wasted utility and finances resulted in feelings of guilt relating to the purchase of these garments. This suggests that more considerate consumption would benefit both consumers and the environment.

This study did not examine the motivating factors for garment acquisition in detail, but the literature proposes that acquisition of garments is motivated by a complex range of factors (Allwood *et al.*, 2006). The acquisition of garments may be habitual, a social activity, or used as a reward. In these circumstances, the rationale behind the purchase is not as significant as the resulting gratification of making a purchase. This would act as a barrier to considerate consumption, and for some individuals, this approach may never work. To promote this approach, the benefits to the individual would need to be emphasised; less guilt about impulse purchases and a more efficient wardrobe.

A significant limitation of the scenario of considerate consumption would be the cooperation from garment retailers. The prevailing approach is to maximise garment consumption. Scenarios that threaten retailer profits may not be widely endorsed. However, some aspects of the scenario may strengthen customer loyalty; the retail experience may be improved.

Scenario one example: promote consideration of how a garment fits with existing garment inventory + convenience

An example of how this scenario could be utilised in a behaviour change strategy is through a smartphone application (app). An app could support individuals in avoiding wasteful purchases. Existing apps, such as Closet (MY/STATIC/SELF, 2016), allow images of an

individual's entire wardrobe inventory to be stored on their phone. This gives convenient access to considering their existing inventory when shopping for new garments; convenience would be an important factor in promoting considerate consumption especially when the existing convenient behaviour is impulse buying. An app could be developed that is designed with the intention of promoting considerate consumption of garments; prompting individuals to consider if they already have a similar garment in their inventory, and rewarding individuals for not wasting money on garments they would not wear. This could be particularly effective with online garment purchase. The engagement with such an app would be reliant on the individual's context and personal capabilities; this strategy would have appeal to a specific audience who are engaged with utilising technology.

Scenario one example: promoting consideration of how the garment may be eventually discarded + commitment

Another example of a considerate consumption behaviour change strategy would be to encourage individuals to commit to environmentally desirable discard at the point of purchase. This could be focused on reducing waste, as a specific aspect of pro-environmental behaviour, as it appears that a dislike of waste resonates with consumers. Consumers could be asked to sign a 'contract' at the point of sale to commit to either returning the garment to store or pass it to a new user. Marks and Spencer's and other retailers are suggesting to their customers to donate used garments to charity using the garment care label, displaying statements such as '*Recycle with Oxfam*' (Malik Chua, 2010). These suggestions do not require any commitment from the customer, and can be easily ignored or forgotten; care labels, by their very nature, are hidden. The example from Marks and Spencer's also promotes a very singular perspective of reuse and recycling, whereas individuals are participating in a breadth of behaviours.

Commitment is effective because it connects to our perception of self (Bem, 1972). By committing to something, individuals begin to see themselves as the type of person who would undertake that behaviour, for example, not a wasteful person, but a person who would reuse or recycle garments. It would then be inconsistent for them not to undertake that behaviour (McKenzie-Mohr and Schultz, 2014). Getting a commitment at the point of sale would encourage consumers to think of themselves as garment recyclers, but only if they do not feel coerced into making a commitment. Customers could be asked if they wanted to sign a contract of commitment to responsibly discard of the garment they were purchasing, once they no longer wanted it. The contract would merely be symbolic, rather than binding, but the act of signing would imply a commitment, and written commitments have been shown to be more effective than verbal commitments (McKenzie-Mohr and Schultz, 2014). Customers

could then be provided with information on a variety of environmentally desirable discard routes. A sticker could then be placed on their shopping bag stating '*I DO NOT waste fashion*' making the commitment public and visible.

Scenario two: an organised wardrobe

The second behaviour change scenario is to promote wardrobe organisation. The environmentally desirable behaviours that this scenario aims to encourage are wearing garments for longer and shifting ownership of inactive garments, although repair and maintenance of garments may also be encouraged as a consequence of wardrobe organisation.

Promoting wardrobe organisation consumption would include:

- Awareness of the wardrobe inventory
- Awareness of inactive garments
- Broadening utilisation of wardrobe inventory
- Visibility of garments
- How wardrobe organisation benefits consumers; reducing unused utility, increased wardrobe efficiency, money generated by selling garments
- Providing information on how to discard of inactive garments using an environmentally desirable channel

From the studies, it appeared that organising the wardrobe was useful for garment utilisation and garment visibility. This motivated wearing garments for longer and shifting ownership of inactive garments. Taking time to engage with the wardrobe outside of everyday use allows individuals to reflect beyond their routine behaviours. When an individual is involved in everyday behaviours, they are predominantly concerned with singular details and do not often have time to consider the bigger picture (Gill and Lopes, 2011). This scenario is aiming to encourage individuals to notice their behaviours, promoting what Mason describes as the discipline of noticing (Mason, 2002). Noticing leads to contemplation, which leads to behaviour change.

Wardrobe organisation in itself acted as a prompt for other behaviours, such as reintegrating inactive garments into use and shifting ownership of inactive garments. Individuals are motivated to donate garments to charity by the self-interest of having a tidy wardrobe (Baker, 2011). The challenge is to prompt the act of wardrobe organisation. The wardrobe study itself acted at an unexpected prompt to wardrobe organisation, as it gave participants the

opportunity and motivation to reflect on their wardrobe behaviour outside of everyday use. This suggests external prompts could have potential.

Wardrobe organisation has been recognised as having an impact on environmentally desirable behaviour by the Love Your Clothes Campaign. The campaign includes tips such as *'reminding yourself what you have, planning, knowing what to buy, organising your wardrobe, sensible storage (to keep garments in good condition)'* as strategies for getting more use out of garments and saving money (Love Your Clothes, 2014; WRAP, 2015a).

Stylists often promote the organisation of the wardrobe as a strategy to get the most utility out of a garment inventory. Wardrobe organisation as a scenario is similar to that undertaken during a 'Wardrobe Detox'; this is a professional service offered by a stylist to help an individual to clear out and reorder their wardrobe (Asome, no date). This idea of using stylists to assist in sustainable garment use was suggested in the 2004 Lifetimes project (Fletcher and Tham, 2004), but there is little evidence that this kind of service has become mainstream.

Marks and Spencer's have regular 'One Day Wardrobe Clear Out' campaigns in association with its Shwopping scheme (Marks and Spencer PLC, 2015) that promote wardrobe organisation. The behaviour change strategies are not about purchasing new garments and, therefore, it is questionable whether retailers are suitably placed to promote wardrobe organisation. Independent, and not for profit organisations may be better placed to promote such behaviours. Despite this, the 'One Day Wardrobe Clear Out' is an example of a marketing campaign that has been used to successfully promote wardrobe organisation.

Organising the wardrobe comes at a significant time cost to the individual, and that would be a barrier to adoption of this behaviour. Organisations that offer wardrobe organisation services, such as personal stylists, still require time investment from the individual; the aims of the scenario would not be met without the commitment of reflection and consideration. Therefore, the individual would have to be convinced of the time-benefit trade-off. Benefits that could be used to promote wardrobe organisation include a dislike of unused utility, more convenient dressing, locating garments to sell for a financial gain.

Wardrobe organisation and utilisation of wardrobe inventory requires a level of capability and skill that not all individuals will possess. This scenario will only be suitable for certain individuals; others will struggle to engage with it.

Scenario two example: improving the visibility of garments + goal setting

An example of how this scenario could be used in a behaviour change strategy is through encouraging consumer goal setting. Many participants in the wardrobe study and online survey cleared out their wardrobe on a regular basis. The participants in the wardrobe study that enjoyed having an organised wardrobe had a general appreciation and enjoyment of competence and organisation. These individuals enjoyed achieving goals and being efficient. The intention of this strategy would be to get other individuals, who are less inclined to be organised, to participate in this behaviour.

Planning when behaviour is going to occur begins the cognitive process of committing to that behaviour (McKenzie-Mohr and Schultz, 2014). Writing down a plan for when that behaviour will occur, i.e. goal setting has also been shown to support actual behaviour (Orbell and Sheeran, 2000). The target behaviour is to get individuals to improve the visibility of garments in their wardrobes through wardrobe organisation. Social marketing campaigns could be used to encourage individuals to set a date for when they would organise their wardrobe. A date could be provided as part of the campaign, for example, 'National Wardrobe Tidy Day' and individuals could publically commit to this date using social media. This is similar to the aforementioned 'One Day Wardrobe Clear Out' promoted by Marks and Spencer's. An organised wardrobe could be promoted as a strategy for individuals to maximise the utility of their garment inventory.

Scenario three: promote reflection on garment use potential

The third behaviour change scenario is to promote reflection on garment use potential. The environmentally desirable behaviours that this scenario aims to encourage is shifting ownership of inactive garments.

Promoting reflection on use potential would include:

- Reflection on the use potential of inactive garments
- Storage of inactive garments for a limited amount of time
- Providing information on how to shift ownership of inactive garments using an environmentally desirable channel
- Awareness of how garment retention can be wasteful due to unused utility

In the wardrobe study, inactive garments would not be discarded until another incentive outweighed the perceived use potential of the garment. Often this incentive was the desire for new things, which prompted clear out. Other events, such as moving house, also prompted contemplation of use potential. Without those prompts or shifts in perception of use potential,

garments could remain inactive for years. This scenario aims to encourage individuals to consider the advantages of shifting ownership of inactive garments that may outweigh their use potential.

Interestingly, the participants who took part in monthly clothes exchanges were much more willing to part with inactive garments after a short period, indicating that exchange value can be more of a motivation than use potential.

One of the biggest barriers to this scenario is to achieve public understanding that discard, via certain discard channels, can be the environmentally desirable behaviour. Individuals who are prone to product retention perceive storage of any product with use potential as preferable to discard and view this as the pro-environmental behaviour. There is some logic in this, as storage is preferable to landfill, but long-term storage is preventing maximisation of garment utility with a new user.

As previously mentioned, the advice of stylists often promotes maximisation of utility and, therefore, environmentally desirable behaviour. Stylists often encourage discard of garments that have not been worn for a certain amount of time:

“I advise my clients to donate anything they haven’t worn in more than two years that has no intrinsic value” (Tiffany, 2013).

After that time has passed, and the garment has remained inactive, the individual can see that the use potential is minimal or non-existent. The individual may have to be prompted to acknowledge the amount of time that has passed or to keep track of use.

The benefits of promoting reflection on the use potential of garments are, for example, it could encourage individuals to wear a garment more, or it could encourage an individual that the benefits of shifting ownership are greater than the use potential of the garment.

Discard is innately connected to acquisition. One limitation of this scenario is that discard of inactive garments could be used to justify the acquisition of new garments, perpetuating the cycle of consumption.

For individuals with strong product retention tendencies, it is unlikely that they are going to be easily persuaded that discard is preferable to storage. Their behaviours are likely to be ingrained in their daily social practices and habitual. Such individuals may not engage in this scenario, and it may be more relevant to other groups.

Scenario three example: encouraging reflection on use potential + prompt

An example of how this scenario could be used in behaviour change strategy could be used to prompt consumers to consider the use potential of purchases after two years of ownership. The wardrobe study showed there was a decline in the regular use of garments after about two years of ownership, making this an opportune time to prompt consideration of use potential.

Prompts are useful when forgetting is a barrier to a behaviour (McKenzie-Mohr and Schultz, 2014). Participants did not necessarily forget to clear out inactive garments, but without a prompt, there was a lack of motivation to question use potential of garments, and the relative benefits of storage.

Consumers could be asked to sign a mailing list at the point of purchase that prompts them via email after two years to consider if they still use the garment. The email could advise them what to do if the garment is inactive, or suggest how the garment may be updated to suit current trends. Current trends in using 'chatty' marketing, would allow brands to let the garment speak for itself, for example, the garment could question '*Do you still love me? Is it time for me to move on?*'. This example would be reliant on the individual's willingness to take part, and share contact details with retailers. Individuals are often reluctant to share contact details with retailers due to the amount of unwanted promotional mail they may receive.

Scenario four: garments have exchange value

The fourth behaviour change scenario is developing and promoting the exchange value of garments. The environmentally desirable behaviours that this scenario aims to encourage are discarding inactive garments and selecting environmentally desirable discard channels.

Developing and promoting the exchange value of garments would include:

- Awareness of clothes exchanges
- Awareness of peer to peer trade of clothing
- Awareness of new business models for the trade of second-hand garments, such as sharing and rental
- How exchange value can benefit consumers; saving money and reducing waste

Exchange value is defined as the garments value that can be gleaned back from an inactive or unwanted garment, which could be exchanged for other garments or money. Before the industrial revolution, in the eighteenth century, textiles and clothing were used as an alternative form of currency (Lemire, 2004). This was influenced by both the high quality and scarcity of garments; characteristics that are missing in contemporary society. Given this, a

return to garments as currency is unlikely, but the exchange value of garments could still be developed.

In the sixteenth century, dealers were skilled in matching garments to new users. These dealers used their knowledge of their clients' tastes to get the best possible price for a garment (Lemire, 2004). Although economically motivated, the outcome was maximisation of utility, as the garment was matched to an appropriate user. In contemporary society, there is such a large quantity of second-hand textiles and garments that supply and demand can be difficult to manage. There is potential to develop roles in the economy for matching second-hand garments to target new users.

This particular scenario is not necessarily a natural fit with social marketing. Social marketing is used to promote ideas and behaviours, rather than products or businesses. In this scenario, social marketing would be used to promote awareness of a range of organisations that develop the exchange value of second-hand garments. Despite this discord, the scenario was still included in the toolkit because such organisations are often not receiving the exposure they need to reach a critical mass. Promoting such organisations encourages individuals to understand the benefits that can be gained from their unwanted garments. In addition to this, the acquisition of second-hand garments needs to be promoted to manage the increased quantities of garments being discarded through reuse channels.

One of the findings of the wardrobe study was that inactive garments only had to have the slightest use potential for them to be kept in the wardrobe inventory. For the participants that attended a clothes exchange, the exchange value of their garments was amplified and, therefore, they were removed from the inventory. The exchange value acted as an incentive for them to shift ownership of inactive garments. They were also incentivised by the exchange of utility; they wanted their inactive garments to find a more prosperous pairing with a new owner.

The online survey suggested that awareness of clothing exchanges amongst participants was low, despite an increase in clothes exchange events in the UK. Clothes exchanges and resale or recycling businesses are examples of the type of organisations that could be promoted through social marketing to develop exchange value of second-hand clothing. Gill and Lopes explain the transformative effect participation in a clothes exchange event can have:

'Such an event service designs the fashion impulse, enabling the user to think about the availability of a giant resource of recyclable clothing to refresh one's look and wardrobe. Yet it functions outside the closed loop of the fashion retail sector as an alternative system of

exchange, and invites subtle shift in the practice interpretation of fast fashion as there is an incentive to look after clothing items for their subsequent lives.' (Gill and Lopes, 2011).

Regarding the selling of garments, most of the wardrobe study participants found the financial return was not worth the time and effort invested, and a significant proportion of the online survey participants did not enjoy selling garments. This is a barrier to engaging in the resale of unwanted garments through online platforms such as eBay. Some companies have utilised this to market themselves as more convenient resale platforms. For example, Tradesy, an online garment resale platform, promotes itself as being fast and simple. Users can list garments for sale in less than a minute, and Tradesy organises packaging and returns (Tradesy, 2016). There has also been an increase in 'cash for clothes' organisations in the UK. Such organisations pay for garments by weight (Clothesbank, no date b), and claim to reuse and recycle all garments they purchase (Clothesbank, no date a). Similar to other mass discard channels, such as charity donation, reuse possibilities may be limited. Consumer awareness of these alternatives to resale through eBay is not widely understood.

The cycle of consumption is often unavoidable as individuals adapt to new situations and explore their identity. Developing and promoting exchange value of garments allows individuals to see inactive garments as a currency to access 'new' clothes. This changes their use potential; they no longer have potential use in the individual's wardrobe, but they have potential exchange value and use in another individual's wardrobe. Developing and promoting the exchange value of garments not only encourages shifting ownership of inactive garments but promotes maintenance and care of garments to acquire the maximum exchange value. Bye and McKinney (2007) found that consumers still hold onto unworn garments for investment value, suggesting there may be some interest in acquiring exchange value for a garment.

It is important that any strategies to promote exchange value are not encouraging acquisition of new garments, as in the case of some current retailer take-back schemes. For example, Marks and Spencer's and H&M offering a discount voucher to spend in store if customers return unwanted garments.

The limitations of this scenario are based on the success of second-hand 'retailers' in competing with retailers of new garments. The low cost of new clothing is a significant barrier to developing the exchange value of garments.

Some consumers look to the second-hand market to access high-quality products at lower prices (Gullstrand Edbring, Lehner and Mont, 2015). In recent years, the second-hand market has been overwhelmed with low value, mass-produced garments. Many charity shops are

experiencing difficulties with large quantities of low-quality garments, which are difficult to resell (Saner, 2009). The original prices of these garments from value retailers such as Primark result in little exchange value. During times when garments were scarce and had exchange value, the value of second-hand clothing was much less depreciated by use (Lemire, 2004).

Contemporary clothing depreciates significantly in economic value after purchase, and developing this into exchange value will be challenging. Any organisation aiming to make profits from retailing second-hand clothing will encounter similar issues to those that charity shops have experienced. The retailers of new garments are paying a small unit price per garment allowing them to retail new garments for increasingly unrealistic prices. This lowers consumer expectations of pricing. Consumers are used to thinking of second-hand garments, except vintage, as being of lower cost than new garments. Without a significant increase in the perceptions of exchange value new business models will find it difficult to compete with value retailers.

Scenario four example: awareness of clothes exchanges + social diffusion

An example of how this scenario could be used is sharing information about exchanged second-hand clothing through social media. Online retailers offer the option of sharing their new purchase on social media, with comments such as *'just bought this on Amazon'* (Wilder, 2015). This visible declaration acts as social diffusion as anybody in the individual's social network can see what they have purchased.

Instead, individuals could be encouraged to share information about exchanged garments on social media, supported by statements such as *'just exchanged this garment at Leeds Community Clothes Exchange'*. In this case, the norm that would be perpetuated through social diffusion would be the exchange, rather than the purchase of garments. Testimonials can be particularly useful in creating social norms (Tabanico and Schultz, 2008); individuals enjoy participating in behaviours that are the norm amongst their peers. This would act to encourage individuals to consider attending a garment exchange.

Scenario five: fast and fun repair

The fifth behaviour change scenario is promoting fast and fun garment repair. The environmentally desirable behaviours that this scenario aims to encourage are repairing garments and, therefore, wearing garments for longer.

- Promoting fast and fun repair would include:
- Access to simple techniques

- Convenient times and places to repair
- Repair as fun and creative, rather than precise and invisible
- Repair as a recreational, social activity
- How repair can benefit consumers; saving money and reducing waste

Most of the participants of the wardrobe study undertook some repairs, but the main barrier to undertaking all repairs was the availability of time. One of the main motivations for making repair more convenient is to avoid the divestment ritual that occurs when garments are left sitting in repair piles for long periods of time. Promoting fast and fun repair aims to result in the quicker integration of garments back into the active wardrobe inventory.

Social marketing seems particularly suitable for promoting garment repair. In behaviours where forgetting is a barrier, such as repairing garments, prompts are a good solution. Commitment is a useful tool for behaviours with compelling barriers such as availability of time. The focus of this scenario has predominantly been on making repair quick and convenient, but another aspect of the scenario is changing the perception of repair as a private, solitary activity to something that could be done in public, or socially.

Consumption is often used to provide for needs: affection, understanding, participation, creation, recreation, identity, freedom (Max-Neef, 1992). There is scope for repair to meet those needs in alternative ways. If competence in repair is nurtured in a supportive, social atmosphere, this might motivate an individual's independent continuation and enjoyment of the behaviour (De Young, 2000), and individuals tend to repeat behaviours that they find rewarding (Gardner and Stern, 2002).

Although promoting the utilisation of repairs services could increase the convenience of repair, it has not been included in the scenario for two reasons. Firstly, the cost of repairs services can be prohibitive, and secondly, services can act to deskill individuals (Von Busch, 2008) as they do not have to engage in the practice themselves. This is counter to the rest of the scenario which is concerned with promoting the benefits of participating in personal repair.

There are some existing examples of strategies to promote fast and fun garment repair, such as repair cafés. The benefit of fast and fun repair is promoting quick repair results in the damaged garment returning to the active wardrobe inventory faster, making it less likely that the garment will be discarded.

There are some relatively durable limitations to engagement with repair, even when it is promoted as fast and fun. The low cost of clothing makes often makes it more convenient to

replace a damaged garment than repair it (Fletcher, 2008). The replacement of garments also involves acquisition, which many individuals find rewarding; the benefits of repair need to be promoted as an alternative. Availability of time is another durable limitation, despite the promotion of fast and fun repair individuals may prioritise other activities over the repair of garments.

Fast and fun repair could also result in garments that have a very different aesthetic to traditional 'invisible repairs'; individuals might not feel comfortable with this aesthetic and, therefore, wear might not be prolonged by repair. The term 'fast' is also in contrast to the slow and patient approach needed to generate high quality repairs. A fast approach could result in low-quality repairs that undermine the exchange value of garments

Scenario five example: convenient times and places to repair + social norms

An example of how this scenario could be used is in the promotion of use of a range of times and places to repair garments. A social marketing advertising campaign could show individuals repairing in a range of situations; in the pub, on public transport, in front of the television, in a café with friends, etc. Many individuals consider browsing for new garments a leisure activity (Birtwistle and Moore, 2007). Repair could be promoted as a leisure activity that could be undertaken in social time, rather than a chore.

Scenario six: promote recycling of all qualities of garments

The sixth behaviour change scenario is promoting recycling of all qualities of garments. The environmentally desirable behaviour that this scenario aims to encourage is selecting environmentally desirable discard channels.

- Promoting the recycling of all qualities of garments would include:
- Increasing awareness of the recycling potential of all textiles
- Increasing access to, and convenience of, textile recycling
- Changing perceptions of what can be recycled

The results of the consumer research identified a general dislike of wasteful behaviour, yet participants were still discarding some garments via landfill. There appeared to be a lack of understanding that some garments, such as used underwear, had any recycling value. There is a gap in both understanding and behaviour, which means that information provision is important to support any behaviour change strategy. Garment discard is not necessarily an everyday behaviour and tends to occur periodically. This does not mean it is unaffected by

habitual behaviour, but there may be more chance of reasoned action. This suggests that provision of information could be effective in promoting behaviour change.

There is potential for services and infrastructure to support this scenario. Kerbside textile recycling could be one way to increase the range of garments that individuals are recycling (Domina and Koch, 2002), and to get individuals to recognise the value in all of their waste garments and textiles. Kerbside recycling increases the convenience of textile recycling; participation in non-textile kerbside recycling was almost twice as much as participation in 'drop off' recycling schemes (Folz, 1991). Research has identified the potential of kerbside textile recycling to increase the number of individuals participating in recycling (Daneshvary, Daneshvary and Keith Schwer, 1998; Domina and Koch, 2002).

One study found that kerbside recycling was effective even for individuals who were unconcerned about the environment (Derksen and Gartrell, 1993). This suggests that it might appeal to other personal motives such as a dislike of waste, social norms, and convenience. Kerbside textile recycling has been introduced in some parts of the UK, and in 2006 17% of local authorities were participating in schemes (Woolridge *et al.*, 2006). Currently, there is no available data specific to participation in textile kerbside recycling and its effectiveness in changing behaviour, but other kerbside schemes suggest the impact they could have.

Consumers may have been asked only to donate good quality items throughout their experience of charity bag collections, leading to incomprehension of how to deal with low-quality or damaged garments. Information that clarifies that individuals could recycle spoiled and damaged items, as such items have value for use in the rag and shoddy trade, could be provided as part of a social marketing strategy.

The benefits of promoting the inclusion of low-quality garments in recycling channels are it will reduce the number of garments going to landfill and, therefore, supports the aims of the European Clothing Action Plan (see Literature Review, page 19).

One limitation of this scenario is that it requires a change in social norms, which can be difficult to bring about. Changing perceptions of the potential use of garments for recycling may not overcome the feelings of embarrassment that may occur when discarding underwear, especially if discard involves a face-to-face interaction. For those without kerbside textile recycling, discard of low-quality garments through recycling channels is still not as convenient as charity donation for many individuals, creating a barrier to adoption of the behaviour.

Scenario six example: changing perceptions of what can be recycled + prompts

An example of how this scenario could be used is through a one-day campaign to encourage the donation of used underwear to recycling businesses. The *'Old Pants Amnesty'* could be made more convenient, yet anonymous, with collection points in high street stores and supermarkets. The information from the first collection could then be used to promote a change to social norms *'3,000 pairs of pants were saved from landfill last year, don't your old pants deserve better than to end up in a trash heap?'*

Summary of scenario development

Six behaviour scenarios were developed. Some of the scenarios, such as considerate garment consumption, will be challenging to retail industry norms that usually profit from the sale of garments. This constitutes a significant barrier to the adoption of many of the potential resulting behaviour change strategies; large-scale implementation would be reliant on co-operation and involvement from retailers. The fashion industry will need to begin to take dematerialised approaches to generating profits more seriously; demand is likely to increase from policy makers, design activists and consumers. Services could, in some circumstances, replace new products, creating a Negademand economy (Fletcher, 2008), where increased production of products is not driving profits. The significant potential of stylists as facilitators of behaviour change was also recognised in the development of the scenarios.

Despite occasionally challenging current economic models, the scenarios may be utilised within the parameters of existing technologies, and the examples of resulting behaviour change strategy demonstrate this. The scenarios are intended to generate attainable approaches towards promoting environmentally desirable behaviour. Promoting the self-interest benefits of environmentally desirable behaviours is intended to make behaviour change strategies attractive to consumers; new behaviours need to be rewarding to avoid a return to former behaviours.

The following section examines the application of the scenarios in the Behaviour Change Strategy Toolkit.

Behaviour change strategy toolkit

This section will look at how the scenarios will be presented. The scenarios are presented as part of a toolkit that can be used to run idea generation workshops. It is intended that the outcomes of the workshop would be ideas for behaviour change strategies to promote environmentally desirable garment behaviours.

This toolkit is intended to be used for educating workshop participants and encouraging the consideration of non-garment based approaches to sustainable fashion. Participants in the workshop would gain an understanding of environmentally desirable behaviour and approaches to promoting behaviour from using the toolkit. The generation of behaviour change strategies would predominantly be a learning experience, but strategies may have real-world applications that could be developed.

Rethinking existing conditions often requires a degree of creative risk (Cooper, 2010). This risk does not always result in a successful, long-term solution, but without it, society would not progress conceptually, or actually.

Factors such as guidance, information, and considered content (Lofthouse, 2006) have been deliberated to ensure the design of the toolkit works effectively.

How to use the toolkit

The six scenario cards and six tools for change cards are intended to be used together to generate behaviour change strategies in creative workshops. The workshops are designed for small groups of between four and six participants, led by a moderator who would lead discussions and deliver tasks. The structure of the creative workshops would be:

TOOLKIT INSTRUCTIONS

Step 1: Read ALL the information cards and discuss

Step 2: Select one scenario card and one tools for change card, and read the cards

Step 3: Each come up with one idea for a behaviour change strategy, and explain it to the rest of the group

Step 4: Decide which of the behaviour change strategies to expand

Step 5: Add comments, questions and details to the behaviour change strategy; be as free in your thinking as possible. The moderator can introduce bonus cards to broaden the discussion.

Step 6: Consider the barriers to the behaviour change strategy

Step 5: Summarise the outcomes of the discussion in terms of questions, ideas, and barriers

Step 7: Swap the tools for change card, and repeat

Step 6: Consider if there are any conflicts between the first behaviour change strategy and the second

Some aspects are adapted from Ritchie's Design Thinking Workshop (Ritchie, 2016)

The toolkit is designed to be used by groups, rather than an individual, as respondent interaction has advantages for generating new ideas (Acocella, 2012). Each participant in the workshop brings their perspective, and this can lead to idea development that is more accomplished due to the contribution of each perspective. A small workshop size would allow all of the participants to contribute to the discussion and would be manageable for a moderator to lead.

First of all, the group would be given the information cards. The information cards are provided as part of the toolkit to provide the workshop participants with context and understanding for the workshop activities. The information cards include terms and

expressions, a life cycle diagram, information on the four target behaviours, how information provision influences behaviour and an explanation of social marketing.

Participants would then be asked to select one scenario card and one tools for change card. The scenario cards explain the behaviour change scenarios. The tools for change cards explain each of the Community-Based Social Marketing tools for behaviour change. The two cards would then be used to generate creative ideas.

Bonus cards are also included to provide the moderator with questions to prompt discussion. The bonus cards encourage the workshop participants to consider the audience, convenience, cost and promotion of the strategy, as well as how information provision may support the strategy, and how the strategy may result in problem shifting.

In general, the information on all of the cards has been simplified to make it clear and concise. Each part of the toolkit is explained in more detail in the following sections.

Information cards

It is important that the toolkit includes information that develops the participants understanding of environmentally desirable behaviour. This section presents the information cards (Figure 8-1). Provision of information is important to the success of toolkits, and this information needs to be delivered in an easily understood format (Lofthouse, 2006).

The 'Terms and Expressions' card can be used by the moderator to clarify all terms used in the workshop and avoid any ambiguity in discussions (Vaughn, Schumm and Sinagub, 1996). A basic life cycle diagram is included to encourage life cycle thinking, and for reference during any discussion of problem shifting (Byggeth and Hochschorner, 2006).

The four target behaviours are included in the information cards, including the motivation and barriers to the behaviours. A card on the role of information in influencing behaviour was included to encourage the participants to consider the strengths and weaknesses of information provision as a tool. A card on social marketing explains what it is, and that it will be used to provide tools for the workshop strategy design.

Figure 8-1 Toolkit Information cards

INFORMATION

Terms and Expressions

Broadening Utilisation: wearing a wider range of garments from the wardrobe inventory

Discard Channel: chosen method for getting rid of a garment

Environmentally Desirable Behaviour: Behaviour that, according to our current understanding, has a low impact on the environment

Exchange Value: the value that a garment could be traded for; this could be economic value or exchange for other goods or services

Inactive Garment: a garment that is not worn, but is stored in the wardrobe

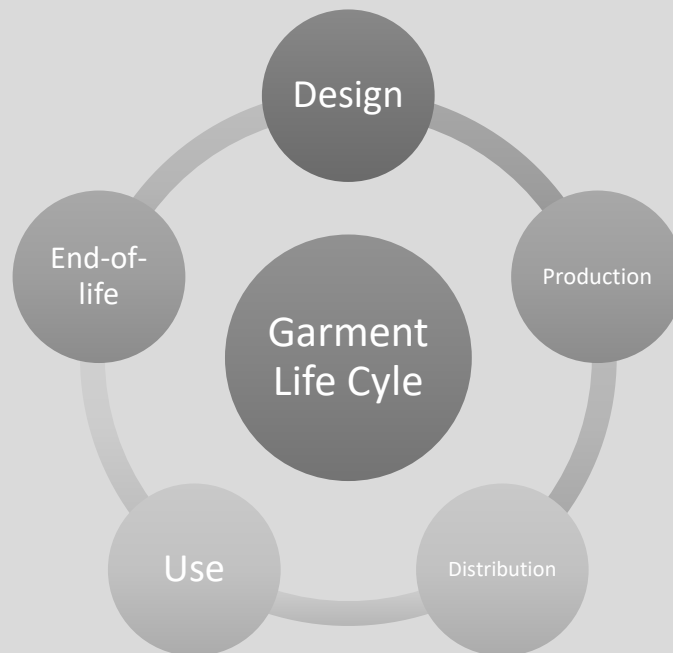
Life cycle: the complete life of a garment from production to discard

Use Potential: the perceived likelihood of future use of a garment with its current owner

Utility: the capacity of a garment to be used

Wardrobe Inventory: the complete collection of garments an individual owns, including garments stored outside the physical wardrobe

INFORMATION



INFORMATION

Environmentally desirable behaviour: Wearing garments for longer

Wearing garments for longer reduces the environmental impact associated with garment production, but only if it results in a reduction in acquisition of new garments. Individuals will only wear a garment for longer if they desire to do so. Regular use of garments appears to decline after two years.

Key Motivations: Fit, Comfort, Style, Visibility in Wardrobe

Key Barriers: Change in Circumstances, Boredom, Change in Style

INFORMATION

Environmentally Desirable Behaviour: Repairing Garments

Repairing garments makes them last longer and reduces the environmental impact associated with textile waste. Most individuals will engage in simple repairs. Sometimes individuals have the intention to repair garments, but they don't get round to it. This can result in inactivity or discard.

Key Motivations: Dislike of Waste, Value of Garment (Economic, Emotional, Aesthetic)

Key Barriers: Access to Time

INFORMATION

Environmentally Desirable Behaviour: Shifting Ownership of Inactive Garments

Storing inactive garments in the wardrobe inventory prevents the maximisation of their utility when another individual could be using them instead of new garments. This only results in environmentally desirable behaviour when discard results in reuse or recycling. Inactive garments can be stored indefinitely if space is available; this is a waste of utility. Many individuals do not consider the storage of inactive garments to be a wasteful behaviour.

This behaviour does not include inactive garments kept for emotional attachment

Key Motivations: Desire for New Garments, Change in Circumstances

Key Barriers: Use Potential, Economic Value, Visibility in Wardrobe

INFORMATION

Environmentally Desirable Behaviour: Selecting Discard Channel

Selecting an environmentally desirable discard channel prevents wasted utility. Currently, most individuals discard some garments through charity donation, but some garments, such as underwear, are ending up in landfill. Individuals do not realise that all garments, regardless of quality, can be recycled. Selection of discard channels is associated with convenience, and there is a range of channels, both formal and informal, that are considered environmentally desirable. The desirable outcome of a discard channel is reuse or recycling, with reuse being preferential in terms of environmental impact.

Key Motivations: Dislike of Wasteful Behaviour

Key Barriers: Beliefs on Condition of Garment

INFORMATION

Providing information on the environmental impact to consumers does not always change behaviour due to several barriers

Barriers to information influencing behaviour:

- Information is easily forgotten
- Individuals may not think they are responsible for changing their impact on the environment
- Other factors may prevent an individual from changing their behaviour
- Behaviours may be habitual and, therefore, not thought through

Despite this, there are benefits to providing consumers with information on environmental impact of behaviours. Information provision can support other behaviour change strategies, engage consumers in issues of environmental impact and encourage consumers to take responsibility for the impact of their behaviour.

Information is most effective when it includes the environmental impact of behaviour AND how the individual can act to reduce that impact.

INFORMATION

Social Marketing

Social marketing is the promotion of ideas and behaviours rather than products. Today you will be using tools from social marketing to promote behaviour change in garment purchase, use and discard.

These social marketing tools are taken from:

McKenzie-Mohr, D. & Schultz, P.W., 2014. **Choosing Effective Behaviour Change Tools.** *Social Marketing Quarterly*, 20(1), pp.35–46.

Scenario cards

The scenario cards (Figure 8-2) include a brief explanation of what the scenario includes, and which behaviours it is ultimately trying to promote.

Figure 8-2 Toolkit scenario cards

SCENARIO

Considerate garment consumption

Including promoting:

- *How a potential new purchase would fit with their existing wardrobe inventory*
- *Whether a potential new purchase is a duplicate of garment already in their existing wardrobe inventory*
- *The ease of care of a potential new purchase, relative to their lifestyle*
- *The fit and comfort of a potential new purchase*
- *The adaptability of a potential new purchase for different occasions*
- *Whether a potential new purchase is intended as a long-term or short-term addition to wardrobe inventory*
- *How considerate consumption benefits consumers; money saved and wardrobe efficiency*
- *How the garment may eventually be discarded in an environmentally desirable manner*

Target Behaviour: Reducing Inactive Garments, wearing garments for longer

SCENARIO

An organised wardrobe

Including promoting:

- *Awareness of the wardrobe inventory*
- *Awareness of inactive garments*
- *Broadening utilisation of wardrobe inventory*
- *Visibility of garments*
- *How wardrobe organisation benefits consumers; reducing unused utility, increased wardrobe efficiency, money generated by selling garments*
- *Providing information on how to discard of inactive garments using an environmentally desirable channel*

Target Behaviours: Wearing Garments for Longer, Discarding Inactive Garments

SCENARIO

Promote reflection on garment use potential

Including promoting:

- *Reflection on the use potential of inactive garments*
- *Storage of inactive garments for a limited amount of time*
- *Providing information on how to discard of inactive garments using an environmentally desirable channel*
- *Awareness of how garment retention can be wasteful due to unused utility*

Target Behaviours: Discarding Inactive Garments, Selecting Discard

SCENARIO

Garments have exchange value

Including promoting:

- *Awareness of clothes exchanges*
- *Awareness of peer to peer trade of clothing*
- *Awareness of new business models for the trade of second-hand garments, such as sharing and rental*
- *How exchange value can benefit consumers; saving money and reducing waste*

Target Behaviours: Selecting Discard Channel, Discard of Inactive Garments

SCENARIO

Fast and fun repair

Including promoting:

- *Access to simple techniques*
- *Convenient times and places to repair*
- *Repair as fun and creative, rather than precise and invisible*
- *Repair as a recreational, social activity*
- *How repair can benefit consumers; saving money and reducing waste*

Target behaviours: Repairing Garments, Wearing Garments for Longer

SCENARIO

Recycling of all qualities of garments

Including promoting:

- *Awareness of the recycling potential of all textiles*
- *Access to, and convenience of, textile recycling*
- *Changing perceptions of what can be recycled*

Target Behaviours: Selecting Discard Channel

Tools for change cards

The tools for change cards (Figure 8-3) will include a brief explanation of what the characteristics of the tools are. The tools for change cards do include an example to aid understanding of new approaches. All of these tools have come from McKenzie-Mohr and Schultz' paper on choosing effective behaviour change tools (McKenzie-Mohr and Schultz, 2014). The paper included eight tools; commitment, social diffusion, goal setting, social norms, prompts, incentives, convenience and feedback. Only six of the tools were appropriate to this toolkit.

Feedback is about updating individuals about the outcomes of their behaviour change. As a strategy to change behaviour, this did not seem appropriate. Therefore, feedback was not included in the tools for change cards.

The SBSM tools of social diffusion and social norms utilise similar motivations to overcome barriers to behaviour. They are both based on providing feedback to an individual about what environmentally desirable behaviours members of their social networks are already engaged in. The differences between the two approaches are subtle, which could be confusing and unclear when used in a toolkit. They were, therefore, combined into one tool for change card.

Figure 8-3 Toolkit tools for change cards

TOOL FOR CHANGE

Goal Setting

Planning a when a behaviour will occur begins the process of committing to it. A behaviour goal is more likely to be achieved if the goal is written down.

Example: National Organise Your Wardrobe Day

TOOL FOR CHANGE

Commitment

Once an individual has committed to a behaviour, they perceive ourselves as the type of person who would undertake that behaviour. Public and visible commitments encourage them to undertake the behaviour to avoid appearing inconsistent to others.

Example: wearing a badge stating 'I will still wear this jumper in ten years.'

TOOL FOR CHANGE

Social Diffusion & Social Norms

An individual can be encouraged to participate in a behaviour if friends, family, colleagues, and others in their social networks are undertaking the behaviour. This is reliant on the behaviour being visible to others. Showing an individual that others in their social groups are participating in environmentally desirable behaviours can encourage participation. Individuals tend to want to participate in the accepted behaviours of their social groups. Use of social norms needs to be targeted to specific social and demographic groups, or it can result in distancing an individual from a behaviour.

Example: Sharing an image of a garment from a clothing exchange through a social media platform such as Instagram

TOOL FOR CHANGE

Prompts

Prompts are reminders to undertake a behaviour. Prompts are particularly useful in situations where individuals forget to undertake a behaviour. Prompts should be positive and encouraging, noticeable and self-explanatory.

Example: Sticker to put in the wardrobe that says 'Don't forget that repairs pile!'

TOOL FOR CHANGE

Incentives

Offering an incentive can increase the frequency of a behaviour. Incentives can include offering a reward or making the desirable behaviour cheaper. Incentives do not always change behaviour in the long-term, as once the incentive is removed behaviour can revert.

Example: Buyback schemes for clothing kept in good condition

TOOL FOR CHANGE

Convenience

Convenience means a behaviour is easy and, therefore, more likely to occur

Example: Kerbside recycling bins for garments and textiles

Bonus cards

The bonus cards (Figure 8-4) were included to give the workshop moderator prompt questions to encourage discussion amongst the workshop participants. Discussions in group workshops can divert off topic (Acocella, 2012), therefore, these cards may also be used to bring the focus back to the discussion.

Participants would also be encouraged to think of the audience for their strategies in terms of age and demographic. The audience that the participants decide to focus on may impact on

how their strategies may be promoted; for example, a younger audience may be more accessible through social media.

Figure 8-4 Toolkit bonus cards

BONUS CARD

Who is the target audience for this strategy?

BONUS CARD

If the target audience changed [age/occupation/salary/environmental engagement] how would you change the strategy?

BONUS CARD

How can you make this strategy more convenient?

BONUS CARD

Who would cover the cost of this strategy?

BONUS CARD

How would this strategy be promoted?

BONUS CARD

Would this strategy appeal to individuals who have a dislike of waste?

BONUS CARD

How are you going to use information provision to support this strategy?

BONUS CARD

Could this strategy result in any negative environmental impact?

BONUS CARD

Would this strategy change your behaviour?

Limitations of behaviour change strategies

The scenarios were developed based on the outcomes of the wardrobe study and online survey. As previously mentioned, the wardrobe study and online survey did not utilise representative samples. Therefore, findings cannot necessarily be generalised to a wider population. Human behaviour is complex and diverse, and these scenarios and the resulting behaviour change strategies may not help some individuals to overcome the barriers to environmentally desirable behaviours. There is always the risk that individuals will not use products or services in the way they anticipated (Akrich, 1992).

When acting to change behaviour, combinations of different interventions are more likely to succeed than one strategy (Gardner and Stern, 2002). This supports Fletcher's argument that there is no 'one size fits all' solution to the environmental and social problems that fashion causes. Each individual's situation is a unique combination of attitudes, context, personal capabilities and habits. This seems amplified when considering garment consumption; perhaps because it is our most exposed and visible method of expressing identity. Consumer garment behaviour is complex and diverse; it would be unreasonable to expect one behaviour change strategy to work for everyone.

Limitations of behaviour change toolkit

The toolkit and workshop design has not been tested. Its effectiveness in producing behaviour change strategies is unknown. It is difficult to predict how participants would react to the workshop without testing it, but some potential limitations can be anticipated.

The participants in the workshops are likely to have pre-conceived ideas about use behaviour, and the responsibilities of designers, retailers or consumers to change behaviours. These ideas will be based on how their experiences have shaped their attitudes and beliefs.

In any group activity, group dynamics impact on the outcomes. Much of the literature on this comes from the focus group research method, which utilises group discussions to explore several individuals' experiences of a topic. Although participants may be used to working as part of an extended team, they may not be used to developing creative ideas within a group (Bocken *et al.*, 2011); working in a new way can sometimes be challenging. Another issue with group discussion is conformism. Conformism is when a member of the group conforms to the most popular idea, disregarding less popular ideas (Acocella, 2012). This could lead to less popular, but potentially useful, strategies and ideas being disregarded by the group.

Although the toolkit has been developed from an understanding of consumer behaviour, the workshop still requires the participants to anticipate how they imagine individuals might respond to their behaviour change strategies. This is a limitation of any behaviour change strategy; human behaviour can never truly be predicted.

Problem shifting

'Problem shifting' needs to be considered; the behaviour change strategies generated by the toolkit could potentially shift negative impact elsewhere. It is not clear whether enough is known about garment use behaviour to predict accurately how behaviours could change, and behaviour change strategies may cause unexpected problem shifting. This supports continued garment consumption research to improve how effectively behaviour can be predicted, and to monitor problem shifting.

Some potential problem shifts have, however, been considered. Encouraging consumers to reduce their consumption of new garments through more considerate garment consumption will have economic and social repercussions in the countries of production. The benefits of new service economies and job roles are likely to be situated in the country of use, in this case, the UK. This could result in job losses in developing countries that may not be replaced with new industries.

Promoting reuse and recycling of all garments could create two issues; more individuals would need to engage in buying second-hand clothes to deal with increased stock, and infrastructure would need to be developed to deal with increased quantities of textiles for recycling. Some studies have already been undertaken into what encourages individuals to wear second-hand clothing (Baker, 2011), but more research may be necessary to develop this market area. If individuals, and industry, began to recycle all of their garments and textiles, within the European Union the recycling industry would need to support an extra four million tons of textiles (EurActiv.com, 2013). This is going to require significant growth of the industry and the infrastructure that supports it.

When considering promoting shifting ownership of inactive garments, there is potential for reactance to be triggered. If an individual is encouraged to shift ownership of an inactive garment, they may later identify a situation for which that garment would have been useful and, therefore, regret discard. During the wardrobe study participants mentioned that past regrets regarding discard had made them more cautious; this is reactance. This kind of reactance may be reduced if the individual received some exchange value for the inactive garment that was discarded.

Summary

Within research into sustainable fashion design, solutions have often focused on how garment design can promote environmentally desirable behaviour. This toolkit instead utilises creative social marketing strategies that aim to change social practices with garments. To radically change consumption, we must look beyond the physical design of garments to consider the other, more influential, factors.

The toolkit has been developed, but not piloted. According to the Community Based Social Marketing approach, the next step would be to pilot the toolkit and then evaluate the actual impact it has on behaviour. Piloting would also enable the identification of weaknesses in the toolkit design, allowing the toolkit to be developed and improved.

Behaviour change strategies that are generated during the toolkit workshops could then be explored further. During the workshop, the participants would be asked to consider the target demographic for their strategies. It is important to consult any individuals who are the target of behaviour change for their feedback on the design of behaviour change strategies (Gardner and Stern, 2002). Therefore, focus groups with the target audience could then be used to gain feedback on the behaviour change strategies. Viable strategies could be piloted with small

samples of individuals to refine the strategy, determine any costs, and determine any problem shifting that may occur if implemented on a larger scale (McKenzie-Mohr, 2000).

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