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## Notes on wearer-worn attachments: Learning to wear

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# Notes on wearer-worn attachments: Learning to wear

## 32. ABSTRACT

33. Previous literature in person-product attachment has identified factors in long-34. term relationships responsible for the strengthening of bonds between users and 35. products, stimulating longevity in use. Interested in further understanding the 36. matter in the realm of fashion, this study investigates how relationships between 37. individuals and the clothes they wear evolve over time. It identifies motivators 38. behind the increase and decrease in the overall quality of wearer-worn relation-39. ships in regard to four dimensions: comfort, frequency of use, visuality and versa-40. tility. In order to achieve this aim, an adaptation of the UX curve method is used. 41. The method was employed with a group of ten participants, wearers of specific 42. clothing production, namely experimental fashion, in contrast with commercial 43. fashion pieces. The study findings contribute to the literature on person-product 44. attachment and highlight 'learning to wear' as an engaging experience encourag-45. ing stronger relations with clothes. In the discussion, the article proposes future 46. endeavours to understand wearing practices aiming at more engaging designs. 47.

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- 51. 52.

## **KEYWORDS**

person-product attachment UX curves learning to wear experimental fashion wearing practices design research methods

<sup>48.</sup> 

#### Introduction

2. Recent political and economic shifts have led to a kind of anguish that is 3. regarded unprecedented – that of disconnection between people and prod-4 ucts (Baudrillard 1996; Pelbart 2011). In the field of design, Jonathan Chapman 5. (2005) reflects on these disconnections and suggests they are the origin of 6. one of the biggest issues faced today, that of early disposal of designed prod-7. ucts. In agreement, Cameron Tonkinwise (2005) points out that one of the 8. main problems with the 'throwaway society' lies not with how many things we 9. consume, but rather how many things we take as perishable, leading to early 10. disposal. Such things include clothing, accessories, electronics and even furni-11. ture. While not exclusive to clothing, this issue seems to be highly supported 12. by the fashion concept in itself, which deals with clearly defined seasonal 13. changes (Barthes 1990) and close connection to the passing of time through 14. trends. 'Contemporary fashion seems antithetical to the needs of sustainabil-15. ity', state Palomo-Lovinski and Hahn (2014: 87), supported by the fact that, 16. historically, it is precisely the constant desire for change that fuels fashion 17. (Lipovetsky 2013: 69).

18. As Gabrieli et al. (2013) point out, the competitive edge of the fashion 19. industry has moved towards quick response to consumers' desires and fast 20. alteration of trends, which determine consumer demands. Fast fashion has 21. become the dominant business model in the fashion field. With accelerated 22 cycles, affordable items enter shops as fast as every second week, keeping 23. up consumers' fashion interest and 'need' for constant change in appearance 24 (Gabrieli et al. 2012). These trend-aware fashion pieces might even be avail-25. able for short periods of time and in limited editions (Christopher et al. 2004; 26. Frings 2002), which accelerates consumers' curiosity. In this way companies 27. invite consumers into a continuous trend-seeking 'game' and into seeking new 28 emotional experiences through a fashion 'hunt' (Niinimäki 2018; Armstrong 29. et al. 2015). Anguelov (2016: 135) talks about value simulation in fast fashion, 30. described as 'surprisingly low prices in unexpected in-store sales promotions', 31. which draws consumers into impulse purchases. All these elements lead to 32. over-saturated fashion markets and overconsumption, leading in turn to an 33. increase in clothing waste. Chapman (2005) points out that waste is a symp-34. tom of failed person-product relationships. As consumers' relationships with 35. clothing items are temporal, most products we own are meaningful for only 36. a short time and can, therefore, be framed as disposables (Niinimäki 2011; 37 Chapman 2005).

38. Why and how to revert this predicament has been the source of action 39. for various researchers, as strengthening bonds between individuals and their 40. clothes is seen by many as a strategy to tackle such issues. To contribute to 41. these efforts, this study focuses on the relationships between wearers and 42 clothes in a longer time frame. In order to lay the ground for the research, 43. this article starts with a brief introduction to previous research on person-44. product attachment (Mugge et al. 2006) in the broader realm of design. It then 45. discusses how this topic has been addressed by fashion studies and culmi-46. nates in the field with which this work engages more closely, that of wardrobe 47. studies (Klepp and Bjerck 2014). Methods of investigation in the literature 48 are compared and discussed, in order to define how the method chosen for 49. this study, user experience curves (UX curves), can enrich research on prac-50. tices of wearing by acknowledging it is through space and time that relationships evolve. The Objectives section details the interests of the study and its

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positioning. The work continues by detailing the methodology of the study
 and opening up the findings. In the Conclusions section we summarize the
 results and discuss endeavours, current and potential, in investigating how

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wearers and clothes relate.

#### From person-product to wearer-worn attachments

7. Previous studies have investigated the attachments between people and prod-8. ucts from a spectrum of dimensions and points of view. Perceived as a clear 9 design opportunity towards sustainability, research into designing for stronger 10. person-product attachment has grown exponentially. Mugge et al.'s work 11. (2005, 2006) was seminal in pointing out the relevance of people's relation-12. ships with designed objects beyond the acquisition phase. Mugge et al. (2005) 13. focused on eco-design strategies whilst Mugge et al. (2006) on a university 14. promotional backpack. Mugge et al. (2006) investigated a case study longi-15. tudinally over a period of six months and suggested person-product attach-16. ment as a means for people to hold on to their objects longer. To achieve this, 17. the authors proposed strategies to enhance personal self-expression, design-18. ing open-endedness and the use of high-quality materials. The study also 19. points out that while enjoyment is relevant in keeping strong person-prod-20. uct attachment in recent relationships, memory evolves as key in relationship 21. sustainment over time. Despite awareness of the relevance time plays in the 22. development of relationships, the short period covered is a clear limitation of 23. the study. 24.

Schifferstein and Zwartkruis-Pelgrim (2008) developed the above initia-25. tive further by covering longer relationships to domestic objects (lamp, car, 26. clock and ornament) using retroactive questionnaires. By extending the time 27. frame, the authors were able to explain how relationships with objects evolve 28. over time. The study confirms the relevance of memory in building stronger 29. attachments, but also identifies other determinants such as enjoyment, self-30. identification, life vision, utility, reliability and market value. Discussing these 31. findings, Schifferstein and Zwartkruis-Pelgrim (2008) point to clothes as 32. objects that strongly support self-identity and are prone to changes in trends. 33. This suggests further investigation of this particular category of objects is 34. warranted. 35.

The works of Niinimäki (2011) and Niinimäki and Armstrong (2013) have 36. proposed filling this gap. The former work investigates relationships with 37. textiles and clothes through digital questionnaires in the Finnish context, 38. covering the acquisition stage through to the use phase. In a broad inquiry into 39. person-product attachment through two studies, the author points out that 40. quality is a relevant factor in relationship sustainment and confirms the role of 41. memory and emotional attachment in long-term engagements. Niinimäki and 42. Armstrong (2013) dive deeper into the field of clothing and not only examine 43. attachment attributes, but also differentiate the garments investigated. They 44. ask if different types of garment could invite different attachments. The study 45. shows that items used more frequently tend to sustain stronger relationships, 46. such as t-shirts, sweatshirts and jeans. This finding implies that different types 47. of clothes can invite different engagements, in connection with their use 48. frequency and length of ownership. 49.

The aforementioned studies (Mugge et al. 2005, 2006; Schiffestein and Zwartkruis-Pelgrim 2008; Niinimäki and Armstrong 2013) provide insights into fashion design and fruitful scopes of investigation. They highlight the

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1. Despite lacking a consistent academic definition. 'experimental fashion' is referred to by many academics as a creative activity that involves experimental processes (CSM 2016; MICA 2016). Here, the main target of the production is testing processes and their outcomes. sometimes leaving the commercial focus aside

importance of memory and self-expression in building stronger attachments, 1. and also suggest fashion as a field for further studies, due to its particular 2 characteristics such as a strong connection to seasons and its use as an expres-3. sive platform of personality. As can be seen from the above examples, research 4 into how people and clothes relate faces complex variants. On the one hand, 5. while short studies cannot account for what happens after years of ownership, 6. or use, long relationships are challenging to investigate in longitudinal stud-7. ies due to the amount of time needed. One of the alternative data collection 8. 9. approaches, that of closed or open-ended questionnaires, usually retrieves consolidated information at the moment the questionnaires were answered 10 and do not account for the various nuances a relationship can takeover the 11. course of time. On the other hand, personal, cultural and interpersonal back-12 grounds take leading roles in how clothes are experienced and cared for 13. (Fletcher 2016), dimensions that are difficult to capture in questionnaires. 14

The growing field of wardrobe studies (Klepp and Bjerck 2014; Skjold 15. 2014, 2017) looks into individuals' wearing practices, often in longitudinal 16. form. Klepp and Bjerck (2014) were seminal in suggesting the materially active 17. wardrobe as a space for investigation that demands specific methods. Skjold 18. (2014) contributes by looking into men's wearing practices and its discrepan-19. cies from fashion's collection images. Together, these studies point to meth-20. ods for deepening understanding on the attachments between people and the 21. clothes they wear. A recent publication by Fletcher and Klepp (2017) presents 22. a collection of new methods that start sensing what the most suitable forms 23. of investigating wearer-worn relationships are. Methods include wardrobe 24. audit systems that look into a set of clothes owned by an individual (Fletcher 25 and Klepp 2017: 170), participatory methods that collect personal reflections 26. and insights into wearing practices (Fletcher and Klepp 2017: 177-81), among 27. others. Thus, while studies into person-product attachment in fashion design 28. are still nascent, research methods able to handle the complexity of clothes as 29. personal worn items are emerging and hold promise. They may be put to test 30. to more systematically build this new field of knowledge. The authors of this 31. study thereby aim to contribute to this body of work, by proposing a retro-32. spective method that reconstructs wearer-worn engagements in longitudinal 33. form. 34.

## Objectives

37. One of the biggest problems faced by the fashion industry today is the early 38. disposal of clothes often generated by weak person-product attachments 39. (Niinimäki and Armstrong 2013). The development of research in fashion has 40. generated answers (as well as questions) related to designing for longevity 41. (Niinimäki 2011; Gwilt and Pal 2017). By providing designers with insights into 42 how individuals sustain relationships longer with their garments, researchers 43 can aid the industry in achieving more ecological production. The main ques-44. tion we thereby ask in this study concerns the factors that can help strengthen 45. these attachments between wearers and clothes over time. The central topic 46 of interest is experimental fashion,<sup>1</sup> a specific production (further described in 47. the Methods section) that is compared with commercial fashion. What factors 48 are responsible for an increase or decrease in the quality of their relationships 49. in each case? What are the effects of these factors over time? 50.

Earlier studies on person–product attachment, as previously mentioned, 51. can be roughly divided into two approaches in regard to methods. On one 52.

35. 36. 1. hand, in longitudinal studies (Mugge et al. 2006; Laitala et al. 2015), the inves-2. tigation happens concomitantly with the phenomenon studied in the course 3. of time. On the other hand, in retrospective approaches, the study asks ques-4. tions about the stage of the phenomenon in that specific moment in time 5. after they have taken place (Niinimäki and Armstrong 2013; Schiffestein and 6. Zwartkruis-Pelgrim 2008). As our objective was to investigate the experi-7. ence of wearing clothes over a long period of time regarding past engage-8. ments, the first option was not possible. The need to understand motivators 9 of changes in perception and relation during a longer period led us to search 10. for an alternative approach. The UX curve proposes a retrospective method-11. ology to collect qualitative memories in long-term engagements from users 12. (Kujala et al. 2011). Even though retrospective memories are often inaccurate, 13. as one can hardly remember with great precision what happened years ago, 14. most memorable experiences remain alive. The method benefits from the fact 15. that these memorable experiences are frequently the ones that lead to prod-16. uct evaluations and overall perception (Kujala and Miron-Shatz 2013). Despite 17 supplying us with less rich data than that collected in longitudinal studies, 18. the UX curve allows covering a longer period of time without invading partic-19. ipants' privacy, two relevant issues in our object of study. Whilst previously 20. the method has been broadly tested in human-computer interaction contexts 21. (Kujala et al. 2011; Varsaluoma and Kentta 2012; Vissers et al. 2013), this pilot 22. study aims at applying an adapted version of the approach to yet another 23. object we interact with: our clothes. In this study, the focus is on the relation-24. ship with objects already owned by participants, most specifically experimen-25. tal fashion in contrast with commercial fashion artefacts.

26. A group of ten participants was assessed with an adaptation of the method. 27. By integrating open-ended interviews with the completion of UX curves, the 28. study focuses on personal experiences instead of on generalization of such 29. engagements. The experiences occurring between wearer and worn are taken 30. here as complex and specific to individuals. Such complexity and particularity 31. demand that the data be analysed independently rather than in a compara-32. tive method with generalizable findings. Similarities and differences between 33. these two modes of designing and making can be identified by analysing the 34. curves in regard to affordance of engagements, and this will be discussed in 35. the Findings section. The aim of this study is thus to collect inputs that will be 36. able to inform the design of clothes inviting stronger person-product attach-37. ments. In this article we will first present how the methods have been applied 38. in the study, including the sampling of participants and detailing the adap-39. tations proposed from the original UX curve method. The results observed 40. during application of the method are then presented, followed by discussion. 41. In the next section, we present our case and its configuration, context and the 42. sample analysed.

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# 44. Investigating wearing experiences through UX curves

The study was carried out with individuals that have owned particular pieces for the last five years. Despite difficulties that might be experienced by the participants in clearly recalling their wearing experience in that time frame, the choice reflected the nature of the objects, that is, their expected lifespan. In order to allow the reader a better understanding of the study, the production will be contextualized and explained in this section. Commercial clothes were also assessed in the study, but as it is the mainstream form of production

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in the world today and familiar to all, we will refrain from detailing it further.
We begin by outlining the clothes investigated in regard to their contexts and
backgrounds. The participants and the methods of the study (from application
to analysis) are introduced. Difficulties will also be identified, which will be
examined further in the Discussion section.

#### **Experimental fashion**

8. As one of the product sources of this study, we look into one specific produc-9. tion in experimental fashion carried out by the first author of this article. Based 10. in Belo Horizonte, Brazil, the women's wear designer develops experimental 11. projects in reduced scales that range from 40 to 100 pieces per project. What 12. characterizes the production as 'experimental' is mainly the process of crea-13. tion and production, where the main driver behind the production is rather 14 the exploration of methods than the merchantability of the finished pieces. 15. Elaborated under creative pattern cutting methods (Almond 2010), the pieces 16. are commercialized solely by the designer's studio under pre-scheduled 17 times in a one-to-one service. The main processual difference between this 18 and mainstream clothing design is that whilst in the latter the final pieces 19 are sketched out and designed in advance, in the former the creative process 20. lies in creating methods for the patterns that serve as a base for cutting the 21. clothes. In other words, no sketches of the pieces are made; instead, a method 22 for the pattern cutting is designed and the results can be understood as less 23. controlled or nearly accidental (Valle-Noronha 2016). These methods delib-24 erately hamper reproducibility, resulting in a production with a majority of 25. unique pieces. 26.

In this study we invited users who owned pieces produced between 2009 and 2011. They were asked to choose pieces they make use of and have them in mind when completing the curves and answering the questions on the reassessment forms. By establishing this time frame we were able to look at similar length wear-phases, thus achieving a more homogenous duration of relationships and avoiding varying ownership times. 27. 28. 29. 30. 31. 32.

## Participant sampling and demographics

An open call was given via social media and emails (previously selected from 35. 36. the designer's mailing list) in April 2015 to individuals who owned pieces produced by the designer. The call invited them to take part in a study aiming 37. 38. at understanding how individuals relate to their clothes. Sixty-eight users 39. responded to this open call and were contacted again via e-mail, where they 40. were asked to fill in a brief questionnaire. Out of the initial respondents, 37 41. completed an online questionnaire providing personal information. A selec-42. tion based on gender, location and piece ownership was made and resulted in 43. a total of eighteen individuals. At that point, applicants were contacted indi-44. vidually and given further instructions about how the study would unfold. In 45. June of the same year, twelve individuals agreed to participate. Two partici-46. pants had difficulties in fully completing the task (due to lack of understand-47. ing or time) and were left out of the study.

As previously stated, the participants were selected mostly based on their 48. location, to assure participation in the study in person. Two male responses 49. were received, but all participants selected were women. The study focus on 50. women's wear aimed at enhancing consistency between designer intentions 51. and the responses from the users. 52.

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1.	Participant	Age	Professional background	Commercial piece 'age'	Experimental piece 'age'
2. 3.	P1	64	Architect	5 years	5 years
4.	P2	31	Journalist	3 years	5 years
5.	P3	30	Graphic designer	3 years	4 years
6. 7.	P4	36	Fashion designer	5 years	5 years
8.	P5	35	Journalist	5 years	4,5 years
9.	P6	65	Architect	5.5 years	4.5 years
10. 11.	P7	34	Producer	4 years	5 years
12.	P8	31	Photographer	3 years	4 years
13.	Р9	33	Psychologist	5 years	5 years
14. 15.	P10	32	Journalist	3 years	3.5 years

Table 1: Participants' demographics.
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18. The final sampling was heterogeneous in terms of participant age but 19. close to homogeneous in other aspects. Despite differing backgrounds they all 20. represent well the clientele of experimental fashion, which, it must be noted, 21. differs greatly from the average consumer in the context of Brazil. In our 22. sample, all participants held at least a bachelor's degree, placing them among 23. a rather narrow sample (around 14 per cent) of the Brazilian adult population 24. (OECD 2017). In other aspects, such as number of years they have owned the 25. pieces and proneness to experimenting with less mainstream clothing styles, 26. the sample can be perceived as more homogenous. 27.

### 28. 29. Methods

This study was built on previous works (Kujala et al. 2011) and proposed an adaptation of the UX curve method to be applied in fashion design studies. To better fit our object of study, changes were made to the original method. The original UX curve dealt with designed objects, and thus some words in the questionnaires were substituted to better fit clothing items. The table below shows the original curves' topics used in the UX seminal study (Kujala et al. 2011) and the adaptations proposed in this study.

The suggested order for completion of the curves was also slightly
changed. In this study we began with a general focus on the experience to
later focus on specific aspects. In sequence, the dimensions observed were (1)
comfort, (2) versatility, (3) visuality and (4) usage volume. In this order, each
dimension implies or is closely connected to the next dimension, providing a
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Original UX curves	Adapted curves
General user experience	Overall relation
Attractiveness	Visuality
Ease of use	Comfort
Utility	Versatility
Usage volume	Usage volume

52. Table 2: Original and adapted terms for UX curves.

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*Figure 1: A blank curves sample sheet filled in by a participant.* 

36. The study was carried out in May and June 2015 and took place in a 37. meeting space in the designer's atelier, where a comfortable environment 38. was prioritized in order to make the participant feel at ease to answer the 39. questions in the most truthful way. The participant responded to two sets of 40. curves, containing five curves each. Whilst participants were asked to think of 41. a commercial garment that was relevant to them when drawing the first set of 42. curves, the second set required that they focus on a piece of experimental fash-43. ion production. Both pieces should have been in their wardrobe for about five 44. years. The participants were guided throughout the process. The meetings took 45. from 28 to 47 minutes each and were audio-recorded. As a reward for taking 46 part in the study, the participants received a piece of contemporary jewellery. 47. In order to strengthen validity of the curves, the users were re-assessed six 48. months later and requested to fill in a brief digital sentence-completion ques-49 tionnaire about the experimental pieces they chose for completing the curves 50. (see Appendix 2). The time-distance between the first study and this ques-51. tionnaire aimed at acquiring answers that were not influenced by the discus-52. sions we had previously, during completion of the UX curves. The request to

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34. Figure 3: Comfort curves for commercial clothes.

complete two sets of UX curves aimed to allow comparison between the two modes of making garments. All meeting audio-recordings and statements on curves were transcribed and translated into English in order to allow the data to be more easily discussed and checked for validity amongst the authors of this article.

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## 42. Interpreting the data

43. Interpreting the information collected prioritized understanding each partici-44. pant individually through open coding to later compare results and imple-45. ment theory-based coding. The interpretation of the collected data took place 46. in three steps, some of which occurred concomitantly. First, the hand-drawn 47. curves were transformed into digital curves using Microsoft Excel to facilitate 48. the overlapping and observation of curves. The vertical axis was assigned a 0-5 49. scale to better align the hand-drawn curves with its digital version. With digi-50. talization done, the curves were grouped according to dimension (see Figures 51. 2 and 3, where the comfort curve is represented), user, clothing type or overall 52. direction (increasing or decreasing). Secondly, the transcripts from the curve

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completion meetings were examined. At that stage, concepts emerged for each 1. participant and were compared to create common categories. In the end, thir-2 teen categories of factors were created, which are further detailed in the next 3. section. The coding process was performed with the support of Atlas software, 4 which facilitated accounting for codes' groundedness, tracing back to quotes 5. and having a clearer overview of the coding. Individuals relate very personally 6. to their pieces, which means clear patterns do not appear in cross-compari-7. son. The difficulty to find patterns in the curves was overcome by considering 8. 9. the reasonings behind the increase or decrease of the quality of each dimension, as these were more fruitful for understanding the relation to the owned 10. pieces. The analysis thus focused more on the reasons for changes in relation-11. ships with garments than on the visuality of the curves, which alone informed 12. little without the contents behind the directions each line took in the curves. 13.

#### Findings

16. Each participant completed a total of twenty curves, in an average time of 17 36 minutes. Despite each meeting being led in a strictly similar way, the 18. responses were very personal and reflected each participant's nature: their 19 interests in, concerns with and ways of experiencing the pieces they wear, as 20. well as personal willingness to share information. At first glance, it was clear 21. that perception of the pieces varies over time, together with the personality of 22. the wearers. Five out of ten participants highlighted the fact that a personality 23. change has influenced the perception or use of the pieces. In relation to the 24. experimental pieces, it was also mentioned three times that as participants 25. grew older, the pieces seemed to better reflect their personality and values.

26. The coding resulted in thirteen factors responsible for changes, either 27. increasing or decreasing, in wearers' relations to visuality, comfort, versatility, 28. frequency of use and overall relationship. From this coding it was clear that 29. the number of reasonings behind the decrease in relations was much smaller 30. than those related to increase. This might be due to both how people relate to 31. decreases in relationships with objects but also to how the exercise was led. 32. A smaller amount of factors mentioned in relation to commercial clothes in 33. comparison to those in relation to experimental clothes was perceived, which 34. might be due to the fact that the curves on commercial clothes were done first. 35. As a new exercise, participants were perhaps not yet at ease with the method. 36. At a second attempt, the participants may have felt more comfortable filling 37. in the curves, thus providing further information in the second round. When 38. filling in the second set of curves, then, participants would be able to focus on 39. remembering the experiences and impressions they had with the pieces and 40. did not have to worry about how to proceed with the completion of the task. 41. This has affected the final results, in which further analysis could be conducted 42. on the experimental clothes in comparison to the commercial ones. 43.

The tables below present the thirteen factors, divided into two sets. The first set shows the factors responsible for a decrease in relations, whilst the second shows the reasons behind an increase in relations. For example, the desire to extend use has been mentioned by one participant as a reason behind the decrease in the frequency of use (see Table 3). The times the factors were mentioned were counted per participant and not per mention. 40

In the following two subsections, the affecting factors are discussed with supporting quotes excerpted from the written explanation on the curves sheets and from the transcribed dialogues. They are divided into factors impairing 52. and improving the relationships.

14. 15.

	Number of mentions		
Relations and affecting factors	Experimental	Commercial	
Comfort			
Fit	1	1	
Low practicality	1	_	
Wear (old or worn out)	_	1	
Weight gain or loss	1	_	
Overall relationship			
Low practicality	1	_	
Wear (old or worn out)	_	2	
Weight gain or loss	2	_	
Frequency of use			
Low practicality	1	NG.	
Season	1	- 0	
Wear (old or worn out)	1	2	
Weight gain or loss	2	- ~ .	
Desire to prolong lifespan		. 1	
Visuality			
Efforts into learning to wear	G · O	1	
Wear (old or worn out)		4	
Weight gain or loss	19	_	
Versatility	<i>(</i> ), 0,		
Wear (old or worn out)	1	1	

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32. Table 3: Factors mentioned by participants as impairing the relationship with the 33. pieces.

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## 35. Factors impairing wearer-worn relationships

36. When we analyse the factors that influenced the decrease in relationship as 37. a whole, it is visible that each type of production is affected by clearly distin-38. guishing factors. In regard to experimental clothes, weight gain or loss was the 39. most often cited factor, being mentioned six times. In contrast, for commercial 40. clothes, the same factor was not mentioned at all. Instead, clothes looking old 41. or worn out were mentioned ten times by participants as causing a decrease in 42. relationship, affecting especially the visuality of commercial pieces. The same 43. factor appeared only twice for experimental clothes. The quotes below illustrate 44. this change in relationship due to the visually perceptible ageing of clothes:

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After wearing out it became less versatile because then I wouldn't wear it for any occasion. My mother would say, 'Aw, are you going out with these trousers like that!?' (P3)

- 49. I think as it becomes old [...] It is still comfortable but I get a little both-
- 50. ered [with a hole in the shoulder], so physically it is still comfortable, but

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51. psychologically it is not. (P8)

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	Number of mentions		
Relations and affecting factors	Experimental	Commercia	
Comfort			
Comfort	3	_	
Design	6	4	
Frequency of use	_	1	
Material quality	2	2	
Learning to wear	3	2	
Overall relationship			
Comfort	3	1	
Design	2	1	
External perception	-	1	
Frequency of use	1,0	3	
Learning to wear	4	2	
Material quality	$\gamma =$	1	
Memory	3	2	
Newness	2	1	
Weight loss	1	_	
Garment versatility	1	1	
Frequency of use	() ·		
Comfort	_	1	
Garment versatility	1	_	
Visuality			
Comfort	1	_	
Design	5	4	
Frequency of use	_	2	
Learning to wear	4	2	
Memory	1	1	
Versatility			
Comfort	1	_	
Design	1	3	
Learning to wear	7	4	
Material quality	1	1	

*Table 4: Factors mentioned by participants as improving the relationship with the pieces.* 

As seen in the quotations above, the worn-out look of the pieces discussed 48. affected not only how they were perceived visually by the participants, but 49. also other aspects such as comfort and versatility. 50.

The second factor most affecting the relationships with experimental 51. clothes in a negative way was a lack of practicality, being mentioned three 52.

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1. times. What motivated these difficulties were delicate embroideries or fabric, 2. which demanded handwash and deep cleavage restricting movements while 3. caring for a toddler. This lack of practicality did not negatively affect how 4. wearers perceived the clothes visually or in regard to their versatility, but it did 5. impact their feeling of comfort. Though this does reflect contemporary life-6. styles, in which clothes that demand care are used less and less, it does raise 7. the question of what space is left for artisanal processes in clothes-making 8. and if there are ways for technology to support the coexistence of practicality 9 and artisanal craftsmanship. The finding also suggests that a more active stage 10. of fitting clothing samples could enhance designs for more comfortable and 11. practical wearing experiences.

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## 14. Factors improving wearer-worn relationships

15. The factors impacting an increase in relationship showed a more complex 16. interplay. The design of the pieces, which includes colour, shape and fit, 17. seemed to play an important part, especially in the acquisition phase, being 18. mentioned as affecting the comfort and aesthetic enjoyment of the garments 19. for both commercial (with fourteen mentions) and experimental clothes (with 20. twelve mentions). Despite acting positively at the beginning of relationships, 21. visual pleasantness takes a different role in the longer run. Visuality curves 22. were more stable for experimental clothes than for commercial clothes, in 23. which a clear decrease is perceived over time. Quality and trend factors are 24. thus possible determinants of this difference, which brings us back to the 25. results on factors responsible for decreases in relationship in commercial 26. clothes: quality and worn-out look. It can be thus understood that a higher 27. quality in garments can sustain not only the use phase longer but also a more 28. enduring pleasantness regarding how the pieces look.

29. The fact that the average of the overall relation with experimental 30. clothes presented such varying curves has caught our attention. The most 31. drastic variations were associated to weight gain and loss (2), frequency of 32. use (2), seasons (2) and, especially, due to a need to 'better understand the 33. piece', framed as learning to wear (4) (further discussed below). In addi-34. tion, as the curves had, in general, a higher starting point for experimental 35. than for commercial clothes, it is possible that there were higher expecta-36. tions at the beginning, adding to the variation of the curves. Despite these 37. variations in both increase and decrease in the overall relationship, other 38. factors such as visuality and comfort were reported as mostly increasing. For 39. commercial clothes, on the other hand, relationships started as more neutral, 40. which might indicate lower expectations of the piece, and experienced rapid 41. increase in the first year. This was mainly associated with the frequency of 42. use (3) and understanding what to match with the piece (2). In the later 43. years, a decrease was reported, mostly due to how the piece 'aged' or how 44. worn out it looked.

45. What was clearly highlighted in the increase in both commercial and experimental clothes' experiences was a relationship development through engaging efforts. This includes becoming more intimate with the piece over time and developing or finding new forms of use or combinations. This factor was mentioned ten times in regard to commercial clothes and eighteen times with experimental clothes. We framed this factor as 'learning to wear', where experience over time is able to alter how individuals and garments relate.

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The expression emerged from the re-assessment forms, where one user 1. commented that, for her, the piece represented 'learning new movements' 2 together with the garment'. The word learning here is not used in a hierarchi-3. cal way; instead, it refers to the development of relationships or engagements, 4. in which both wearer and worn play active roles. The engagements are under-5. stood as processes that take place over the course of time as individuals get to 6. know their garments better, as they experiment and engage with the pieces. 7. Some quotes that illustrate this phenomenon follow below: 8.

I have forgotten it for some time in the wardrobe and then I started wearing it again. Today I wear it more than I used to two years ago. I have found a new way of wearing it, with a belt, which renewed it. I think I have changed as well; I started buying more linen pieces (especially dresses) and started considering this fabric as more casual. (P5)

Well, actually I think it even grew better because it has these [straps] for tying and then I think I got to know better how to use it, with time. I think at the beginning I found it difficult, I found it a little strange until I found a way I liked better. So I think it increased. (P2)

It is exactly the opposite of other pieces I bought many years ago and still have the tags on. Because for some reason when I bought them I found something amazing, but they are still there [in the wardrobe without being worn] for years. And this one was exactly the opposite. Maybe it could cause some strangeness, it IS beautiful, but will I wear it? But as time went by I started wearing it more and more. (P8)

28. As can be seen in the above examples, learning to wear goes beyond understanding how to combine the piece with other pieces in the wardrobe. 29. Ultimately, it also means a stage of constant transformations with the piece, 30. where new perceptions and understanding about the self, the piece and 31. personal style can reconfigure both the wearer and the worn. In this sense, the 32. piece receives constant updates, not being noted as a trend, and supports the 33. wearer in developing further a personal style. Apart from the positive learning 34. outcomes from the engagements, the participants have also added'side effects' 35. of the learning-to-wear experiences, such as a change in attitude, as exempli-36. fied in the quote by Participant 5 above. Another point to note is that as partici-37. pants develop a relationship of engagement and learning with the clothes, they 38. may have a stronger feeling of connection and intimacy with these pieces. 39.

Participants' comments can be verified on the curves below for both 40. commercial and experimental pieces, where the ascending trend curves illustrate the average of comfort and versatility. The curves below present durability, changeability and endurance in learning to wear as factors that have led 43. to positive engagements between wearer and worn. The scales on the curves 44. vary from -5 to +5, where -5 means a very negative experience and +5 a very 45. positive experience in each of the factors investigated. 46.

As shown in Figures 2 and 3 above, an overall increase in comfort with 47. time could also be perceived for both commercial and experimental clothes. 48. An exception to this was one participant who experienced weight gain and 49. loss, which affected the perception of comfort over the last two years of use. 50. Participants associated comfort with various aspects, referring to visual, physical and psychological forms of comfort. Some examples are feeling visually 52.

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33. Figure 5: Versatility curves for commercial clothes.

comfortable with the piece, feeling at ease, the next-to-skin comfort a material
brings, amongst others. Associations of comfort with versatility of the pieces
also connect to the idea of learning to wear, where it acts as a motivator for
the increase in psychological and visual comfort (see Figures 4 and 5).

In comparison to other methods used to investigate person-product
attachments, such as questionnaires, the data collected in this study showed
more depth and detailed description of the engagements. On the one hand, a
more nuanced perspective on how individuals and clothes meet was possible,
encompassing the complex ecologies of wearing. On the other, the method
generates more complexity in the collected data and its analysis.

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#### 46. 47. Discussion and conclusions

48. The main interest of this study was to investigate individuals' long-term engagements with clothes in regard to comfort, visuality and versatility. The 50. findings presented thirteen factors that influence person-product relation-51. ships, either strengthening or weakening. Whilst some of the findings accord 52. with previous studies (Schifferstein and Zwartkruis-Pelgrim 2008; Mugge et 53. State of the strengthening of the strengthening

al. 2006; Niinimäki 2011), such as the relevance of visuality and memory in 1. different phases of use, 'learning to wear' was found as another factor that can 2 contribute to the development of strong person–product relationships. Initial 3. efforts to overcome early difficulties in wearing were mentioned as a factor 4. that strengthened person-product attachment through a 'learning phase'. 5. This factor is directly connected to active engagements in overcoming initial 6. wearing difficulties, more often present in non-commercial pieces due to the 7. experimental processes in pattern cutting, material choice and exploration of 8. form. This finding aligns with Kujala et al.'s (2011) study on mobile phone 9. usability, where learning to use emerges as a relevant factor in the positive 10 development of person-product relationships. Despite the dramatic difference 11. between clothes and mobile phone engagements, both studies point to the 12. importance of investigating learning phases in engagements with designed 13. objects. They also indicate a more active role of both user and object, which 14 15. enter a stage of influencing mutual becomings once the use phase begins.

Concerning the learning phase, connections can also be made to studies 16. on frictional relationships with designed objects. What we perceived was that 17. during the phase of mutual learning and understanding, the relationship was 18. not always positive, but often rather shifting between pleasing and frictional 19. events. Other projects examining design in more 'meaningful' objects have 20. shown that such frictional relationships can lead to more effective results in 21. regard to ecological awareness and building of meaningful relations (Laschke 22. et al. 2015). Laschke et al.'s (2015) study proposes an energy extension cable 23. that reacts to energy use in an annoying way, demanding reflexion and action 24. from its users. The frictional relationship is strongly based on a more responsive 25. and questioning engagement between users and objects, allowing the user/ 26. 27. wearer to get to know the object in question better and strengthen connections with it through reflexive action (Laschke et al. 2015). This finding leads us to 28. question if frictional design applied to fashion could drive clothing experience 29. towards a more reflective level of attachment. Considering the finding that 30. relationships were often impaired by worn-out appearances, especially in rela-31. tion to commercial clothes, we can state that investing in design with longer 32. lasting qualities is needed and can support longevity in use. This could be done 33. through designs that can age, incorporating expression of use in a positive way. 34.

Notwithstanding the particularities of each wearing experience, it seemed 35. clear from the results of this study that different modes of making (commercial 36. and experimental) invite different experiences with the clothes. This difference 37. could be supported by not only the piece itself but also its background, includ-38. ing production mode, information given and buying experience. But while on 39. the designer's side the modes of making are clearly differing, on the wearer's 40. side the differences become more blurred as they encompass a broader myriad 41. of social and cultural aspects (Kaiser 1990). Thus, despite this difference being 42 clear in this study, the small sample analysed here offers more suggestions for 43. deeper and more intense investigations than definitive conclusions. In what 44. ways different modes of making stimulate different experiences in wearing is a 45. question we ask and propose as a driver for further studies, as well as expan-46. sion to other modes of making garments, such as artisanal, home-made, high 47. fashion and others. This would add diversity of consumer profiles, broadening 48 the understanding on the matter. 49.

Possibilities to enhance the application of the method were perceived in 50. this study. A point of relevance found while dealing with the data was that 51. the most valuable and informative material was found in the conversational 52. 1. aspect of the interview. Since the objects discussed had such a variety of stories and experiences attached, these conversations provided resourceful 2. 3. information. As a result, the curves played an illustrative part that relied on the 4. complementary data supplied by the other data sets (meeting transcriptions 5. and reassessment forms). In that sense, as a case analysed independently, 6. the contents found in the curves would fail to provide answers to the ques-7. tions addressed in the study. In addition, in assessing the data, two aspects 8. were noted as clear limitations to the study: the extended length of owner-9 ship and the research setting chosen to carry out the interviews. As much 10. is lost in memory with time, it is likely that many subtleties that took place 11. in the long five-year period of use were not brought into the discussion. On 12. the other hand, participants relied on stronger and more eventful memories. 13. Though a clear limitation to the study, our interest in making a contribution 14. to filling the gap in the research, currently mainly populated with investiga-15. tions on short durations, has supported us in carrying the study forward. We 16. believe these findings can suggest new approaches to assessing the person-17 product attachment phenomenon and gaining a better understanding of the 18. complex practices of wearing. Closely connected to understanding dressing as 19. a practice, the research setting prevented deeper dives into participants' wear-20. ing routines. A suggestion would be to carry out the interviews as a ward-21. robe investigation that would take place in the participant's home, where they 22. could also involve other pieces in their wardrobes to justify their statements.

23. Studies that look into the relationship between individuals and clothes, 24. such as wearing experience and fashion practice research, are still at an early 25. stage of development. For that reason, methodologies that fit the needs of the 26. emerging field are still being crafted. With this study we intend to encour-27. age further exploration for more suitable ways of investigating wearing prac-28. tices. The time demanded by this study has made it difficult to cover a broader 29. sample of participants in a short time frame, thus leaving us with a rather 30. restricted sample. In response, two possibilities could be developed in differ-31. ent directions. In order to broaden the sample, digital UX curves (Varsaluoma 32. and Kentta 2012) could be applied. Alternatively, in order to increase depth, 33. an ethnographic study could be conducted without the presence of the 34. researcher, where users could fill in a UX curve diary over a longer period 35. of time as auto-ethnography concerning their daily choices of clothes. These 36. adaptations could be helpful in advancing the research field.

37. The findings presented in this article aim at adding voices to the stud-38. ies in person-product attachment in the field of fashion by reckoning the 39. different modes of making garments. It does not advocate one specific mode 40. of making, but rather evokes the plurality of productions in fashion design. 41. Added to academic endeavours, the study proposes that fashion practition-42. ers be more aware of the effects to which each creative and productive step 43. can lead. It raises questions such as '[w]ould adaptable garments prevent a 44. decrease in relationship or use frequency due to weight changes?' and '[c] 45. an designers explore service as a communication tool for a more effective 46. learning-to-wear phase?'. It is believed this study can inform practitioners of 47. constructive design projects by bestowing them methods for collecting rich 48. and resourceful information. It can also promote enhancing achievability of 49. designers' intents, through the analysis of the data collected. Once objects are 50. 'out in the world', it is extremely difficult to predict or guarantee correspondence between designers' intentions and how users' effectively perceive the 51. objects (Albrechtslund 2007). The findings can provide guidelines for fashion 52.

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design practice, allowing the development of new products that will more 1. easily deliver the creator's values and intents by broadening the understand-2. ing of the complexity of the relations once the products leave the designer's 3. studio. 4. 5. 6. **ACKNOWLEDGEMENTS** 7. We would like to thank CNPq (2015), Aalto ARTS Scholarship (2015) and 8. Aalto University for supporting this research. 9. 10. Appendix 1: UX curve sample sheet. 11. 12. Sua relação com o objeto | Your relationship towards the object 13. Lembre-se do momento em que iniciou o uso do objeto/produto e desenhe uma curva descrevendo como sua 14. relação com ele mudou desde o primeiro momento até hoje. | Please, recall the moment when you started to 15. use the object and draw a curve describing how your relationship has changed from the first time until today. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 2010 2012 2013 2014 2011 2015 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. Descreva as razões para as mudanças em sua relação | Describe the reasons for changes in your relationship 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51.

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Complete a frase   C	Complete the sentence
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A respeito da peça juliaval	le, sobre a qual fizemos o
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experiencia em julho/2015.	
Para mim, esta peça de roupa representa For me, this piece of clothing represents	
Quando uso esta peça sinto	
When I wear this piece I feel	
No tempo que passo com esta peça	
During the time I spend with the piece	
Esta peça me faz pensar em This piece makes me think of	
Acredito que esta peça promove mudanças e	em
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