SHOES, CARS AND OTHER LOVE STORIES:
Investigating the experience of love for products

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SHOES, CARS AND OTHER LOVE STORIES:

Investigating the experience of love for products

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"Love is patient, love is kind. It does not envy, it does not boast, it is not proud. It is not rude, it is not self-seeking, it is not easily angered, it keeps no record of wrongs. Love does not delight in evil but rejoices with the truth. It always protects, always trusts, always hopes, always preserves."

1 Corinthians 13:4-7
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ABOUT THE AUTHOR
PROLOGUE

In 2003 I carried out a study in which I examined the influence of affective experiences on the perceived usability of consumer products. I noticed that some products, while effective, efficient and (somewhat) satisfying, were not preferred by users. Rather, they preferred to use products with which they resonated emotionally. Usability, - “the extent to which a product can be used by specific users to achieve specified goals with effectiveness, efficiency, and satisfaction” (ISO 9241-11, 1996) - for long has been seen as a critical factor for user acceptance. However, by the time of my study, researchers had begun to recognize that effectiveness and efficiency might not be the only qualities products should have in order to promote user satisfaction: the ability of products to satisfy people’s affective needs also seemed to improve product acceptance and people’s well-being (for example, Picard, 1997; Jordan, 1999; Hassenzahl, Platz, Burmester, & Lehner, 2000; Tractinsky, Katz, & Ikar, 2000; Helander & Tham, 2003).

Did these findings also apply to my research? I was investigating differences between the users’ judgment of products they owned and resonated with emotionally and the users’ judgment of highly usable products that served the same purpose (function). I carried out usability tests in which participants tested both products and collected many experience narratives. All products participants claimed to resonate with emotionally did badly in the usability tests. Still, participants favoured using those products instead of the highly usable ones (Russo, 2004). For example, in a particular post-test interview, while commenting on the fact that her fingers were bleeding from using her nail clipper (figure 1), just a moment ago, a participant said:

"It doesn't really matter if once in a while I happen to cut my finger with it. I really love this nail clipper (...) and nobody will convince me to ditch it and use another one. In fact, I have another one and I have had it for a long time. But since I got this one I always use it".
The findings indicated that good usability – alone – was not a critical factor to user acceptance, but love seemed to be. During the study, many participants said they experienced love for the products they own, use, and resonate with. When experienced towards a product, love seemed to have the power to lessen the importance of effectiveness and efficiency during product use as well as convey higher levels of satisfaction.

Figure 0.1 – The beloved nail clipper ‘Canaglia’, from Alessi.
Design: Stefano Giovannoni.

Considering that nowadays we have access to products that are very similar in terms of price, quality, and technical characteristics, products with an affective appeal have competitive advantage when people make purchase decisions (Desmet, 2002). Moreover, affective experiences can satisfy our emotional needs, strongly influence our wellbeing, and improve our quality of life (Desmet, 2002; Hassenzahl, 2008; Demir 2008; McDonagh & Lebon, 2000). Researchers have also been raising awareness about the role of affective experiences in the environmental impact of products (Woolley, 2003; Van Hinte, 2004): products are quickly discarded because they provide a limited scope for affective experiences or provide experiences that are short-lived (Dunne & Raby, 2001). Enabling people to have more intensive and varied experiences with products could make them keep the products for longer and engage in long-term relationships with them (Chapman, 2005; Dunne and Raby, 2001; Woolley, 2003).

For these reasons, it became essential that product developers are prepared to deal with the affective experiences people have with
products (Denton, McDonagh, Baker & Wormald, 2004; McDonagh and Lebbon, 2000). Design researchers are seeking to integrate into the design domain knowledge of what experiences are, what they entail, and to provide guidance for those who wish to design for experiences or – at least – facilitate their occurrence (Forlizzi & Ford, 2000).

Although people often express love for a product, not much is known at present about the experience of love in the person-product context and its role in people’s satisfaction with product use. It might be worth studying in order to provide product developers with opportunities to support people’s wellbeing. What is the experience of love for products? What is the role of product use in the experience of love? Can we create products people would love? Motivated to investigate this phenomenon I started my doctoral studies at Delft University of Technology. At the Faculty of Industrial Design Engineering, design researchers were joining efforts to investigate specific affective experiences people have with products and to gather knowledge to facilitate the occurrence of these experiences. Despite their appealing motto – creating successful products people love to use – they also seemed to be in need of an understanding of love for products and provided me with an opportunity to study it. This thesis is the result.
‘IS THIS LOVE THAT I’M FEELING?’

Chapter 1:

The experience of love for products¹

In the prologue we proposed that investigating people’s experience of love for products they own and use could provide insights into how this experience supports wellbeing. With these insights, eventually, guidance for product developers could be developed on how the experience of love can be fostered through design. First, we look into how love has been described. Then, we investigate what it means to people to love a product they use and gather insights that help us describe what is the experience of love for products in the context of use.

1.1 Descriptions of love

From Plato to contemporary researchers in various domains of the humanities and social sciences, many have tackled the need to understand what is widely considered to be the most powerful and meaningful of all human emotions (Sternberg, 1988; Berscheid & Peplau, 1983). Love is a phenomenon present in all human cultures (Levinger, 1988). Because it has many forms and guises (Pope, 1980), researchers and theorists have described it through many perspectives. Love has been described in light of the affective phenomena it portrays as, for example, an attitude (Rubin, 1973, Fromm, 1957) or an emotion (Casler, 1974; Ortony, Clore, and Collins, 1988). It has also been described in terms of the behaviours people engage with when experiencing it (Buss, 1988; Levinger, 2002; Sternberg, 1988); in terms of the values and

¹ Chapter based on Russo & Hekkert (2007), Russo (2009), and Russo, Boess, and Hekkert (2011).
moral issues it involves (Badhwar, 2003; Brown, 1987; Velleman, 1999), and in terms of its sexual outcomes (Freud, 1952). It has been described as, for example, a source of motivation (Aron & Aron, 1996), as stories (Sternberg, 1998; Reik, 1943), and as a bond of commitment or attachment (Bowlby, 1999; Shaver, Hazan, and Bradshaw, 1988). Most often, love is examined in the interpersonal context, whether between peers, parent and child, siblings, or friends. However, can love for products be said to exist as well? How has love for products been described?

Brown (1987) and Chapman (2005) suggested that people think that, when expressed towards products, love gains a metaphorical aura, as if it could only be experienced towards people. Brown (1987) was probably the first to include love for products in the philosophical literature on love. He believed that much of what we experience as 'love' may be truthfully extended to all possible objects since "there is nothing in particular that we have to believe about the object of our love in order to make it a possible recipient" (p.15). However, he also believes that people may use the word love towards products simply to stress their liking for it, or because some languages such as French have a single word that corresponds to the words love and like. In the psychological literature on love, Berscheid (2006) cautions that when expressions of love refer to a product these do not necessarily have the same (or similar) connotation as when they refer to a person: "people generally know what love means because they construe its meaning from knowledge of precisely who, in what situation, in what culture, is using the word to describe his or her attitudes, emotions, feelings, and behaviours about a person or a thing" (p. 173). In design research Chapman (2005) considers that love is something we can experience towards products: "love abounds in both the made and unmade world" (p. 68). However, he believes that, unlike interpersonal love, love for products is incapable of mutual evolution and growth as it lacks reciprocity. According to these authors, love for products is not exclusively metaphorical and can be said to exist. However, they caution
that the word love may mean various things when employed towards products, and that it may differ in character from interpersonal love.

Researchers of various areas have described love for products in association with a number of phenomena. For example, Desmet (2002) investigated emotions people experience when assessing the appearance of consumer products and found that – at an early stage of consumption – love was indistinguishable from desire as an experience. Expressions of love towards products have been interpreted as attachment (Mugge, 2007; Chapman, 2005), preference (Berscheid, 2006), or a more intense form of liking (Brown, 1987). Love for products was claimed to be an expression of self-love (Taylor, 1982), an extension of the self (Ahuvia, 1993; 2005), and a form of brand loyalty (Whang, Allen, Sahoury, & Zhang, 2004, Caroll & Ahuvia, 2006). It seems that, like interpersonal love, love for products can also be observed through many perspectives. However, none of the perspectives presented above specifically reflect people’s experience of products they use, interact or engage with. What does it mean to people to love a product this way?

1.2 Preliminary study

In order to understand what it means to people to love a product they use, we turned to their own words; how they talk about a product they love. This could help us decide whether love for products can be said to exist. It could also provide first pointers towards a suitable approach to researching person-product love if it was a phenomenon worth studying. We set up an exploratory preliminary study in which we invited people to discuss a particular consumer product they own, use, and love. We chose to focus our investigation on loved consumer products that people own and use because this might generate insights of value to product design.

The participants of the preliminary study were 24 (11 male, 13 female; 22-28 years old) international master students of the faculty of Industrial Design Engineering at Delft University of Technology, the Netherlands. Lacking an a priori objective measure of love, we assumed that when a person responds to our invitation to discuss a particular
loved product they do experience love for the product. Each participant was met individually and asked to present from 1 to 3 consumer products they own, use, and love, and to share their personal experiences with these products.

Each interview session (one session for each product) lasted between 35 and 50 minutes. Fifty-three love stories (unstructured self-reports) about people’s experiences with products they love were collected. Loved products were a broad range of consumer products: from shoes to laptops, from mobile phones to hairbrushes (see figure 1.1). We conducted an initial analysis of the participants’ stories. We grouped the participants’ statements into phenomena that seemed relevant to affective experiences, such as duration and strength of affect (Silverman, 2000). As we examined the stories, new phenomena were found to be relevant and were also described.

1.2.1 Insights

The collected person-product love stories helped us understand what people mean when they say they love a product they own and use. First, descriptions of love portrayed a meaningful relationship between people and a product specimen.

“I always remember the first time I saw these sunglasses. I was in this shop in NY looking for glasses and I always had problems finding ones that fit well and that look good. I saw these, put them on and I felt like they were made for me (...) so I bought them (...) I felt like I had to have them (...) I never had something like this with anything else. Just with these glasses”.

Second, throughout the stories, participants frequently pictured their relationship with loved products as very rewarding.

“I can do everything with this [photo] camera. I know every little piece of it, every little detail (...) I love it so much (...) I’m so glad to have it”.

“Really, I can’t imagine having another mobile phone. It is old, but it does so much for me”.

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Third, love was portrayed as an *enduring* experience. Participants described their love as spanning over time.

"I actually bought this pen a long time ago, like 4 years ago. I saw it and didn't even think much. I just bought it. It was, let's say, 'love at first sight'"
(...) I still use it, of course. It doesn’t look as pretty as it used to, but I love it, what can I do?"

Fourth, since it is enduring, love is more than an experience: it is a container of experiences. People often describe having momentary affective experiences, both positive and negative, while also having an overall experience of love for a product.

“I remember how I felt when I saw the photo camera the first time. It was so shiny. I really wanted to have it (...) I used to play with it in the beginning, it was kind of fun. Mostly because I wanted to get to know it, its functions and all (...) one day I found a scratch on it and I got so mad. I thought it would never be the same again. But then, as I got used to it, the scratch became part of the camera (...) I really love it. It is a very good camera, but I think that we’ve been through so much that it is impossible not to love it”.

“I was really happy to know it [backpack] was then mine (...) I’m still happy about it”.

Lastly, people often describe the experience of love for products as changing over time.

“I bought these running shoes because I wanted to run. And I did use them the whole summer. I was running around the city almost every day and I loved wearing these shoes (...) but when winter came I went back to the gym and I realized these shoes were not made for the gym. My feet hurt after a while and I was very disappointed. I thought I could use them everywhere, but no (...) I decided that I would not wear them at the gym, but I would try to run outside when there was no snow and it is not too cold (...) my love for them definitely went a bit down, but it goes right up when I am able to wear and enjoy them”.

In sum, our participants described love as a rewarding, long-term, and dynamic experience that contains other affective experiences and arises from meaningful relationships with special products they own and use. Given that love has been described in many ways, has love even been described like this?
All the characteristics of the experience of love for products described by our participants have been pointed out by interpersonal love researchers – mostly social psychologists – as characteristics of interpersonal partnering love. Partnering love is a kind of love experienced towards a significant other, such as a lover or spouse. Interpersonal partnering love has also been pictured as a rewarding experience (for example, Sternberg, 1986/2006; Murstein, 1988); a long-term experience that changes over time (for example, Kelley, 2002; Levinger, 2002, Pope, 1980; Sternberg, 2006); and as a meaningful experience that is best described as a relationship (for example, Pope, 1980; Sternberg, 1988/2006; Kelley, 2002; Van Krogten, 1992; Maxwell, 1985; Reik, 1944). Moreover, interpersonal love researchers have also posed that love is not a single emotion but many (for example, Maxwell, 1995; Murstein, 1988; Pope, 1980). Researchers have also described how other affective experiences play a role in the experience of love: for example, desire (for example, Beal & Sternberg, 1995), disappointment (for example, Levinger, 2002), contentment (for example, Berscheid, 2002), happiness (for example, Brickman & Campbell, 1971), liking (for example, Sternberg, 1988; Berscheid, 2002), grief (for example, Berscheid, 2002; Levinger, 2002), and so on. In short, researchers of interpersonal love suggest that love is a rewarding, long-term and dynamic experience.

Sometimes, our participants’ talk about loved products even sounded like talk about people:

“It’s a real pity. Sometimes I cannot believe my mobile phone is gone”.

“I loved the shoes from the first moment I saw them. They had to be mine (…) I even dreamt about them”.

Love for products, as described by our participants, seems to have similar characteristics as interpersonal love. If we can accept that the love people say they experience for their human partners exists, its similarities to the person-product love stories collected here suggest that person-product love can also be said to exist.
1.2.2 Why investigate the experience of love for products? A research perspective

Let’s look back at the love experience presented in the prologue that sparked this research. Even when bad things happen – for example, fingers bleeding after using a beloved nail clipper – people still experience rewards (rating and describing its use as satisfactory). How could this phenomenon be explained? We will try to explain it as love, a rewarding, long-term, and dynamic experience that contains other affective experiences and arises from meaningful relationships with special products people own and use. Investigating what underlies the rewarding and dynamic nature of love could provide a basis for the promotion of such emotional benefits and people’s wellbeing.

While examining what it means to people to experience love for products they use, participants often described their efforts in maintaining relationships with loved products for an extended period of time:

“I clean it [meat grinder] every time I use it. If I don’t do it, it will rust and won’t last very long (...) and I won’t be able to use it anymore (...) I don’t want that to happen”.

“I don’t like to see it [hair brush] getting old but it is old, so I just accept it (...) I also try to clean it once in a while. I want it to last longer”.

“You can see that the colour is fading. There used to be a butterfly here in the front but it disappeared already. It [wallet] is getting old, I have it for almost 5 years now. Already (...) but I don’t want to buy another one”.

“I have these shoes for almost 15 years! I’ve already dyed them, originally they were light brown (...) I want to dye them again now but I am afraid the leather can’t take it anymore. It will probably crack (...) I try not to use them in situations in which they could get damaged, like if it is raining or something”.

Given these statements, research on love for products people use could also be a potential ally in reducing the impact of products on the
environment. The rewarding nature of love seems to be able to extend the empathic bond between people and products over time.

In this research we investigate the experience of love for products and seek to provide insights into how this experience supports wellbeing. With these insights, guidance for designers could be developed on how they can design for the experience of love and foster rewarding and long-term person-product relationships.

1.3 This thesis

This thesis presents an iterative and systematic research into the experience of love for products. Its six chapters describe a journey in unravelling and clarifying this complex, powerful and, sometimes, unexplainable experience people have with special products they love, own, and use. The main questions addressed in this thesis are the following. What is the experience of love for products? How can we investigate love in the field of design? How are person-product interactions connected to the experience of love? How do person-product interactions influence the experience of love over time? These questions are addressed with particular attention to the relevance of the findings to design. As you accompany me in this journey, you will find that love for products can be measured, explained through simple concepts, linked to interactions people have with products, and tracked over time.

In the next paragraphs I provide an overview of the studies that are reported in the chapters of this thesis. The research was partly carried out in collaboration with others, for example graduation students and research assistants, and partly reported in published papers with contributions from the supervisors of this PhD project and from fellow researchers. Therefore, the form ‘we’ is generally used throughout this thesis.

In chapter 2 we examine how the experience of love for products can be investigated in a way that is useful to the field of design. Lacking a structured design research approach to investigate the love described by
the participants of the initial study (this chapter), we examine whether love for products can be explained by interpersonal theories from social psychology. A study is reported in which we trace whether two theories of interpersonal love match the participant’s stories about their loved products. These were Sternberg’s triangular theory of love (1988) and Levinger’s theory of close relationship development and change (1983/2002). Both theories matched the participants’ stories well, indicating that the rewards of love and the longevity of love relationships have a similar structure in both interpersonal and person-product contexts. Creating a conceptual connection between those two theories provided us with a basis to investigate the experience of love for products in this research.

In chapters 3 and 4, research tools are developed for the study of the experience of love. Their development is based on the findings presented in chapter 2. In chapter 3, through a content analysis of participant’s love stories with products, we identify the rewards of love that are specific to person-product relationships. Then, through a series of statistical analyses, we develop and validate a psychometric scale that measures the intensity of rewards of love for products. This scale can be used as a research tool to assess the quality of the experience of love at times in a person-product relationship. In chapter 4, through a series of studies that rely on methods such as content analysis and card sorting, we develop another research tool that assists participants in sharing stories of moments in time in which they interacted with specific loved products and experience love. A pilot study is carried out in order to confirm the effectiveness of the tool. This tool is based on a diary approach and also incorporates the psychometric scale.

In chapter 5 we use the combined tool developed in chapters 3 and 4 in two studies, each on a different product type. Person-product relationships with two product types are studied: shoes and cars. In the two studies, we examine how interactions and the experience of love are connected in person-product relationships;
how those connecting aspects influence a change in the experience of love in an interaction, and;
how these aspects influence love over time: through change in the experience of love and through the development of the relationship over time.

In chapter 6 we present the main findings of this research and discuss their implications for design research and for strategies on how to design for the experience of love, with the aim of fostering more rewarding experiences and long-lasting relationships. Implications for research on love in other fields are also presented as well as the limitations of this research and directions for further research.
Chapter 2:

Examining how to investigate the experience of love for products

In the previous chapter, we explored what it means to people to love products they own and use. The insights led us to consider person-product love as a rewarding, dynamic, and long-term experience. In this chapter we develop an approach to the in-depth investigation of the experience of love for products, to be conducted in a way that is relevant to the field of design.

2.1 Product experience

The term product experience refers to the aesthetic, cognitive, and affective experiences people have with products. It has been defined as an awareness of any change in affect due to human-product interaction (Desmet & Hekkert, 2007). Product experiences can be very complex. They happen in ‘a scene of various dynamic aspects’ in which they are all tangled together and may occur simultaneously (Jääskö, Mattelmäki, and Ylirisku, 2003). Experiences (like love, as seen in chapter 1) can be ‘containers’ of other smaller experiences (Forlizzi & Ford, 2000) and the anticipation or remembrance of product experiences generates other experiences (Desmet & Hekkert, 2007). All these factors make the study of product experiences a challenging task.

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2 Chapter based on Russo & Hekkert (2007); Russo (2009); and Russo, Boess, and Hekkert (2011).
2.1.1 Investigating product experiences

Design researchers successfully investigated product experiences by looking into interactions between people and products: product experiences arise from person-product interactions (for example, Hekkert, 2006; Forlizzi & Ford, 2000; Desmet & Hekkert, 2007). Knowledge on how experiences arise from person-product interactions can provide insights with which to design for experiences. Several models and frameworks have been developed that aim to elucidate the link between experiences and interactions through various perspectives: for example, by looking into the different sources of pleasure during interaction (Jordan, 1999), the contexts and scenarios of experiences (for example, Forlizzi & Ford, 2000; Hummels, D jihadiningrat, & Overbeeke, 2001; Jaasko et al, 2003), the appraisal processes that give rise to experiences (for example, Desmet, 2002; Demir 2009), the different levels of cognitive involvement during experiences (Norman, 2004). No approach has been developed yet that is specifically aimed at the experience of love in the context of use. Out of all the approaches, only Desmet’s (2002) appraisal approach aims to identify a variety of specific affective experiences (emotions), such as joy, anger, boredom, and amusement, and their specific appraisal structure. Could the appraisal approach help us investigate the experience of love?

2.1.2 The appraisal approach

The appraisal theory claims that emotions arise from evaluations (appraisals) we make of something during specified events (Scherer, Banse, & Wallbott, 2001). The way we evaluate, for example, the appearance or any other particular quality of a product while we interact with it determines the affective experience we have towards that product. Desmet (2002) investigated how people evaluate the appearance of products at an early stage of consumption. He found that the criteria people use to evaluate products are their personal concerns: a product elicits an emotion if it is appraised as relevant to people’s concerns (see figure 2.1). For example, one is proud of a car because its appearance matches with one’s concern for social acceptance.
However, unlike surprise, fascination, irritation, and many other emotions people have with products that have a unique underlying appraisal structure (Demir, Desmet, & Hekkert, 2009), love seems to have a different structure.

First, despite the fact that many interpersonal love researchers and theorists refer to love as an emotion (for example, Casler, 1974; Ortony, Clore, and Collins, 1988), the experience of love does not fit into descriptions of emotions. Emotions are acute and exist only for a short period of time, lasting seconds or minutes at most (Ekman, 1994; Desmet, 2002). Unlike this, as we have seen in chapter 1, people tend to describe their love for a product as something that is dynamic and endures over time.

Second, Desmet (2002) found that when participants said they experienced love for a product they actually experienced desire. In the stories we collected in the preliminary study (chapter 1) participants often talk about experiencing desire when encountering the beloved product for the first time. But they also mention other emotions experienced with their beloved products over time, such as frustration, happiness, anger, and so on. Here then, love is not similar to desire, but encompasses it in participants’ retrospective reports, besides other emotions. Love, as we have seen (chapter 1), seems to be a container of emotions but not an emotion itself. Considering that the experience of love for products encompasses other affective experiences, we can
conclude that employing the appraisal approach to investigate it might reveal the emotional experiences love contains instead of the experience of love per se.

Third, there may be another reason why the experience of love cannot be grasped by the appraisal approach: the experience of love is not involuntary. Although this may sound counterintuitive, as love is often pictured as something people ‘fall in’ or ‘can’t help’ experiencing, one must be dispositioned to experience love (Murstein, 1988). Interpersonal love theorists have asserted that love stems from a decision people make to love someone and to maintain that love over time (for example, Fromm, 1956; Sternberg, 2006; Murstein, 1988; Hendrick & Hendrick, 1989, Berscheid, 2002). Therefore love does not simply start and end like other affective experiences design researchers have been investigating. Can we identify moments in time in which people make these decisions to love products?

Love as a dynamic, long lasting, and ‘container’ experience is not an emotion and does not fit into the appraisal theory. In chapter 1, we saw that the experience of love for products has characteristics similar to the love interpersonal researchers describe when they look at partnering relationships. Interpersonal love researchers have developed many models and frameworks to understand the experience of love and its rewards, dynamics, and longevity. Could interpersonal research on love provide an approach to investigate the experience of love for products in design?

2.2 Investigating interpersonal love theories

Interpersonal love theories that examine partnering love have looked into various aspects of love. Theories, models, and frameworks have been developed to understand expressions of love (for example, Murstein, 1988; Wilkins & Gareis, 2006); people’s individual experiences (for example, Sternberg, 1988/2006; Berscheid, 2006; Lee, 1988; Aron, Dutton, Aron, and Iverson, 1989); types of love (for example, Sternberg, 1988/2006; Aron, Fisher, and Strong, 2006; Aron, Paris, and Aron, 1995); the time course of love (for example, Levinger, 2002; Cunningham
In order to examine whether these perspectives are useful to our research, we propose to (1) trace whether these interpersonal love theories seem to match the experience of love in person-product relationships and (2) examine the extent to which the theories can help us define an approach to investigate the experience of love for products. However, considering the great number of perspectives available, first we define criteria and use them to select those interpersonal theories that are most relevant to our research and to the field of design. Then, by comparing people’s stories about loved products with interpersonal theories, we trace whether each theory seems to match the experience of love for a product. We make use of the stories as verbalized by the participants of the preliminary study (chapter 1).

2.2.1 Selection criteria

Interpersonal love theories that can be relevant to design and useful to investigate the rewards, dynamics, and longevity of the experience of love for products should describe:

- A relationship of mainly two partners – so that insights can be transferred to the situation of user and product;
- A relationship where dependency is not the main aspect – theories that focus on dependent close interpersonal relationships (such as between mother and child) are excluded here as these mainly describe bonds of attachment instead of love;
- The different characters the dynamic experience of love may have – this could help us investigate the interrelatedness between the experience of love and interactions over time;
• The time course of the experience of love and love relationships – this could help us understand what influences the experience of love and the continuation of a love relationship over time.

No theory alone fitted all four criteria. However, together, a theory of interpersonal love and a theory of interpersonal close relationship development fitted the criteria and were selected. Both have been empirically studied, based on observations and people’s accounts of their own experiences.

• Sternberg’s Triangular Theory of Love (1986/2006) describes the components of love and what is experienced as love in close relationships. The theory is the basis for a tool, the triangular love scale. By tracing the intensity of each component of love, the tool can indicate the quality of love at times in a relationship, enabling intervention in case the intensity of components is unbalanced. Additionally, ‘kinds of love’ indicate eight ways in which people experience their interpersonal relationship. Sternberg’s theory has influenced further analyses of interpersonal love (for example, Murstein, 1988; Berscheid, 2006). However, Sternberg’s triangular theory only assesses people’s individual experience of love at isolated moments in time. His secondary theory – ‘love as a story’ (Sternberg, 1998/2006) – aims to describe the development of love over time but offers an approach that considers the experiences of both partners in a relationship, which is difficult if not impossible to apply to relationships between people and products.

• Levinger’s (2002 – original work published in 1983) theory of relationship development and change describes the time course of close partnering relationships (for example, courtship, marriage) as well as influences that provoke changes in the continuation of these relationships. His descriptions involve events in which partners interact. Although he does not focus on the experience of love but on relationships between romantic partners, his relationship descriptions also include experiences of love. Other researchers have
used similar descriptions of relationship phases (for example, Wish, Deutsch & Kaplan, 1976; Pope, 1980) and processes within relationships that influence its development (for example, Harvey & Wenzel, 2006; Rusbult, Olsen, Davis, & Hannon, 2001; Clark & Monin, 2006).

In the next section, both theories will be described in more detail. In parallel, we look for fragments in people’s product love stories that seem to match what is described in the interpersonal theories.

2.3 Tracing person-product love using interpersonal love theories

2.3.1 The Triangular Theory of Love

The triangular theory poses that the experience of love has three components: intimacy, passion, and commitment. Each component is experienced through certain rewarding thoughts and feelings and is characterized by certain rewarding behaviours.

The components of love

The intimacy component is a long-term experience and includes the emotional investments and feelings of closeness, connectedness, and bondedness that lead to the experience of warmth in loving relationships (Sternberg, 2006). Intimacy comprises behaviours such as sharing one’s possession and time, caring for someone, expressing empathy for someone, and communicating honestly with someone. In the person-product context, participants often expressed a close bond and connectedness with loved products:

“I feel very close to it. This was not my first mobile phone, but it was the most important one. I could do everything I wanted with it (…) and I have so many stories of this phone”.

“I feel like I’m the only person in the world who has this wallet (…) I feel really close to it, I can’t explain (…) it’s like we were made for each other or something”.
The **passion** component comprises the motivational involvement in a relationship and includes the drives that lead to romance, physical attraction and sexual consummation. Passion is often expressed when lovers kiss, hug, gaze at each other, touch, and make love (Sternberg, 1988).

Participants talked about their attraction to the physical appearance of their beloved product and about their sensory gratification from it.

“I really like to hold my tennis racket. It seems perfect for my hands. The weight, the size (...) sometimes, when I am between matches, I just like to hold it, to keep it in my hands. I don’t feel like abandoning it on the bench, or inside my bag (...) I find it pretty, I like these curves”.

The **commitment** component comprises two scenarios: the short-term scenario describes the cognitions and actions involved in making the decision to love another and establish a relationship (Sternberg, 2006). Participants gave hints of a similar process in person-product love when, for example, deciding to own a product:

“When I saw the hairbrush the first time I realized I was looking for something like this for ages (...) I needed it, and bought it immediately”.

The long-term scenario describes the commitment to maintain a relationship and is expressed when lovers pledge and practice fidelity, stay together through hard times, when they are (somehow) engaged with each other and when they marry (Sternberg, 1986). We found evidence of this scenario of commitment in our participants’ reports:

“This meat grinder is a quality product. I know I will have it forever (...) it is not easy to clean it. It takes time and lots of effort. But I use it anyway. I would not choose not to use it because it is hard work (...) the feeling I get when I am using it pays off for the hard work”.

“The hammock is always there for me. Sometimes I am busy, have lots of things to do. I look around and see my hammock there, waiting for me. I like that. Of course I cannot always go for it, but I know it is there”. 
Sternberg’s components of love provide a structure for the rewarding experiences people have in a love relationship. By measuring the intensity, presence, and absence of each of the components of love in interpersonal relationships, Sternberg defined eight distinguishing characters a relationship may have at a given time: the kinds of love.

**Kinds of love**

Although Sternberg calls these eight characters *kinds of love*, they actually range from the absence of love to the presence of high intensities of love. The kinds of love indicate the quality of love relationships at particular moments in time. The first kind of love is characterized by the absence of all components and is called *non-love*. It characterizes the majority of interpersonal relationships, for example with acquaintances, where nothing meaningful or long lasting is experienced. Non-love may be experienced, for example, in the beginning of a relationship that becomes meaningful over time. Participants sometimes mentioned having had such kind of relationship with a beloved product before the love started:

“It is funny. I bought it [notebook] because it looked nice. I had it for a long time, but only a few months ago I realized how cool it is (...) I think that the love grew from that”.

*Consummate love* is the other extreme, comprising the intimacy, passion and commitment components. It is a love many people aspire to. Attaining it can be difficult, but sustaining it even harder, since relationships tend to change over time. Our research participants often expressed themselves in ways that suggest a consummate relationship with beloved products:

“I think the sunglasses look beautiful [passion]. They fit me very well, they’re my style [intimacy] (...) and I really hope I never lose them [commitment] (...) I take very good care of them, but accidents can happen (...) but I hope I can use them forever”.

*Liking* describes a relationship involving intimacy only, via feelings of closeness, bondedness and warmth, like in a true friendship. Liking is
experienced when people get to know each other but no great commitment is made (yet) or passion has arisen. Liking may be experienced at times in love relationships, however, its experience does not necessarily involve the experience of love. As our participants were asked to share their experiences with loved products, there were not many stories where only liking a product was mentioned. Most stories contained accounts of liking a product - the intimacy component - as well as accounts referring to the other two components. One participant compared his experiences with a mobile phone he ‘loves’ with another one he simply ‘liked’:

“I liked this phone. I don’t have the same stories I have with this other one [the loved phone]. But it is a fine mobile (...) I can use it, I know how it works, but I don’t really love it”.

Infatuated love comprises only the passion component. It is experienced, for example, in the beginning of a love relationship when not much is known about the other (intimacy) and a commitment was not yet made. It refers to what people often call ‘love at first sight’ and it is guided by the appearance and idealization of the other. Participants mentioned falling in love with their product and idealizing it:

“From the first time I saw the Mp3 player, I really wanted to have it (...) I left the shop so I could think about it, if I should really buy it or not. But I couldn’t wait and went back to the store ten minutes later (...) it is so hard to explain why I wanted to have it. It looked really pretty and fashionable. But now I look at it and I see that it is just an Mp3 player (...) Don’t get me wrong, I love it. But I think I was a bit ‘overboard’ when I bought it”.

Although Campbell (1987) described the idealization of products as restricted to the beginning of a relationship, we found indications of infatuated love at a later stage. One participant idealized a car even after it ‘died’ and was thrown away:

“Later we bought another car. Same brand, same colour, but definitely not the same. No other car will be the same (...) we still think of it, and talk about it (...) that was the best car”.
Empty love comprises only the commitment component. It is experienced in stagnant relationships that have lost their former mutual emotional involvement and physical attraction. It also occurs at the beginning of a functional relationship, such as an arranged marriage, in which a couple agree to share a life together but intimacy and passion have not yet developed. We found that participants held on to products although passion had waned, or that they only started loving a product after learning more about it:

“It's getting old and parts of it [hair comb] are already breaking. I love it but deep down I want to replace it. But I can only replace it for the same model (...) it's not pretty anymore. A bit dirty even. I tried to clean it but it is impossible”.

“I got the bottle opener as a present from a friend and I kept it. I used it once in a while but it was not special at all (...) only some time ago, years after I got it, a friend told me how beautiful and special it looked. Then I started to pay more attention to it. I even searched on the Internet and found out a lot about it (...) that was when everything changed”.

Passionate love combines the passion and commitment components, for example in tumultuous love affairs where two people fall in love and soon marry, not giving time for intimacy to blossom. Examples were also found in the stories:

“When I saw a friend of mine using the bike lights, I had to have them (...) the same day I went to the shop and they were sold out (...) for almost two months I went to the shop every other day to check if they already had them. I couldn’t stop thinking of them (...). One day I found them and didn’t even think twice before buying”.

Romantic love combines the intimacy and passion components. Lacking commitment, romantic love is 'liking' combined with physical or other attraction, and the idealization of the other.

“I find the lamp so beautiful. I remember the first month or two after I got it, I couldn’t stop looking at it (...) I was addicted to it, really”.

“
Companionate love combines intimacy with commitment. It is a long-term committed friendship, as often occurs in marriages in which physical attraction as a major source of passion has waned:

“The wallet is getting old, so I don’t think it is very pretty anymore (...) I just have to accept that. But the memories I have with it are strong, I try to clean it once in a while, or at least try to prevent the colour from fading”

Sternberg’s theory suggests that when the components of love are experienced at a higher intensity and are in more balance, the love relationship has a better quality. On the other hand, when the components of love are experienced at a lower intensity and are less balanced, the love relationship has poorer quality. Relationships that possess better quality are more rewarding and people expect to maintain them for longer.

Our participants’ talk of loved products matched the descriptions of components and kinds of love described by Sternberg, leading us to assume that these – as described by Sternberg – may also make up the experience of love for products. The rewarding thoughts, feelings, and behaviours of love were also rather similar between interpersonal and person-product love. However, there is also reason to expect that they are not identical. For example, drives and actions in the passion component that are related to sexual consummation such as kissing and making love seem to be less relevant in person-product relationships. Commitment to a product is not expressed through marriage and seldom through bonding ceremonies, although (as we have seen) buying or repairing a loved product may be seen as an act of commitment. Because there are similarities and differences between interpersonal and person-product love, it could be valuable to investigate further what are the specific rewarding experiences of love in the context of products. Furthermore, participants seemed to be at ease with loving more than one product (although many of them said they did not hold such relationships with many products at the same time), something that is less generally accepted in interpersonal relationships.
Although Sternberg’s theory provides valuable leads for the investigation of person-product love, it does not cover all aspects we have seen in the data: Sternberg does not describe the transitions between these kinds of love over time. He only gives general indications of likely intensities of intimacy, passion, and commitment throughout relationships without detailing what prompts changes to occur and how. In order to grasp the dynamics of love through time more fully, we turn to Levinger’s (2002) theory of relationship development and change.

2.3.2 Relationship development & change

Levinger (2002) examined the development of close interpersonal relationships by investigating stories of how partners interact over time, from the perspective of one of the partners. By analysing these stories he identified five phases: attraction, building, continuation, deterioration and ending. He defined these phases in analogy to prototypical love stories. Each phase is not a stable plateau, but rather represents a set of dynamic tendencies in the course of a relationship. For example, during attraction, potential lovers move towards each other and their feelings develop. The attraction phase has a dynamic that makes the next phase – building – likely and possible. The phases described by Levinger have no clear beginning/ending, and sometimes (partly) overlap. Levinger highlights six causes of change in relationships that can influence their development. These influences are (1) the experiences partners have over time, (2) the interactions between partners and with others, (3) evaluations of rewards and costs, (4) changes in satisfaction over time, (5) demonstrations of affection and (6) external or internal influences in people’s lives, such as the coming of a newborn, a change of job, or a fall into depression over the loss of a loved one.

The attraction phase

Two individuals meet and are attracted to each other’s appearance, body language, or similar interests. They form impressions about each other based on their moods, goals, and values (Levinger, 2002). Participants in our study also shared such stories. For example, a
participant loved the looks of an antique meat grinder when he spotted it for sale:

“I saw it on a flea market (...) I loved the way it looked. That is what attracted me in the first place. It looks so robust (...) it looked like a quality product”.

As seen in chapter 1, a participant fell in love with and purchased a hairbrush mainly because they shared environmental values:

“One thing I really like about the hairbrush is that it is made with certified wood. I know that no forests were destroyed, or that nature was not endangered in any way for the making of this hairbrush (...) and these things are really important to me. That is why I bought it”.

**The building phase**

A foundation for a relationship can be built by finding common ground in personality, attitude, and interests. Interactions and such conditions can transform the lovers’ relationship and roles (Levinger, 2002). For example, two people meet, become friends, and then find themselves in love. However, if unable to find common ground beyond fondness for each other’s appearance, the relationship may end again. We found person-product love stories that follow similar lines: a participant began loving a tennis racket only when she found that it fitted her hand well when she played:

“At the shop, I didn’t even like the tennis racket. I was looking for a blue racket, just like the one a friend of mine has. But then that one was too expensive (...) then I saw this one. I didn’t like the orange colour at all (...) but after I started using it, everything was different. I love my racket. I even like the colour now”.

In a counter example, a participant mentioned a failed relationship with a pair of shoes she was first attracted to:

“When I bought these shoes I thought they were very pretty. I had to have them (...) I don’t really like them now (...) they don’t fit my feet very well (...) it hurt too much (...) I’ll just give them away”.
While Levinger does not describe such a case, we found that the building phase can follow from an existing ‘liking’ relationship when it turns into a ‘loving’ one (as described by Sternberg). This occurs after there were external influences or after interactions became more frequent, like in the story of this participant:

“I think I have this notebook for about 2 or 3 years (...) but only now, after a friend of mine was all enthusiastic about it telling me how cool it is, I started to look at it with a different eye (...) then I started to use it a lot more, and discovered some things about it I didn’t know before (...) now I like it so much, I use it all the time.”

The continuation phase

During the building phase both lovers begin to evaluate whether the relationship is worth pursuing: whether the rewards are greater than the costs. If so, they enter the continuation phase in which they interact regularly (Levinger, 2002).

“In the beginning, it was nice to see how the mobile phone works, all the functions it has (...) I used to spend hours on it (...) now I know how it works. All its features, its little shortcuts. I can use it with my eyes closed”.

Lovers try to enhance the positive aspects of the relationship by demonstrating affection, trust, commitment, equality, and mutual satisfaction. They seek to make their relationship harmonize with and become part of their social environment:

“Even though I love my tennis racket, I really like when people ask me if they can try it (...) I’m not jealous but of course I’m afraid that it can be damaged. But I like to see others enjoying it too (...) I want people to like it as much as I do”.

Continuous evaluation of the relationship results in changes in experienced satisfaction. In chapter 1, while presenting our initial insights, we presented some such evaluations. They were, for example, evaluations of negative experiences followed by doubts and then the assessment that love was still present (for example, “I still love it”).

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The occurrence of ‘critical events’ such as the birth of the first child or the shock of a disabling illness can have a big impact on continuation and mark a change for the better or the worse (Levinger, 2002). In our study, a participant’s affection for her pair of shoes temporarily decreased when one day she saw a friend wearing identical shoes. After an initial disengagement she recovered from the disappointment and concluded that she still loved to wear them. Another participant’s affection for and commitment to his mobile phone increased after he found it in the street, having it lost the night before.

“I was very drunk and I didn’t see that my phone fell to the ground. The next day, when I woke up, I didn’t know where it was. I immediately jumped on the bike and re-did my way back home the night before (…) and I found it. Unbelievable, I was so happy (…) After that I always took very good care of it. I always search my pockets now, just to check if it is in there”.

The deterioration phase

During the continuation phase a relationship may start to deteriorate. In the deterioration phase at least one of the partners experiences the costs of the relationship as greater than its rewards and may assess the relationship as not worth saving (Levinger, 2002). Levinger found that average marital satisfaction declines after some time and partners disengage. Nevertheless, resolving conflicts or seeking professional help can reverse the deterioration and reconciliation sometimes occurs (Levinger, 2002). Our participants sometimes expressed disengagement from long-term relationships:

“I look at the shoes and I remember so many stories, so many times I’ve used them (…) but they are old-fashioned now. I don’t wear them so much anymore, but I’m not throwing them away either”.

Other participants described how their relationship regained power – within limits:

“Something inside the camera was broken and to fix it would cost a lot of money. I couldn’t pay for it (…) I knew I had to buy another one and I did. The new camera is nice, but nothing compared to ‘Erin’ (…) then I realized
that I could use ‘Erin’ to transfer the picture files to the computer. Its software is a lot better than the one that came with the new camera. So I managed a way to keep on using it (…) it is a new type of use, but still, it is nice to be able to use it once in a while”.

The ending phase

Due to passiveness, evaluations of greater costs than rewards, and failed attempts to restore a relationship, it may eventually end. A relationship break-up can be triggered by a number of factors internal or external to the relationship. Mutual disagreements, interest in another person, depression or low self-esteem such as that caused by job loss can be reasons why partners end a relationship (Levinger, 2002). Relationships may also end naturally, with the death of a partner. In cases such as this, the relationship is often partially maintained in memory (Levinger, 2002). A few of our participants shared stories of ending their relationship with a once-loved product, for example because the feeling of love ended:

“A long time ago I had these shoes that I really loved. (…) But every time I used them they bruised my toes so much (…) I made a lot of effort to keep on wearing them. (…) One day I realized it wasn’t worth it anymore, I realized I didn’t have good memories of them, you know. My shoes definitely didn’t like me as much as I liked them. I kept them for a while, but later I just gave them away”.

Another participant gave up on an old beloved car that broke down and could not be fixed:

“What can I do? It is really gone. When the [car] motor stopped working, that was the last straw! The door didn’t close properly and it wouldn’t start by itself anymore, unless we give it a little push (…) anyway, it was dead already, there was nothing we could do about it”.

Some stories reflected moments in which participants thought about breaking up with a product in the future. It may be thrift that keeps them from doing so, but it is also the desire to hold on to shared values:
“I'm also keeping it [hairbrush] because I think it is a waste to throw it away. This is made with the thought that the environment should not be destroyed. And if I throw this away I would be contributing to it (...) but I know one day it won't make any sense to keep it.”

According to Levinger (2002), the end of a relationship is often painful for the partners but also an opportunity for them to grow. Levinger states that learning from mistakes can help people in a fresh start. A few participants mentioned learning from a relationship to ‘make things right’ in the next one:

‘Now, if I am at the shop trying out the shoes and they are not extremely comfortable, I don't buy them (...) even if it's the most beautiful pair of shoes I've ever seen (...) it is a pity, but I always have to convince myself that it is not worth it’.

Levinger sought to increase the time span of relationships, but he was pessimistic and assumed that most relationships are likely to fail. In our stories, participants sometimes seemed reluctant to discard loved products.

“It’s [nail clipper] a keeper. I don't think I'll ever replace it, or throw it away”.

However, possibly due to the high availability of products, person-product relationships seem to follow a similar route:

“I love my shoes and I know I take very good care of them. I hate to see them getting old, breaking, getting dirty. But still, I think that there is always a potential for a new pair”.

Levinger’s theory provides a useful complement to Sternberg’s theory: it sheds light on the dynamic course of relationships and emphasizes events in which partners interact and influences that can change the course of these events. Our participants’ talk of loved products also seemed to match Levinger’s descriptions of relationships phases. Therefore we assume that person-product love relationships may also develop through similar phases. However, the influences with which Levinger describes the phases of interpersonal relationships could impact relationships with products differently. For example, a critical event such
as the birth of the first child or the shock of a disabling illness can have a great impact in an interpersonal relationship. By contrast, a critical event in a person-product relationship such as malfunctioning of the product may lead to break-up, but still have a less drastic impact on the person involved.

2.4 What have we learned and how to investigate the experience of love for products?

The person-product love stories we collected matched the descriptions of components and kinds of love established by Sternberg’s interpersonal theory as well as Levinger’s descriptions of relationship phases and its influences. Having traced how the two theories describe our data, we can now assess what we have learnt from these theories and formulate an approach to investigate the experience of love. Figure 2.2 summarizes the learnings.

Sternberg’s triangular theory of love provides us with an understanding of the structure of the experience of love for products and the rewarding experiences it includes. It also provides a link between the rewards of love and the quality of love experienced at specific moments of time. The triangular theory structures the experience of love by indicating its three components: intimacy, passion, and commitment. Each component of love refers to rewarding thoughts, feelings, and behaviours people experience as love in a relationship. According to the intensity and balance in which people experience each of these components – at specific moments of time – a specific kind of love is experienced (see figure 2.2).

The theory suggests that the intensity and balance of the three components of love determines the quality of rewards experienced at (Sternberg, 1988). When intimacy, passion, and commitment are experienced at high intensities (consummate love), these are balanced and a relationship’s quality is high; when blends of two components are experienced at high intensities (romantic, passionate, and companionate love), these are fairly balanced and relationships’ quality is moderate-high; when only intimacy, passion, or commitment are experienced at
high intensities (liking, infatuated love, empty love), these are fairly unbalanced and the relationship’s quality is moderate-low; when all three components of love are experienced at low intensities (non-love), the relationships’ quality is low (see figure 2.2).

Sternberg’s theory provides little guidance regarding the interrelatedness between interactions and the experience of love and the influences that can alter the intensity of experienced components. His theory also does not offer insight into how love and its components change over time. Levinger’s description of relationship development and change provides more insight into these aspects (see figure 2.3). By assessing sequences of events in which partners interact over time, Levinger describes influences that can alter the quality and the continuation of relationships.

**THE EXPERIENCE OF LOVE**

Figure 2.2: Sternberg’s approach to the investigation of the experience of love.

Sternberg’s approach to the investigation of the experience of love.

Levinger’s approach to the investigation of close relationships.

Figure 2.3 - Levinger’s approach to investigate close relationships.
The two theories have not yet been conceptually connected. Doing so has potential benefits: it could help us link person-product interactions to the experience of love in order to understand (1) how interactions and the experience of love are connected in person-product relationships and (2) how the connecting aspects in an interaction influence a change in the experience of love. This could provide insights that could eventually help in designing for the experience of love and increasing its rewards. Moreover, adding a time perspective to the experience of love could help us describe (3) how these aspects influence change in the experience of love and the development of the relationship over time. This could help designers ‘see’ the story of love over time and possibly be of help to them in seeking to foster rewarding and long-term person-product relationships. This is the approach that will be used to investigate the experience of love for products in this research. A scheme summarizing it is presented in figure 2.4.

**PERSON-PRODUCT LOVE RELATIONSHIP**

![Figure 2.4 - The conceptual basis for the study of the person-product love experience throughout relationship events: interactions as the link between concepts from two theories.](image)

In figure 2.4, the larger frame represents a person-product love relationship. It contains the isolated moments in time, top, at which the
love experience and its components can be measured (Sternberg), and a sequence of relationship events, bottom, in which a person and a product interact in the course of a relationship (Levinger). The beginning and the end of an interaction delimit them as events. Earlier in this chapter we saw that experiences with products arise from person-product interactions. In this approach, the experience of love is seen as arising from interactions people carry out with products in relationship events and as – over time – being influenced by these interactions.

In order to investigate love for products following this approach, like Sternberg (1986), we must first identify the specific thoughts, feelings, and behaviours that make up the components of love in the person-product context and be able to measure their intensities over time. In the next chapter we look into that. In addition, unlike the stories Levinger collected, the stories we collected were not yet particularly focused on relationship events and participants did not provide enough detail of their own accord on what happened in these events. For example, it was often not clear which interactions influenced experiences described by participants. We were also not able to determine the factors that can influence the experience of love and the continuation of love relationships. A more structured assessment of person-product relationship events is needed to help us identify these influencing factors. This is developed in chapter 4.
‘HOW DEEP IS YOUR LOVE?’

Chapter 3:

The person-product Love Scale

In the previous chapter we proposed an approach to the study of the link between interactions and the experience of love in person-product relationships. With this approach we can examine how interactions change the experience of love and how these changes occur over time. In order to investigate these processes we must first identify the rewarding thoughts, feelings, and behaviours of love in the context of products and assess their intensities. In this chapter, we follow Sternberg’s steps and identify rewarding experience of love for products, and develop a measuring tool to assess it.

3.1 Introduction

Sternberg’s Triangular Theory of Love is considered to be the “most significant theoretical approach to love” (Hendrick & Hendrick, 1989, p. 789) and a “major contribution” to the field (Murstein, 1988, p. 32), due to its simple and inclusive approach to the experience of love. As seen in chapter 2, the triangular theory poses that the experience of love has three key components – intimacy, passion, and commitment – each containing a specific set of rewarding thoughts, feelings, and behaviours people have when experiencing love for another. The love someone experiences over time changes as the intensity of experienced intimacy, passion, and commitment changes. By examining people’s talk about their experience of love, Sternberg identified the specific rewarding

3 Chapter based on Russo, Laurans, Boess, and Hekkert (submitted).
thoughts, feelings, and behaviours people have when experiencing each component of love. He used these to develop the triangular love scale (Sternberg 1986, 1988): a 45-item psychometric measuring tool designed to assess the intensity of the components of someone’s love.

In chapter 2 we examined whether love for products could be explained through Sternberg’s (1986/2006) triangular theory of love. The findings supported the assumption that the experience of love for products encompasses components and kinds of love similar to the ones described in the interpersonal triangular theory. The approach by which we proposed to investigate the experience of love relies on the assessment of these rewarding experiences. Therefore, before we initiate our investigation, we must be able to identify the rewarding thoughts, feelings, and behaviours associated to love for products. They may differ from those associated to love for people. Moreover, a measuring tool is needed which can assess the intensity of these components. The preliminary study presented in chapter 1 lacked an a priori objective measure of love and assumed that when a person responds to our invitation to discuss a particular loved product they do experience love for the product. Although all participants interviewed seemed to actually love the products they claimed to love, we need a more objective measure of this construct. This should allow us to study fluctuations in the love experience due to internal and external causes.

In this chapter we describe a succession of efforts taken to identify the rewarding thoughts, feelings, and behaviours each love component entails in the person-product context. With those, we can develop an effective, reliable, and concise measuring tool for the intensities of both the overall experience of love and of each of its three components separately. The development of this tool could also serve to confirm our assumption that person-product love has the same structure (components) as interpersonal love (chapter 2).
3.2 Identifying rewarding experiences with loved products

3.2.1 Phase 1 – Mapping person-product love stories

In chapter 2 we found that the rewarding thoughts, feelings, and behaviours of intimacy, passion, and commitment resembled the ones our participants reported to experience with products. For example, commitment in person-product love is not expressed through the consummation of marriage or other bonding ceremonies such as in interpersonal love. However, purchasing the beloved product seemed to be a ‘ritual’ through which commitment is experienced in person-product love relationships. As a starting point in identifying the rewarding experiences of intimacy, passion, and commitment people have with products we decided to convert items from the Triangular Love Scale (Sternberg, 1986) to a person-product context.

We mapped the content of the stories collected in the preliminary study (chapter 1), searching for extracts similar to the 45 items of the interpersonal Triangular Love Scale. Following a standard content analysis protocol, which recommends first analyzing a small sample of data to derive initial insights (Babbie, 2004), a random sample of 10 person-product love stories was first analyzed. No person-product examples were found for 12 of the 45 items. These 12 did not seem applicable to the person-product context, alluded to a broad or unspecific concept, were difficult to cluster, or seemed exaggerated if referring to a product. They are:

(23) ‘There is nothing more important to me than my relationship with ____’;
(17) ‘I find myself thinking about ____ frequently during the day’;
(27) ‘I cannot imagine my life without ____’;
(29) ‘When I see romantic movies and read romantic books I think about ____’;
(37) ‘I will always feel strong responsibility for ____’;

53
(26) 'I adore ____'?

(7) 'I give considerable emotional support to ____'?

(15) 'I share deeply personal information about myself with ____'?

(22) "I would rather be with ____ than anyone else"

(33) "Because of my commitment to ____ I would not let other people come between us"

(18) 'My relationship with ____ is very romantic'; and

(28) 'My relationship with ____ is passionate'.

The remaining 42 person-product love stories were analyzed according to the 33 items left. This analysis revealed that some items reflected similar phenomena when it comes to person-product love, as extracts of person-product love stories often fitted more than one item. Consider, for example, the story extract below that fitted both items 3 ("I am able to count on ____ in times of need") and 13 ("I feel that I can really trust ____"):

"What I really love about it [bike] is that I can always trust it, it is always there for me. For years this bike takes me to work, back home, to class in the morning. It takes me everywhere".

In order to avoid redundancy, similar items were grouped. In order to contextualize scale items to person-product relationships, a number of statements were adapted. For example, because participants often referred to a mutual understanding between them and their beloved products, the items 12 ('I feel that I really understand ____') and 13 ('I feel that ____ really understands me') were merged into one item ("I have a feeling that ____ and I understand each other well"). Items 44 ('I plan to continue my relationship with ____') and 45 ('even when ____ is hard to deal with, I remain committed to our relationship') were combined into one item - 'I am prepared to keep on using ____ no matter what' - as participants often talked about their motivation to maintain their relationship at all costs.
This resulted in an initial set of 18 experiences people are expected to have with products they love. Each six of them are expected to reflect—respectively—experiences of intimacy, passion, and commitment people have with loved products (see table 3.1).

<table>
<thead>
<tr>
<th>INTIMACY</th>
<th>PASSION</th>
<th>COMMITMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) ‘I feel close and connected to ____’</td>
<td>(7) ‘I have a feeling that ____ was meant to be mine’</td>
<td>(13) ‘I feel that I will always use ____’</td>
</tr>
<tr>
<td>(2) ‘I feel that I can trust and rely on ____ when I need it’</td>
<td>(8) ‘I really enjoy physical interaction with ____’</td>
<td>(14) ‘I feel responsible for ____’</td>
</tr>
<tr>
<td>(3) ‘I am willing to use my time, money, and physical effort to keep on using ____’</td>
<td>(9) ‘I prefer to use ____ more to using any other’</td>
<td>(15) ‘I am prepared to keep on using ____ no matter what’</td>
</tr>
<tr>
<td>(4) ‘I have a feeling that ____ and I understand each other well’</td>
<td>(10) ‘I find ____ very attractive’</td>
<td>(16) ‘Because I plan to continue using ____ I try not to over-use it’</td>
</tr>
<tr>
<td>(5) ‘I actively take special care to protect ____’</td>
<td>(11) ‘I tend to idealize ____’</td>
<td>(17) ‘I wouldn’t trade ____ for any other’</td>
</tr>
<tr>
<td>(6) ‘I value having ____ around me’</td>
<td>(12) ‘I sometimes have fantasies about ____’</td>
<td>(18) ‘I am certain of my love for ____’</td>
</tr>
</tbody>
</table>

Table 3.1 – Person-product love experiences

As most items were redesigned, we must ensure they still measure the components as expected. For that, we verified the content validity of the scale.

3.2.2 Phase 2 – Checking subscales items

Content validity indicates to which degree items of a scale appear to be a good measure of the concept one intends to measure. It helps to identify whether items correspond to the same construct and, if not, indicates need for improvement. In order to check the content validity of our scale items, we selected 10 specialists and asked them to determine which of the 18 items correspond to thoughts and feelings of intimacy, passion, and commitment. Specialists were design researchers in the field of user-centred design and product experience familiar with
people’s affective accounts. The specialists were first instructed to reflect on their own concept of what intimacy, passion, and commitment to a product represents. Then, they were asked to read carefully each of the 18 items and determine if each one of them refers to a thought, feeling, or behaviour of intimacy, passion, or commitment.

According to the specialists’ ratings (table 3.2), most items corresponded to the component they were first assigned to. However, most specialists assigned item 3 to a component different from the one expected and did not agree on the components associated with items 2, 5, 7, and 18.

<table>
<thead>
<tr>
<th>Item</th>
<th>Intimacy</th>
<th>Passion</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>‘I feel close and connected to ____’</td>
<td>INTIMACY (10x)</td>
<td>COMMITMENT (6x)</td>
</tr>
<tr>
<td>2</td>
<td>‘I feel that I can trust and rely on ____ when I need it’</td>
<td>COMMITMENT (6x) / INTIMACY (4x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>3</td>
<td>‘I am willing to use my time, money, and physical effort to keep on using ____’</td>
<td>COMMITMENT (7x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>4</td>
<td>‘I have a feeling that ____ and I understand each other well’</td>
<td>COMMITMENT (9x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>5</td>
<td>‘I actively take special care to protect ____’</td>
<td>INTIMACY (5x)</td>
<td>COMMITMENT (5x)</td>
</tr>
<tr>
<td>6</td>
<td>‘I value having ____ around me’</td>
<td>INTIMACY (8x)</td>
<td>COMMITMENT (8x)</td>
</tr>
<tr>
<td>7</td>
<td>‘I have a feeling that ____ was meant to be mine’</td>
<td>PASSION (6x) / INTIMACY (4x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>8</td>
<td>‘I really enjoy physical interaction with ____’</td>
<td>PASSION (7x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>9</td>
<td>‘I prefer to use ____ more to using any other’</td>
<td>PASSION (7x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>10</td>
<td>‘I find ____ very attractive’</td>
<td>PASSION (9x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>11</td>
<td>‘I tend to idealize ____’</td>
<td>PASSION (9x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>12</td>
<td>‘I sometimes have fantasies about ____’</td>
<td>PASSION (10x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>13</td>
<td>‘I feel that I will always use ____’</td>
<td>COMMITMENT (9x)</td>
<td>COMMITMENT (8x)</td>
</tr>
<tr>
<td>14</td>
<td>‘I feel responsible for ____’</td>
<td>COMMITMENT (8x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>15</td>
<td>‘I am prepared to keep on using ____ no matter what’</td>
<td>COMMITMENT (8x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>16</td>
<td>‘Because I plan to continue using ____ I try not to over-use it’</td>
<td>COMMITMENT (9x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>17</td>
<td>‘I wouldn’t trade ____ for any other’</td>
<td>COMMITMENT (8x)</td>
<td>INTIMACY (4x)</td>
</tr>
<tr>
<td>18</td>
<td>‘I am certain of my love for ____’</td>
<td>COMMITMENT (6x) / PASSION (4x)</td>
<td>INTIMACY (4x)</td>
</tr>
</tbody>
</table>

Table 3.2 – Person-product love experience and expert component ratings.

To ensure the content validity of the scale, those five items were improved in order to better fit their corresponding constructs. Item 2, 3, and 5 were modified to better fit the construct of intimacy and items 7
and 18 to better fit the construct of passion and commitment, respectively. Items were modified as follows:

(2) ‘I feel that I can rely on ____ when I need it’

(3) ‘I thought that I would use and keep ____ even if it takes my time, money, or effort’

(5) ‘I support and protect ____’

(7) ‘I have a feeling that ____ was specially made for me’

(18) ‘I care about ____’

3.2.3 Phase 3 – Testing the Love Scale

During phase three, our goal was to test the 18-item preliminary personal-product love scale on whether the items measure love for products and whether the three-part structure of the scale would be reflected in the data. Based on the triangular love theory, we expected all items to exhibit some degree of correlation, as love relationships tend to involve more than a single component of love. Still, items within subscales were expected to correlate better than items between subscales, since these refer to the same construct.

Therefore, in order to test the preliminary personal-product love scale, we asked 144 students from a design master program (74 men, 70 women, age = 23.3 ± 1.9) at Delft University of Technology to fill in the love scale. Each participant was asked to rate, on a five-point scale, the extent to which each of the 18 items corresponded to the thoughts and feelings they experience with a specific product they love, own, and use (1 = do not correspond; 5 = corresponds very well). Items in the scale were presented in four balanced orders. The data collected were subjected to a series of analyses to assess the dimensionality of the questionnaire and refine the subscales.

The analysis techniques applied included principal components and factor analysis (principal axis factoring) followed by orthogonal (varimax)
and oblique (promax with $\kappa = 4$) rotation. Different criteria (eigenvalue $> 1$, parallel analysis) yield very different numbers of factors or components to extract (between 1 and 4 or 5) but the scree plots show a big drop after the first factor, suggesting that a single factor accounts for a big part of the common variance in the ratings. Because three subscales were expected on theoretical grounds, reflecting the three components of the love experience, we will nonetheless examine a 3-factor solution (30% of variance explained).

Results from the various analyses were broadly similar, but the factor analysis followed by oblique rotation produced a relatively clearer picture and corresponds to the theoretical expectation that the components of love are related to each other. Consequently, it will be the only analysis presented here (for further details regarding the preference for this approach, see also Fabrigar, MacCallum, Wegener, & Strahan, 1999). The correlations among factors and between items and factors in the structure matrix confirm that the scores are dominated by the overall "love" construct but also suggest that the three factors do in fact reflect the three components of love. An examination of the factor loadings in the pattern matrix also supports this interpretation (see note). Three of the intimacy items have their strongest loadings on the first factor, four of the passion items on the second factor and two of the commitment items on the third factor. However one item does not correlate with any factor at all and 8 items do not have their highest loadings on the expected factor.

Taken together, these findings support our expectation that all scale items measure love and correlate with each other. However, the theoretical structure of the three constructs was imperfectly reflected in the scores. Two features of the data can explain these difficulties: a potential bias in the choice of product and the general lack of variability. Asking participants to choose a product they love might have prompted them to select a product for which they experience a relatively high level of several or all of the components at the same time. It may have masked the patterns of difference that would appear when considering a broader range of product-love relationships.
Additionally, examining only relationships with love products certainly restricted the range of observed scores. Indeed, an inspection of the distributions of item responses revealed that most participants only used the two or three highest ratings for many items. This range restriction combined with the 5-points response format resulted in a very coarse measurement, attenuating correlations between items and hiding potential subscales.

3.2.4 Phase 4 – Subscales validation

To overcome the technical difficulties identified in the first test of the love scale and to assess its ability to measure each component of love separately, we conducted two further studies. In the first study a group of participants were asked to rate how much each one of the eighteen items applies to their relationship with their mobile phone. In the second study, three groups of participants were asked to fill in the scale considering their relationships with a product with which they experience one of the components of love. In both cases the response format was changed to a 7-point rating scale to increase variability and limit correlation attenuation.

For the first study, we recruited 66 students from an architecture master program (26 men, 40 women, mean age=24) at Delft University of Technology. They were asked to rate, on a seven-point scale, the extent to which each of the 18 items corresponded to the thoughts, feelings, and behaviours they have towards their mobile phones (1 = does not correspond; 7 = corresponds very well). Items in the scale were presented in three balanced orders. Mobile phones were selected because most potential participants were likely to own one and this type of product sometimes came up as an example of a loved product in previous studies. Importantly, participants in this study were not selected based on the level of love they experience towards their mobile phone and their relationships are assumed to vary from no love at all to different kinds of love.
As in the previous study, the data collected was subjected to a factor analysis. The scree plot is compatible with one or two-factor solutions while a parallel analysis and the "eigenvalue over 1" criteria both suggested that a two-factor solution is the most appropriate. The two factors account for 58% of the total variance. The first factor seems dominated by intimacy, with all intimacy items (but also one commitment item) exhibiting loadings over .6 on this factor. The second factor clearly refers to passion with high factor loadings for the passion items (all except one > .6). Commitment items tend to have lower loadings and to be split between the two factors, with several moderate to high loadings on the first factor. The correlation between both factors was still quite high suggesting that the scales are closely related.

While we were unable to recover a separate commitment subscale in this data, the structure of the ratings conformed relatively well to the expectations, with all passion and intimacy items loading highly on a different factor and no cross-loadings over .3. The internal consistency of each subscale was also largely satisfactory ($\alpha = .91$ for intimacy, .88 for passion and .88 for commitment). Overall, the results from this study confirmed that most, if not all, items of the scale are related to the love construct and suggested that at least two subscales might be used to assess different components of love.

The second study of phase 4 complements these results by taking a different approach to the validation of the instrument. Factor analyses are based on the correlation between items but are not sensitive to their means. The last study was designed to look at the total scores on each of the a priori subscales and to assess the ability of the love scale to distinguish different criterion groups defined by the component of love experienced.

To this end, 75 students from an architecture master program at Delft University of Technology participated in the study (41 men, 34 women; mean age = 24). They were assigned to three separate groups of 25 participants each. Each group was asked to use the 18-item love scale (7-point range) to assess the thoughts, feelings, and behaviours they have with a product they feel intimate with, passionate about, or
committed to, respectively. Prior to the assessment, a written description of what is to be intimate with, passionate about, or committed to a product was given to its corresponding groups: to be intimate with a product is to feel a special and close emotional connection with it; to be passionate about a product is to experience excitement and enthusiasm to a product that appeals to you; to be committed to a product is to be dedicated or devoted to its protection and integrity.

Factor analyses of this data produced clear groups of factors, with all intimacy and all passion items defining the opposite ends of a bipolar factor and all commitment items loading highly on a second factor. Internal consistencies were also generally high, but these analyses might not be entirely appropriate given the composite nature of the sample (see Waller, 2008).

More importantly the patterns of scores in the three groups were extremely clear (figure 3.1). The participants who were asked to reflect about a product they felt intimate with reported a much higher level of intimacy (30 ± 2.3 for a maximum score of 36) than participants asked about a product they felt passionate about (11 ± 2.4) or committed to (12 ± 2.8), F(2, 72) = 417, p < .001. Similarly, participants asked to choose a product they felt passionate about reported a much higher level of passion (26 ± 2.2) than either the participants reporting about a product they were committed to (11 ± 2.8) or those reporting about a product they were intimate with (8 ± 2.5), F(2, 72) = 383, p < .001. Finally, the participants who were asked about a product they felt committed to also reported a higher level of commitment (26 ± 3.4) than participants reporting about a product they felt passionate about (11 ± 2.6) or intimate with (12 ± 2.5), F(2, 72) = 201, p < .001.
3.2.5 Phase 5 – Scale revision

One of the objectives of the validation studies was to provide an empirical basis to revise the scale and reduce the number of items, because a concise person-product Love Scale is quicker and easier to administer when investigating the intensities of love experiences over time. The different data sets were therefore reanalyzed together, weighting the observations to adjust for the diversity in sample sizes. The criteria considered suggested between 3 and 4 factors. Given the theoretical background of the scale development, the three-factor solution (49% of variance explained) will be presented in detail.

The factor structure is reasonably clear, all items have their main loading on the expected factor and cross-loadings are generally low (table 3.3). All items of the intimacy scales have very high loadings and
could be retained in the final version but INT3 has slightly lower loadings and will not be selected.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>(INT1) ‘I feel close and connected to ____’</td>
<td>0.81  0.10  0.02</td>
</tr>
<tr>
<td>(INT2) ‘I feel that I can rely on ____ when I need it’</td>
<td>0.82  0.02  0.10</td>
</tr>
<tr>
<td>(INT3) ‘I thought that I would use and keep ____ even if it takes my time, money, or effort’</td>
<td>0.57  0.14  0.11</td>
</tr>
<tr>
<td>(INT4) ‘I have a feeling that ____ and I understand each other well’</td>
<td>0.75  0.02  0.12</td>
</tr>
<tr>
<td>(INT5) ‘I support and protect ____’</td>
<td>0.80  0.04  0.03</td>
</tr>
<tr>
<td>(INT6) ‘I value having ____ around me’</td>
<td>0.80  0.06  0.01</td>
</tr>
<tr>
<td>(PAS1) ‘I have a feeling that ____ was specially made for me’</td>
<td>0.08  0.67  0.08</td>
</tr>
<tr>
<td>(PAS2) ‘I really enjoy physical interaction with ____’</td>
<td>0.02  0.73  0.06</td>
</tr>
<tr>
<td>(PAS3) ‘I prefer to use ____ more to using any other’</td>
<td>0.07  0.69  0.10</td>
</tr>
<tr>
<td>(PAS4) ‘I find ____ very attractive’</td>
<td>0.16  0.72  0.12</td>
</tr>
<tr>
<td>(PAS5) ‘I tend to idealize ____’</td>
<td>0.13  0.52  0.13</td>
</tr>
<tr>
<td>(PAS6) ‘I sometimes have fantasies about ____’</td>
<td>0.18  0.63  0.08</td>
</tr>
<tr>
<td>(COM1) ‘I feel that I will always use ____’</td>
<td>0.12  0.06  0.68</td>
</tr>
<tr>
<td>(COM2) ‘I feel responsible for ____’</td>
<td>0.16  0.03  0.70</td>
</tr>
<tr>
<td>(COM3) ‘I am prepared to keep on using ____ no matter what’</td>
<td>0.01  0.07  0.67</td>
</tr>
<tr>
<td>(COM4) ‘Because I plan to continue using ____ I try not to over-use it’</td>
<td>0.25  0.02  0.49</td>
</tr>
<tr>
<td>(COM5) ‘I wouldn’t trade ____ for any other’</td>
<td>0.07  0.07  0.77</td>
</tr>
<tr>
<td>(COM6) ‘I care about ____’</td>
<td>0.15  0.03  0.50</td>
</tr>
</tbody>
</table>

Table 3.3 - Pattern matrix for the three-factor solution.

Item loadings for the commitment scale seem generally lower, with COM4 and COM6 clearly below the rest of the scale. The case of the passion scale is a bit more complex. PAS5 is the item with the lowest loading but the differences are not very big. In fact, extracting four factors splits the passion scale, revealing two correlated subscales, defined respectively by PAS1 and PAS3, and by PAS2 and PAS4. Selecting these four items should therefore maximize the scope and validity of the reduced scale.

A shorter version of the person-product Love Scale was developed following this analysis (see table 3.4). Its reliability was
assessed by computing internal consistency estimates (coefficient $\alpha$) on the second data set (mobile phones ratings): $\alpha = .86$ for intimacy, .86 for passion and .82 for commitment. These internal consistencies are all good and only slightly lower than those of the full 6-items scales (.91, .88, and .88 respectively for intimacy, passion and commitment).

<table>
<thead>
<tr>
<th>INTIMACY</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 'I feel close and connected to ____'</td>
</tr>
<tr>
<td>(2) 'I feel that I can trust and rely on ____ when I need it'</td>
</tr>
<tr>
<td>(3) 'I have a feeling that ____ and I understand each other well'</td>
</tr>
<tr>
<td>(4) 'I support and protect ____'</td>
</tr>
<tr>
<td>(5) 'I value having ____ around me'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PASSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 'I have a feeling that ____ was specially made for me'</td>
</tr>
<tr>
<td>(2) 'I really enjoy physical interaction with ____'</td>
</tr>
<tr>
<td>(3) 'I prefer to use ____ more to using any other'</td>
</tr>
<tr>
<td>(4) 'I find ____ very attractive'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMMITMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) 'I feel that I will always use ____'</td>
</tr>
<tr>
<td>(2) 'I feel responsible for ____'</td>
</tr>
<tr>
<td>(3) 'I am prepared to keep on using ____ no matter what'</td>
</tr>
<tr>
<td>(4) 'I wouldn't trade ____ for any other'</td>
</tr>
</tbody>
</table>

Table 3.4 – Final person-product Love Scale.

3.3. Discussion

Our goal in this chapter was to identify the experience of love for products and develop a comprehensive, concise, and reliable scale to assess it and its (hypothetical) three main components (intimacy, passion, and commitment). As a starting point, we searched for extracts of person-product love stories that were similar to the items of the interpersonal Triangular Love Scale. In this analysis, some items were excluded due to their lack of fit and others were redesigned to improve their consistency and fit to a person-product context. These efforts resulted in a set of 18 statements (items) that reflected the thoughts, feelings, and behaviours people have for products they love (six reflecting each love component). Next, as the items were re-designed, we checked whether they were a good measure of the three love constructs. Most items reflected their corresponding constructs and five of them were improved to ensure a better fit.
Later, a study was carried out to test the love scale and check whether it assesses love for products and if subscales could assess the components of intimacy, passion, and commitment, independently. The results confirmed that the 18-item scale is a reliable tool to measure the experience of love for products. We also had reasonable indications that the scale could assess the underlying structure of the experience of love as being composed of intimacy, passion and commitment. Having achieved such encouraging results, two further studies were carried out. The first one confirmed that the components of intimacy, passion, and commitment are independent from each other and that each component can be assessed through a 4/5-item subscale within the person-product love scale. Five items were excluded, leaving 13.

The findings indicate that the 13-item person-product love scale is a comprehensive, concise, and reliable tool to assess the experience of love for products and its three components (see table 3.3). The findings also support our theoretical assumption, borrowed from Sternberg’s Triangular Theory of Love, that intimacy, passion and commitment are structural elements – components – of the experience of love for products.

The person-product Love Scale allows us to perform periodical assessments of the experience of love and understand its dynamics through time. The independent assessment of the three components allows us to get a more fine-grained understanding of these dynamics, for example in relation to specific interactions. The 13 statements that make up the person-product Love Scale correspond to the rewarding thoughts, feelings, and behaviours people have when experiencing love for products. These statements are useful to identify love and distinguish it from other affective experiences. Therefore, the Love Scale can be used effectively to ensure homogeneity among research participants. It can also be used as a participant selection tool.

Product developers and industry could benefit from the use of the person-product love scale. Results from its application can help designers and product developers understand what is experienced as love towards specific products. The insights can in turn inform the
design or re-design of products that can deliver more rewarding and longer-term experiences.

Limitations of the scale should also be mentioned. The scale was developed in the English language and the research participants were not, for the most part, native English speakers. They took part in international master programs and were educated in the English language. Although the results indicate that the participants’ ratings are consistent, it is possible that some items were misinterpreted and that some ratings were imprecise due to shortcomings in English language skills.

We should also clarify that the person-product love statements in the scale are not expected to represent the whole range of love experiences people can have with consumer products. These were devised to measure the construct of love.

Having developed a measuring tool to assess the experience of love in person-product relationships and the intensities of intimacy, passion, and commitment, we now turn to the assessment of person-product relationship events. In chapter 2 we have seen that, unlike Levinger’s stories, the stories we collected were not yet particularly focused on relationship events and participants did not provide enough detail on what happened in these events. Investigating relationship events could help us identify interactions that are linked to the experience of love and influences that could change the experience of love.

Note:

When using an oblique rotation, the phrase “factor loadings” is somewhat ambiguous because factor weights, factor structure and factor pattern are not identical (see, for example, Gorsuch, 1974). By convenience, we will refer only to coefficients from the pattern matrix as loadings. They can be interpreted as part correlations between factor scores and observed variables, controlling for the correlations between factors.
“MY LOVE IS YOUR LOVE”

CHAPTER 4:

The Experience Interaction Tool

In Chapter 2 we proposed an approach to the study of the link between interactions and the experience of love in person-product relationships. As a first step towards this we have identified the rewards of love that people experience and developed a tool to assess the intensity of those rewards (components of love) at particular moments in time. Now we need to be able to assess how these rewards are connected to interactions, conceptually and over time, in order to grasp the development of person-product love relationships. In chapter 2 we saw that, unlike the stories Levinger collected, the stories we collected were not structured enough. The stories we collected were not yet particularly focused on relationship events and participants did not provide enough detail of their own accord on what happened in these events. For example, it was often not clear which interactions influenced experiences described by participants. In this chapter, we develop a structured assessment of person-product relationship events: the Experience Interaction Tool (EXITool).

4.1 Introduction

We defined relationship events as short periods of time in person-product relationships in which people and products interact and

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4 Chapter based on Russo, Boess, & Hekkert (2008) and Russo, Boess, & Hekkert (2009). Research assistant Deger Ozkarananli contributed to the data analysis of a study presented in 4th phase of the development of the experience interaction tool.
(occasionally) an experience takes place. For example, a moment in which one hears their mobile phone ringing, take it out of their pocket, press a button to answer the call, talk with the caller, end the call, and put the mobile phone back in their pocket is a relationship event. This definition was chosen for its general similarity to Levinger’s (2002) descriptions of events in which partners in a relationship interact. Investigating what happens in these events could give us clues which interactions are linked to the rise and change of the experience of love. Investigating time-sequences of relationship events could inform us about the time course of the experience of love for products and the influences within interactions that could affect it.

Interpersonal love researchers have used love stories to investigate events throughout relationships. According to Kelley (2002), such personal-life narratives are fundamental to the understanding of the love phenomenon. Both theories from which we derived our approach to investigate person-product love in this research have used personal-life narratives to investigate the love phenomenon. Levinger (2002) used personal-life stories to investigate the content of close relationship events and make descriptions of interpersonal relationship development and change. Sternberg (1986/2006) also relied on personal narratives to theorize about the structure and meaning of the experience of love and used prototypical love stories that inform us about patterns in the experience of love over time. In the field of design, experience narratives are also perceived as a great source to access rich insights and to analyse a given experience and the context in which it takes place (Karapanos, 2010). Stories are the unique and personal means we use to remember and communicate experiences we have (Forlizzi & Ford, 2000). Here we first examine the prospect of using people’s written and spoken love stories as a means of assessing relationship events in person-product love relationships.

4.2 Assessing person-product relationship events

In order to assess the content of relationship events and their sequences over time, we conducted a trial study using personal-life
stories. In this study, we collected people’s retrospective accounts of relationship events, aiming to grasp the interrelatedness between interaction and the experience of love. Three participants (2 men and 1 woman) were selected by convenience. They were asked to share stories of events in which they interacted with a particular beloved product and experienced love. This approach differed from the story collection in the preliminary study (chapters 1 and 2) in that participants were now asked to focus particularly on events. Loved products were a hammock, a folding bike, and a laptop. Each participant was interviewed twice and asked to fill in a diary. In the first interview, participants were informed about what relationship events were: they were given examples of a number of interactions with products that could be linked to the experience of love and should be reported. The examples consisted of the typology of interactions proposed by Desmet & Hekkert (2007) as relevant to product experiences (see figure 4.1). The participants were then asked to share stories of times in which they interacted with their beloved product. The interviews were audio recorded.

<table>
<thead>
<tr>
<th>INSTRUMENTAL INTERACTIONS</th>
<th>using, operating, managing products</th>
</tr>
</thead>
<tbody>
<tr>
<td>NON-INSTRUMENTAL INTERACTIONS</td>
<td>playing with, caressing products</td>
</tr>
<tr>
<td>NON-PHYSICAL INTERACTIONS</td>
<td>fantasising about, remembering, anticipating the usage of products</td>
</tr>
</tbody>
</table>

Figure 4.1 – Types of person-product interactions linked to product experiences (Desmet and Hekkert, 2007).

After the interview, participants received a diary in which they were asked to share more stories of relationships events as they remembered them over a period of one week. The stories could be retrospective stories of past events or stories of events that happened during the week itself. After that period, in the second encounter, participants were
invited to discuss the stories and to place them in chronological order. The participants were also asked to tell more stories if they had any. Furthermore, the participants were asked how they felt about this form of reporting and how easy they found it to do. In total, the three participants shared fourteen stories of relationship events. Only three of these were shared verbally during the second encounter (by two participants).

The 3 stories the participants shared verbally during the interview itself were transcribed. Then the content of each of the 14 stories of relationship events were examined in search for a link between interactions and the experience of love: we searched for statements of rewards of love (chapter 3) and passages that indicated interactions.

This attempt to assess time-sequenced relationship events brought up a few problems. First, participant’s accounts of relationship events were difficult to manage systematically. People tell stories in ways they find most convenient and, as a result, the stories were often long, complex, and unstructured. The stories contained a large amount of partially useless data that took a long time to assess. One of the participants complained that it took him too long to write the stories. Second, the participants said they experienced difficulties in distinguishing what is an interaction. It still remained difficult to identify interactions and corresponding experiences in the data, as the participants often only mentioned one or the other. Third, the typology of interactions proposed by Desmet & Hekkert (2007) did not inform participants – at a practical level – about what interactions are. During the second encounter, two participants said they had difficulties to share stories about events in which non-instrumental and non-physical interactions occurred. In addition, because they were not sure about which interactions to share (as they stated when probed further about events), they purposely omitted stories about certain relationship events. Still, in the stories participants shared, they were many times able to link interactions to experiences of love and even described effects that may have influenced their experience love. For example:
"I was unfolding the bike when I noticed [interaction] that my new raincoat was also red, like my bike [effect]. I didn’t notice it when I was at the shop (...) you see, I’m so connected to this bike that I unconsciously bought a coat to fit it [experience of love (intimacy) – ‘I feel close and connected to the product’].".

As a result of this trial study some requirements could be set for the Experience Interaction Tool (EXITool). The tool should aid the assessment of relationship events by (1) sensitizing research participants to think in terms of interactions and (2) offering participants a structure to share stories. The aim of this tool is to (a) easily identify interactions, (b) avoid unneeded data, (c) facilitate the systematic assessment of interactions, and (d) link interactions to experiences. In addition, the tool should be manageable and convenient to use.

The further development of the Experience Interaction Tool followed an iterative course, where the results and findings of one phase provided insights that helped in setting the objectives and goals of the next one. For each phase, we report its goals and the methods used to carry out the study and analysis, describe the results, and discuss the findings.

4.2.1 Phase 1: Structuring stories of relationship events

Our first step was to identify a basic and common structure of relationship events in the stories. Considering that the imposition of a structure to storytelling might compromise the acceptance of the tool in the research, we sought a way of reporting interactions and experiences that is still natural to people. Although many of the 14 stories collected in the trial study (this chapter) did not describe experiences and the corresponding interactions, 6 of them did. Those we could use for a content analysis. We analyzed the stories collected in the trial study searching for commonalities in the structure of storytelling and in the content of these stories. The content analysis consisted of, first, the examination of a smaller sample in order to derive analysis codes and second, the analysis of the rest of the stories considering these codes (Babbie, 2004).
The analysis revealed certain structural aspects of stories of relationship events that should be taken into consideration in the development of the tool. The stories followed a basic structure: a participant performs an action towards a product and/or a person. Subsequently, the participant describes the experience of a positive or negative affect (e.g. happiness, disappointment) towards either the product, the interaction, others involved in the event, or towards him - or herself. The participant then explains why that experience occurred and, often, expresses love for the product (considering the experiences of love identified in chapter 3). Here, for example, is an extract of a relationship story in which the participant was sitting in her beloved hammock:

“I sat on the hammock with my boyfriend. I was so happy that we were sitting there, because I really enjoy the comfort of my hammock and to chat with him (...) it feels as if this hammock is a part of us [intimacy = ‘I feel close and connected to the product’].”

Participants used action verbs to report interactions with their beloved products. Action verbs are a type of verb that describes an act or activity: things people do or could do (e.g., to use, to clean, to move). According to Crawford (2005), verb thinking is “central to understanding interactivity” (p. 91) since it focuses on the actions enacted by people and any interactive system of artifacts. In order to encourage verb thinking and ensure that interactions are reported, action verbs could be a valuable means to sensitize research participants.

Moreover, the participants employed action verbs to account for the actions taken by a person towards a product (e.g., “I carried my bike”), actions carried out by a product towards a person (e.g., “the laptop screen smacked my fingers”), and actions products carry out by themselves (e.g., “the table collapsed”). On most occasions, the participants were the ones who carried out actions towards the products, sometimes together with others. Participants also reported relationship events where they witnessed actions carried out by others towards the product and vice-versa (e.g., “I was observing my boyfriend reading on the hammock”).
Besides the structure of stories, another finding was considered useful to the further development of the tool. Relationship events may contain sequences of interactions. For example, in an event in which a participant was ‘buying’ his bike, he actually reported a number of interactions, such as ‘going to the shop’, ‘checking the bikes’, ‘choosing the red bike’, ‘paying for the bike’, and ‘taking the bike home’. Some of these interactions contained, in turn, other sequences of interactions: in ‘checking the bike’, for example, a participant reported ‘looking at the bike’, ‘rubbing the leather seat’, ‘touching the metal frame’ and so on. However, of all the interactions reported in each relationship event, often one of them was associated with a love experience. For example, in the entire event in which the participant bought his bike, he considered ‘taking the bike home’ to be the most meaningful interaction because "at that moment I knew the bike was mine. I was so happy and looked forward to spending more time with it". When asked which interactions the other participants thought were connected to their experience of love, they referred to the interactions they picked as ‘special’, ‘the one that made me feel the love’, ‘the most important one’ and also ‘meaningful’.

This finding indicates that relationship events may encompass several interactions but that only a specific – ‘meaningful’ – interaction is strongly linked to love experiences. The tool must ensure that participants report particularly those interactions in their stories that were meaningful to them.

4.2.2 Phase 2: Collecting relevant action verbs

Following the findings from the previous phase, the goal of phase two was to compile a list of action verbs in the English language in order to provide research participants with inspiration on possible actions that can be reported. These action verbs should encourage participants to report relationship events and interactions linked to the experience of love. The content of the three reports from the trial study and fifty-two reports of relationship events from the preliminary study (Russo, Boess, & Hekkert, 2010 and Chapters 1 and 2) were examined in search for
action verbs participants had used in order to report interactions in relationship events. The outcome of this analysis was a list of forty-two action verbs. This pool was considered to be very incomplete, since it did not contain several action verbs (e.g., try, fix, design, smell) that could conceivably describe interactions between people and products. As it was not possible to find a complete list of action verbs, we added four other lists of action verbs in order to extend the pool and improve its scope. The lists were: a list of action verbs for writers (Rahmel, 2008), two lists of action verbs for resumes, and a list of action verbs for communicators (Hart, 2004). These efforts resulted in a pool of 1454 action verbs. Not all 1454 action verbs collected seemed useful to describe person-product interactions. For example, person-product interactions involving an action like ‘dope’, ‘mentor’, ‘petition’ or ‘placate’ could not be envisioned. In order to obtain a selection of action verbs that are relevant to our research, three English native speakers were selected and asked to rate the pool of 1454 action verbs as relevant or not to report person-product interactions. The verbs that were considered relevant by at least two participants were selected. The three native speakers made fairly similar verb selections. The selected verbs formed a pool of 957 action verbs relevant to report person-product interactions. Two of the three participants mentioned that many of the verbs they rated as relevant to person-product context are not commonly used. Verbs such as ‘abide’, ‘fondle’, or ‘plow’ are not frequently used in everyday situations and would probably not be part of the vocabulary of many people, especially those who are not native English speakers. To eliminate the verbs that may not be part of the vocabulary of future research participants, ten participants with an international background and a good knowledge of the English language were asked to indicate on a list of 957 action verbs which ones they used frequently to report interactions with products.

Out of the verbs the ten participants indicated as being relevant to a prospect participant’s vocabulary, only those indicated to be frequently used by at least five participants were selected, leaving 451 action verbs.
4.2.3 Phase 3: Manageable set of action verbs

In order to inform participants about the relationship events and interactions they are expected to report, it is essential to have a manageable number of verbs. The pool of 451 action verbs collected was still quite large and impractical to inform participants. According to Lakoff (1987), things are categorized together on the basis of what they have in common. Categorization is a very basic process used to make sense of things (Lakoff, 1987). In the third phase, we worked towards a taxonomy of action verbs. The taxonomy was expected to comprise and organize the 451 relevant action verbs into self-explanatory groups of interactions.

Through a card sorting technique (Spencer, 2009), three designers and one non-designer were asked to categorize the 451 relevant action verbs. The reason to ask designers was their specialist experience in reflecting about products and interactions. The non-specialist was selected in order to check if he/she would come up with different and useful categorization criteria. Each participant was met individually and received 451 cards, each containing the name of one relevant action verb. They were informed about the purpose of the study and their task was to develop a criterion to categorize those cards. Participants were also asked to explain their choice of classification criterion, define each category created, and try to come up with a different criterion to group the action verbs. This procedure was repeated until the participant could not develop new criteria. All taxonomies created and the criteria developed were compared and analyzed. The final interaction taxonomy was made based on its manageability and its expected ability to elicit reports of relationship events.

Participants one and two (specialists) each adopted one classification criterion. Because participants three (specialist) and four (non-specialist) developed very similar criteria for their taxonomies, those were counted as one. Because the number of action verbs to be categorized was extremely large, the participants considered the task to be quite laborious and time consuming. Therefore, only participant three
developed a second classification criterion. In total, four distinct taxonomies were created.

**Taxonomy 1 – Similarity of Actions**
The criterion used by participant 1 to categorize the verbs was the similarity between actions. Verbs were put together based on their meaning, their connotation. Accordingly, twelve categories were created and each one of them had between 0 to 4 sub-categories (see table 4.1). Each category contained actions considered to be ‘alike’ and was named after their best example (prototypical verb). Each category refers to a type of action.

We considered this taxonomy very relevant for the tool. The twelve categories of this taxonomy are clear and mutually exclusive, referring to types of interaction that may be carried out with products.

**Taxonomy 2 – Human faculties**
The criterion used by participant two to categorize the action verbs was which human faculties were involved when performing interactions. First, two categories were created: mental actions (e.g., think, anticipate) and physical actions (e.g., to touch, to transport). Later, another category – social actions – was included, representing those actions that are carried out together with other people (e.g., show, tell). This categorization is quite similar to the one proposed by Desmet & Hekkert (2007) that, previously, was found not to inform participants on interactions that could be reported. Moreover, the categories were not mutually exclusive: first, the participant classified action verbs in terms of ‘mental actions’ and ‘physical actions’. Later, the category ‘social actions’ was included, referring to actions that are carried out together or in the presence of others, whether the action was mental or physical. For these reasons, this taxonomy does not seem useful to inform participants about interactions, nor to help them report relationship events.
<table>
<thead>
<tr>
<th>Category</th>
<th>Sub-category</th>
<th>Examples</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use</td>
<td>Operate (start/stop)</td>
<td>Utilize, activate</td>
<td>Actions that refer to the instrumental use of products.</td>
</tr>
<tr>
<td></td>
<td>Test</td>
<td>Experiment, test</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Move</td>
<td>Rotate, turn</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manipulate</td>
<td>Handle, touch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hold</td>
<td>Support, grab</td>
<td></td>
</tr>
<tr>
<td>Handle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sense</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do</td>
<td>Make</td>
<td>Build, construct</td>
<td>Actions in which the product is made, designed, or reproduced.</td>
</tr>
<tr>
<td></td>
<td>Reproduce</td>
<td>Copy, duplicate</td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>Resize</td>
<td>Enlarge, shorten, stretch</td>
<td>Actions that refer to modifying, changing the product in terms of size or appearance.</td>
</tr>
<tr>
<td></td>
<td>Modify</td>
<td>Adjust, adapt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Customize</td>
<td>Personalize, decorate</td>
<td></td>
</tr>
<tr>
<td>Arrange</td>
<td>Reallocate</td>
<td>Settle, fit</td>
<td>Actions referring to the arrangement of the product.</td>
</tr>
<tr>
<td></td>
<td>Position</td>
<td>Align, straighten</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organize</td>
<td>Classify, order, list</td>
<td></td>
</tr>
<tr>
<td>Care</td>
<td>Preserve</td>
<td>Maintain, save</td>
<td>Actions carried out in order to keep the product for longer, whether by preserving, repairing, or assisting it.</td>
</tr>
<tr>
<td></td>
<td>Repair</td>
<td>Recover, polish</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assist</td>
<td>Help, collaborate</td>
<td></td>
</tr>
<tr>
<td>Violate</td>
<td>Hit</td>
<td>Slap, kick, punch</td>
<td>Violent, abusive actions carried out in order to harm or not.</td>
</tr>
<tr>
<td></td>
<td>Break</td>
<td>Crash</td>
<td></td>
</tr>
<tr>
<td>Examine</td>
<td>Analyze</td>
<td>Study, check</td>
<td>Any action referring to the examination of products whether it refers to a visual analysis or observation or to the investigation of product characteristics and its measurement.</td>
</tr>
<tr>
<td></td>
<td>Observe</td>
<td>Monitor, view</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Investigate</td>
<td>Explore, research</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluate</td>
<td>Measure, rate</td>
<td></td>
</tr>
<tr>
<td>Concede</td>
<td>Give</td>
<td>Donate, award</td>
<td>All actions in which one gives away the product, whether it is temporarily or definitive.</td>
</tr>
<tr>
<td></td>
<td>Sell</td>
<td>Commercialize, trade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abandon</td>
<td>Leave, delete</td>
<td></td>
</tr>
<tr>
<td>Obtain</td>
<td>Get</td>
<td>Capture, retain</td>
<td>All actions in which one gets hold of the product or act in order to get hold of the product.</td>
</tr>
<tr>
<td></td>
<td>Find</td>
<td>Discover, detect</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Select</td>
<td>Pick, choose</td>
<td></td>
</tr>
<tr>
<td>Share</td>
<td>Tell (report, suggest)</td>
<td>Recommend, describe, inform</td>
<td>Actions that are carried out together with others, whether they refer to talking about the product or showing the product.</td>
</tr>
<tr>
<td></td>
<td>Show</td>
<td>Indicate</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1: Taxonomy 1 – Similarity of Actions
Taxonomy 3 – Relationship life-cycle

The first criterion adopted by participant 3 to categorize the action verbs was based on actions that are likely to occur in specific phases of product consumption lifecycle, or person-product relationships. The first category created was named contact and it refers to all actions that may occur in the initial phase of person-product relationships. This category comprises actions that are likely to occur prior to the start of the relationship with the product (e.g., find, investigate), or when the person gets in touch with the product for the first time (e.g., spot, check).

The second category was named consumption and it refers to all the actions likely to occur when the person acquires the product (e.g., buy, get, receive) and consumes it (e.g., use, press, carry). The third category created was named avoid discard and it refers to all actions that are expected to be carried out by a person in order to keep the product for longer, whether in order to recover it (e.g., repair, fix), modify it (e.g., renew, change), or to clean it (e.g., maintain, sanitize).

The fourth category was named discard, and it refers to all actions carried out when products are discarded, whether the discard is voluntary (e.g., give, abandon) or involuntary (e.g., lose, break). This category also included after-life actions, which are those that can be carried out after the product is discarded (e.g., recycle).

This categorization was considered problematic because it depends on the frequency of certain actions in specific phases of person-product relationship development. At this point, it is not known what phases characterize person-product love relationships. Neither it can be assumed that certain interactions occur more frequently (or even exclusively) at particular times. This classification would either force certain everyday actions such as touch, move, into one particular phase of a relationship, or its categories would become not mutually exclusive.

Taxonomy 4 – Macro and micro-level actions

Participant 3 adopted a second classification criterion, similar to the one created by participant 4 to categorize the action verbs. As the
differences are small, here they are discussed as one. Taxonomy 4 was based on two distinctive levels of interaction that occur in sequence during relationship events: the macro-level actions and the micro-level actions. The macro-level actions are those people often refer to when they talk about a relationship event. Usually it refers to the most representative interaction (e.g., ‘buying my bike’ represents an event in which a bike is purchased) or the most meaningful interaction (e.g., one that is linked to the experience of love) in an event. The micro-level actions refer to all the other interactions that take place in a relationship event (e.g., ‘seeing the bike’, ‘touching the bike’, ‘testing the bike’).

The reasoning behind this categorization is hierarchical where, in a same relationship event, an action holds several smaller actions. This structure of relationship events was highlighted by the findings of the first phase of the development of the tool. The employment of this categorization in the tool may be useful as it may help research participants understand the sequences and hierarchies of interactions within relationship events. However, the categorization is unstable as an action may be macro-level in one relationship event and micro-level in another.

**Conclusion of phase 3**

Based on this analysis, taxonomy 1 was considered to be the most manageable and useful classification to sensitize participants with types of interactions that can be carried out with products. Although this classification results from the efforts of only one participant, it consists of informative and intuitive categories that are stable and different from each other. Based on this classification, we created a set of twelve action cards (see figure 4.2), each referring to one type of action and containing examples of similar actions. These cards are expected to sensitize participants about interaction types that can be relevant to product experience and aid storytelling: (1) inform them about which interactions they could report, (2) aid the remembering of interactions that were carried out in their relationships with beloved products and, consequently, (3) aid the structure of their reports.
4.2.4 Phase 4: Trialling the tool

The fourth phase of tool development was in two steps and aimed to verify the effectiveness (1) of the action cards in sensitizing participants in research and aiding storytelling, and (2) of the storytelling structure found in the first phase of the tool development. This structure was introduced in a diary expected to help participants report stories of
relationship events, sequences of interactions within relationship events, and corresponding love experiences. Diaries are more convenient than verbal data collection as they allow participants to share stories in privacy, at their own pace, as they are remembered, and less biased by the researcher. The diary was divided into two parts: the past and the present. In the past part, participants were asked to report all the moments when they interacted with the product they love, since the first time they ever saw the product until the day they got the diary. In the ‘present’ part, participants were asked to report all the moments they interacted with the loved product from the day they received the diary. The past part of the diary was expected to give insights on whether the cards can aid the remembrance of past interactions. Including the past was valuable because it was expected to allow the study of the relationship over time. The diary contained 20 pages and each page referred to one relationship event.

The goal of this phase is not to confirm or refute the usefulness of the tool, but rather to bring up issues that may support its further development. In this phase, two studies are carried out addressing the following questions:
- Do the action cards encourage participants to report relationship events?
- Do the action cards aid participants in remembering past relationship events?
- Does the structure imposed facilitate the systematic analysis of interactions?
- Can interactions be easily identified in the stories?

**Step 1: Pilot study**

In this trial, we investigated the experience of love in relationships between women and their most beloved pair of shoes (for the full study, see chapter 5). First, two participants were selected to carry out the trial study. Both participants selected claimed to love shoes and to own at least one pair of shoes that is much loved. At the start of the study, they were asked to fill in the love scale tool and participants were selected if scores of love were high in at least two components of love
(love scale, see chapter 3). Each participant received a diary and two sets of action cards: one set of 12 separate cards, and a two-page version of the 12 cards printed inside the diary. First, they were asked to look at the cards in order to get acquainted with them. Then participants were asked to use the cards to remember events in their relationship with their most beloved pair of shoes and report those events in the diary (both past and recent events). Each page of the diary contained instructions for how to report a story of a relationship event: participants were asked to give a name to the event (e.g., “the day I saw them the first time”) and then report, in eight boxes, the sequence of interactions carried out in that event (see figure 4.3). For each interaction reported, they were asked to identify who carried out the interaction.

![Figure 4.3 – Diary pages (pilot study).](image)

After reporting the sequence of interactions, participants were asked to mark which one of those interactions they considered to be the most meaningful one. Then they were asked to discuss why that specific action was the most meaningful one and rate to what extent they experienced each of the items of the love scale (see chapter 3) at the moment the meaningful interaction occurred. Participants kept the diary.
for a week. After that period, they were interviewed and asked to share their experiences with the diary and cards.

**Insights and Improvements**

In the interview, both participants said they had read all the cards beforehand and that they had used the cards as inspiration to write the events. Participant 1 mentioned that each time she felt like writing a story, she would sort one action card out of the group, read all the actions in it, and then try to remember events in which at least one of those actions were carried out. By the end of the study, she reviewed all the cards just to ensure all interactions were covered. Participant 2 mentioned that, every time she would sit to write down stories in the diary, she would put all the cards on a table and go through all of them, trying to remember stories.

Both participants confirmed that the action cards helped them remember stories:

“*I tend to remember stories, especially if they are about my shoes. But I’m sure that if I didn’t have these cards, I would never remember all the things I wrote here. At least it would have been very difficult*” (participant 1).

Both participants said they preferred the separate set of action cards to the printed version of the cards in the diary.

“*It is a lot easier to check these cards. The other version is fine, but I didn’t use it at all. The cards are nicer; you can pick them up, sort them, and put them on the table while you write. I liked it more*” (participant 2).

Both participants found it difficult to fill in the boxes with sequences of interactions. In their own words, reporting only interactions seems “unnatural” and “weird”.

Uncomfortable with writing only the interactions and interactants for each event, participant 01 wrote down the stories on a separate paper and later added them to the diary. After that, she used the boxes to re-tell the interactions in the stories. Similarly, participant 2 suggested that
it should be easier to first write the stories and then present the actions carried out.

Participant 1 first tried to use the verbs in the cards to fill in the sequences of interactions. As she found this extremely time consuming, she preferred to write actions as she had them in her memory. Participant 2 didn’t even consider using the cards to write down the stories but mentioned that “a few times” she had consulted the cards while filling in the sequences of interaction. Still, sequences of interactions were reported with clarity: both actors and actions involved were filled in and the action considered to be ‘the most important’ was highlighted. Both participants said that the most meaningful interaction was always very “obvious” and that it was very easy to identify it and the reason why they considered that specific action more important than other ones in the same event. Many times, the actions were considered important because “when that happened, I loved my shoes even more” (participant 2).

Considering some of the difficulties faced by participants in the pilot study and their suggestions, we improved the diary by implementing an area where participants can first write down the story (freely), and later, re-tell the story in terms of the actions that were carried out. The sorted version of the action cards was better accepted by participants and thought to contribute to the reporting of relationship events and the interactions within them.

**Step 2: The study**

Similarly to the pilot study, here we tested the effectiveness of the diary and the cards in assessing participants’ experiences in both remembered and actual relationship events. Sixteen female participants were selected for this study on the basis of owning at least one loved pair of shoes. Participants received a new version of the diary (see figure 4.4) and a set of action cards and were asked to share, in a period of approximately 30 days, all the events in which they interacted with their most beloved pair of shoes. Participants were advised to get acquainted with the cards and use them as an inspirational tool to recall and
report relationship events and interactions. After four to five weeks, the diaries were collected and the participants were interviewed. The sixteen diaries and interviews were analyzed according to the participants’ performance in reporting structured events, interactions, and experiences. Participants’ opinions regarding the diary’s structure and the use of action cards were also considered.

**Analysis & Results**

The content of the 16 interviews was subjected to a content analysis (Babbie, 2004) in order to assess the usefulness and disadvantages of the action cards. The analyst listened to the content of a random sample of 5 interviews, derived codes of analysis, and gave a brief description of these codes. Codes referred to whether participants followed the instruction given by the researcher and read or did not read the action cards prior to storytelling, whether the participants used the cards when writing stories, whether they sorted out cards for inspiration, whether participants experienced the cards as a helpful
instrument, and so on. Based on the codes and descriptions, the analyst analyzed the 11 remaining interviews.

The structure of the relationship events reported in the diaries was analyzed according to how well they followed the storytelling structure proposed. The relationship events reported in the diaries were examined in order to check whether the structure of interaction events was reported as desired. Each report of a relationship event was examined on whether it contained the following: whether participants mentioned the carrier of the action, the action carried out, and the object towards which the action was carried out. If this structure was complete the event complied with our criteria regarding the desired structure of storytelling. Reports in which some interactions were reported according to the criteria but some others were not, were considered to comply moderately with our criteria. Reports in which actions are not reported at all and the carrier of the action and/or the object was not made explicit were considered to not comply with our criteria.

**Action cards**

The 16 participants reported a total of 163 relationship events. This represents an average of 10.2 stories per participant. From these stories, 88 referred to relationship events that occurred in the past and 75 referred to events that occurred while they had the diary. Of the 163 events reported, six did not refer to the most beloved pair of shoes.

According to the interviews, only 7 participants claimed to have followed the instructions and examined all the cards before reporting stories in the diary. Some said that reading the cards inspired them to report interaction-related stories in the diaries:

“When you came here and said that I should report interactions, I thought ‘ok, that is simple’. But then later I opened the diary and saw these cards and opened them over my bed. Then I could see that there was a lot more I could say about my shoes (...) I mean, first all I was planning to say are a few times that I used it, but then I knew that I could tell a lot more stories. Even I didn’t know those were stories”.

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Six participants said they had not examined the cards at first. They said they only examined them when new stories could not be remembered:

“I know I should have looked at the cards at first, but I was so excited to write about the stories I remembered already, that I just didn’t even look at them. But after five stories, I picked the cards up and examined them very carefully, trying to relate the verbs to things I may have done with my shoes”.

The remaining 3 participants did not use the cards at all.

“Cards? Oh, these cards. Well, as you can see I didn’t even open them. I didn’t think it was necessary. I can remember things I’ve been through with my shoe”.

“Well, I didn’t really use these cards. Once I looked into a couple of them, but for me it was quite obvious of what I was supposed to report here (…) so, no, I didn’t really see them”.

Of the 13 participants who have eventually examined the action cards, 8 sorted them prior to reporting stories and actions, for inspiration.

“Well, what I found really nice is that, after I wrote down all the stories I remembered already, I would sometimes sit down with the diary and pick one or two cards from the deck. Then I would really focus on those actions and try to remember more stories, and write them down in the diary”.

Seven participants, of the 13 who eventually used the cards, expressed their liking for the action cards and claimed that without the action cards they would have not remembered stories:

“I believe that if it wasn’t for these cards I would only have three past stories. Because it is very easy to remember the day you bought the shoe, and the first time you wear it, or when someone compliments on your shoes, but for the rest it is more difficult (...) and I ended up writing down seven stories. So I think these cards are really good”.

“How many? Six stories? Yes, I am really surprised because usually I have no memory (...) but my shoes, of course I can remember some things. But for example, I saw in one of the cards ‘to photograph’ and I thought ‘oh yeah,
that was that time when I was taking pictures of my shoes, and I took pictures of this pair of shoes’. So, you see? The cards did help”.

The other 6 participants did not express a like or dislike for the action cards.

The participants that did not use the action cards reported 3 to 4 past stories and the ones who used the cards reported from 3 to 15 past stories. The participants who did not use the cards reported from 1 to 4 recent stories. The ones who used the cards, reported from 1 to 9 recent stories. One of these participants had bought the shoes a week before the study and only had one past story to report. Also, because the study was carried out during wintertime, four participants (3 who used the cards and 1 who did not use them) did not wear their most beloved pair of shoes during the period of study and only reported from 1 to 3 recent stories.

**Diary (structure of reports)**

From the 163 relationship events reported in the diaries, 41 complied with our expectations, 107 complied moderately with our expectations, and 15 did not comply with our expectations. The three participants who mostly reported sequences of interactions in a way that complies with our expectations said they had studied the action cards before reporting their stories. These participants were the ones who reported the highest number of stories. Two participants who reported very few events, of which most did not comply with our expectations, did not use the cards at all. The remaining 11 participants reported most interaction events in a way that complied moderately with our expectations.

Five of the 11 participants whose reports complied with our expectations moderately said in the interview that instead of simply reporting the actions, they wanted to share what and how they feel about the events. For instance:

“Sometimes, instead of just putting down the actions, I wrote how I felt. I think it was difficult just to put the actions, as if there is something missing (...) Just actions cannot tell a story”
Even though most participants shared some of their experiences instead of only actions in the sequences of actions in the diary, it was still possible to recognize the actions even when participants did not follow the structure as advised. However, this made the analysis of stories and identification of interactions again more time-consuming.

Unexpectedly, in the course of the diary, 4 participants started to report stories about other pairs of shoes or other things that had nothing to do with the interaction with their most beloved pair of shoes. This might indicate that participants understood the structure of their love and its resemblance to their love for people.

“After a while I just wanted to tell stories. And while doing this diary thing I got so much in contact with my shoes, I started analyzing them and my history with them so much that I think I even have stories here that have nothing to do with them (...) for example, in the last story I was comparing my relationship with shoes and my relationship with men. I realized that I act in the same way when I love shoes and when I love a man. I thought it was so funny, I just wanted to report that”.

The presence of the diary (and the task) seemed to influence the participants’ relationship with their loved shoes to some degree. Some participants felt pressured to create new stories in order to report them:

“Sometimes I would think ‘oh, it’s been three weeks I don’t wear my shoes’. I should wear them otherwise I won’t have any stories to tell”.

Similarly, participants who did yet not own the beloved shoes for very long seemed distressed and tried to compensate for the lack of past stories:

“Are you sure it is not a problem? I only have one story from the past. But the thing is, when I got the diary, I only had these shoes for a week (...) it is not a problem? I feel bad because I wanted to do more. But I tried to compensate with more recent stories”.

Six participants said that the diaries were time-consuming and that, if they had had more time, they would have probably written more stories.
“I think I sat down a couple of times and wrote all I could remember (…) you know, it was Christmas time and I had a lot to do for the festivities”.

“I really liked to do it and to keep a diary for my shoes was something totally out of ordinary, but I am a mother and I barely have time for myself (…) I am surprised I wrote 13 stories, but it did take some of my precious baby-free time”.

All 16 participants said they had written down at once all the stories they could remember. After that, 12 participants reported stories whenever they would find some time and could sit down to write all stories they could remember, including the recent ones.

“Yes, it did take some of my time. I tried to write things down as I would remember them, but it never worked like that. Most of the times I would just sit down and try to write them all at once”.

The remaining 4 participants reported stories as they remembered them.

“I cannot say that I did it everyday, but most days I would just look at the diary and think if there was something I could tell (…) but sometimes during the day, I would remember something and then at home I would just get the diary and write it down”.

Although 6 participants were enthusiastic and said they enjoyed the task of filling in a diary (“It was really fun”), 3 participants mentioned in the interview that filling in the diary was boring.

“I don’t like to write. I would just prefer to talk about my shoes. I love to talk about my shoes! (…) But just writing these stories down, I kept of thinking: is anyone going to read it? Can anyone understand my handwriting? I’m not sure. It is a bit boring thou”.

Two other participants wrote all their stories in the computer, then printed them and glued them into the diary.

“I must say I am not very used to writing anymore. So I hope it is not a problem, but it was just easier and faster to write stories on the computer”.

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4.3 Discussion

This analysis provided some useful insights to improve the efficiency, efficacy, and reach of the tool. The action cards seem effective and efficient in sensitizing research participants about what interactions are and what relationship events they should report. The cards helped them remember and report both past and recent relationship events and the interactions within them. Participants who used the action cards reported more past events (from 1 to 15 events) and more recent events (from 1 to 9 events) than those participants who did not use the cards. As practice seems to increase the effectiveness of the action cards, the familiarization with the action cards should not be simply advised to participants but should be a compulsory part of the study where participants are required to examine the cards and practice their use. Familiarizing participants with the cards at the time the diary is handed to them may potentially increase the number of stories.

The set of twelve cards each referring to one of the categories of actions may not be complete. After analyzing the actions reported in the sequences of interaction events, the actions ‘think’ and ‘solicit/ask’ were mentioned quite a number of times. Those verbs were not included in the final set of verbs.

Although two participants said they preferred to talk rather than write about products they love, and although some regarded the diary as time-consuming and even boring, the diary still seems to be a better vehicle to collect stories than talk. For one, this is because the diary makes it easier to analyse the data in the first place. Compared with our preliminary study (chapter 1), it took less time to transcribe the stories and find the interactions and experiences in them. A second reason is that the diary provides autonomy to share stories at any time participants find convenient. To facilitate the access to the diary and improve its convenience, a digital version of the diary may be considered in the future. Since many people can be expected to have access to computers and digital communication devices, we could explore more diversified and interactive ways of collecting these reports.
Many participants seemed unable to follow the structure imposed for the reporting of interactions (reports that did not comply or complied moderately with our expectations). Participants persisted in reporting their experiences when they were asked to report interactions. Nonetheless, most participants reported the meaningful interaction in the relationship event, which allows us to link it to their experiences.

Considering that our tool relies on participant’s recall of their experiences, we must reflect on that and the possible limitations of the tool. According to Robinson & Clore (2002), an emotional experience can neither be restored nor retrieved, but only constructed on the basis of recalled contextual cues derived from episodic memories. Episodic memories are those specific to particular events from the past. Therefore, the accuracy of one’s remembered events depends on the degree to which contextual cues are still present in the person’s episodic memory (Karapanos, 2010). However, in case these contextual cues are absent, one might access one’s semantic memories in order to reconstruct the past. These are not tied to any particular event, consisting of static generalizations or beliefs about something and may be, therefore, (somewhat) distorted from reality (Karapanos, 2010). Since more stories were gathered from those people who used them, the action cards seem to help participants access their episodic memories. In addition, carrying out the study at the participants’ home and having the loved product around them during the study might have helped participants share accurate stories. However, as yet, we do not know the extent to which participants’ stories were accurate.

Another limitation of this tool should be mentioned. The study in which we investigated the effectiveness of the action cards was not controlled, as all participants received the action cards to report relationship events and meaningful interactions. Because some of the participants chose not to use the action cards during the study, we were able to compare the reports of the participants who used the cards and the reports of those participants who did not. It is possible that the participants who did not consult the action cards reported fewer relationships events because they were less interested in the
study. A study that compares a group that uses the action cards with a group that does not could provide a more precise assessment of the value of the cards in informing participants about relationship events.

Having developed two research tools necessary to the research approach proposed in chapter 2, the person-product Love Scale (chapter 3) and the Experience Interaction Tool (this chapter), in the next chapter we present the application of the research approach in two case studies.
CHAPTER 5:

Investigating the experience of love for products

The aim of this thesis is to understand how the experience of love arises and changes over time in person-product relationships. In chapter 2, we found that two seminal theories on interpersonal love can be used as a basis for this. They are Sternberg’s theory of the experience of love and Levinger’s theory of the development and change of close relationships. These interpersonal theories matched the descriptions of love for products as verbalized by the participants of our preliminary study. Aligning both theories with each other – by developing tools to study both in parallel in actual relationships – provided a basis for the study of the person-product love experience and relationship events over time (see figure 5.1). The interactions within the events were adopted as the link between the theories. The Love Scale developed in chapter 3 and the diary method developed in chapter 4 were combined into the EXITool.

The application of the EXITool to existing person-product relationships should now provide insights into the following questions: (1) how interactions and the experience of love are connected in person-product relationships, 2) how the connecting aspects influence a change in the experience of love during a relationship event, and (3) how these aspects influence change over time, in the experience of love and in the development of the relationship. With these insights, we hope to derive

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5 Research assistant Deger Ozkaramanli and graduation students Stefanie Tumewu and Sanela Halilic partially contributed to the data collection and/or analysis of the studies presented in this chapter.
conclusions on what promotes wellbeing in person-product relationships and what makes these relationships last.

PERSON-PRODUCT LOVE RELATIONSHIP

Figure 5.1 – The conceptual basis for the study of the person-product love experience throughout relationship events: meaningful interactions as the link between concepts from two theories.

In chapter 1 we examined people’s talk about their loved products and found that the experience of love – besides being a very rewarding, dynamic, and long-term experience – was also a container of experiences: while experiencing love, people also have a large variety of positive or negative affective experiences such as desire, disappointment, joy, anger, and so on. In chapter 2 we saw that appraisal processes within interactions lead to these affective experiences. So we have reason to expect that the connection between interactions and the particular experience we are looking for – love – will also have something to do with appraisals. However, we also know that this connection is not straightforward.

We already know that the experience of love is connected to a particular interaction within relationship events. In chapter 4, when assessing the structure of relationship events, we found that a relationship event may contain several different interactions. However, participants only associated the experience of love an interaction
they consider to be meaningful. Therefore, in this chapter, when we investigate participants’ stories of relationship events, we focus our investigation on these meaningful interactions participants report.

The way we interact with a computer can differ in many ways from the way we interact with a chair, a desk, or a pen. Because we are looking here at the impact of interactions on experiences, we must ensure that our findings can be generalized to more than one type of product. The scope for in-depth comparisons between products is limited in this thesis. The decision is therefore made to focus on two types of products that often seem to be loved by their owners and will elicit very different interactions: shoes and cars. A comparison between the interactions with these products is made. Two parallel studies are conducted on existing relationships with products using the EXITool, one for each type of product.

5.1 Method

Using the EXITool we now study the experience of love over a number of interactions and over a certain period of a relationship in order to answer the questions posed at the beginning of this chapter. The EXITool consists of a diary, to be kept for several weeks. The diary is provided to the participant during an initial interview and discussed in a final interview when it is picked up again. Each page of the diary asks the participant to tell the story of one relationship event. The participant is asked to indicate which interaction is meaningful within the event. The same page also presents the love scale and asks the participant to rate their experience of love in relation to this meaningful interaction. The participant is thus asked to recall their experience of love at the moment when the meaningful interaction occurred. The same method is applied to the study on shoes and the study on cars. The two studies are analysed in parallel.

The data resulting from this study is analysed by means of a content analysis (Babbie, 2004) in an iterative process. A first content analysis of the stories in the diary should indicate which aspects of meaningful interactions the participants connect with the experience of love in their reports of relationship events. The outcomes from this
analysis are then linked to the ratings of love (from the love scale) that participants gave in the diary at the same time. From this we conclude what it is within a meaningful interaction that influences a change in the experience of love. A second content analysis focuses on the reported events in sequence. It investigates how the particular aspects within meaningful interactions influence change in the experience of love over time and in the development of love relationships.

To answer each of the three questions posed, we present a data analysis, our findings, and discuss what those findings mean to this chapter and their respective link to the next iteration in the analysis. Finally, a general discussion of the approach and the findings is presented.

5.2 The study setup

5.2.1 Study 1: Women and shoes

In the first study we investigate relationships between women and their most beloved pair of shoes. The choice of selecting only female participants was due to a request made by the multinational company that sponsored this study. Still, women often express their love for shoes, are happy to share their feelings and thoughts about their beloved shoes, and tend to be open and comfortable about these relationships. Interactions with shoes are not limited to wearing them: women also tend to clean and protect them, gaze at them with admiration, touch them, talk about them with others and so on.

5.2.2 Study 2: People and cars

In the second study, we investigate relationships between people (both men and women) and their beloved cars. Like shoes, a car is a type of product that is often loved and with which people build strong relationships. People also clean and maintain their cars, admire them, touch them and discuss them. Relationships with cars can be expected to cover different interactions from relationships with shoes as, for
example, a driver sits inside a car and uses his/her whole body to interact with it, a car can be used together with others, and it is used at a different speed.

5.2.3 Participant selection

In order to select participants for the studies, first we placed announcements throughout the campus of Delft University of Technology, in the Netherlands, searching for women who loved shoes and people who loved cars. Twenty-two women volunteered to participate in the shoe study and 11 people to participate in the car study. Many of these respondents were not directly associated to the university and took notice of the study through friends or family who work or study at the campus. To ensure participants really loved their shoes or cars, we asked participants to fill in the love scale considering a particular pair of shoe or car they own, use, and love the most. People who scored above moderate-high in the love scale (between 3.2 and 5.0) were selected. Sixteen women (21-60 years old) who claimed to love shoes and have a special relationship with at least one pair of shoes and ten people (26-42 years old; 5 men and 5 women) who claimed to love their own car were selected to participate in this study. All participants resided in the Netherlands.

5.2.4 Data collection

All participants were met individually for a first interview (open-ended interview). They were asked to talk about their love for the specific pair of shoes or car they claim to love. By the end of the interview, participants received a set of action cards and a diary in which they were asked to write up to 20 stories of relationship events (times they have interacted with their beloved shoes or car). The diary contained a written introduction to the study, instructions for use of the diary and action cards, as well as examples of how to report stories of relationship events and use the love scale. The interviewer read those instructions together with each participant and encouraged the use of the action cards to remember and report relationship events. The
examples given of how to write stories in the diary were also examined in order to ensure participant’s confidence in using the diary. Participants were asked to write stories of times they interacted with their beloved pair of shoes or car from the first time they had seen them until the end of the study. Participants kept the diary for a period of five weeks in the shoe study and 3 weeks in the car study. Weekly contact with participants was made to remind them of sharing stories in the diary. After that period, a second interview marked the end of the study. Participants were asked to sort the stories of relationship events shared in the diary in order of occurrence. They were then asked to indicate which story corresponds to the moment they first experienced love for the product.

253 stories of relationship events were collected in total (163 in the shoe study and 90 in the car study) in 26 person-product relationships (16 in the shoe study and 10 in the car study). In each of these stories, participants indicated which of the interactions reported in the story was the meaningful one and then rated their love in connection with it using the love scale.

In the following, the data are presented and analysed according to each of the questions posed at the beginning of this chapter.

5.3 Question 1: How interactions and the experience of love are connected in person-product relationships

The data collection using the EXITool provided accounts of meaningful interactions and corresponding ratings of the love experience. This now allows us to trace what in the interaction produces or influences this love experience. Although appraisal processes are expected to be involved, we do not yet know how, or whether other processes are involved in this as well. Therefore, before we link participants’ diary stories to the Love Scale data that shows the intensities and balance of love components (rewards of love), we examine how the participants themselves link – in their stories – the meaningful interactions and rewards of love experienced. After we have identified how participants
make this link, we can connect the outcomes to the ratings of the experience of love and understand how it produces a change in the experience of love (question 2).

5.3.1 Data analysis

In order to establish a conceptual connection between interaction and the love experience, a content analysis was performed. First, this was done on a small sample of data in order to derive initial insights from a manageable data set (10 random stories, 5 from the shoe study and 5 from the car study). In the small data set, the content of the stories of relationship events was examined and the interaction participants themselves indicated to be the meaningful one (in the diary) was extracted. Then, we identified in the stories passages associated to these meaningful interactions that indicated a reward of love. We did this by comparing the relevant passages of the text to the 13 rewarding thoughts, feelings, and behaviours of love that constitute the love scale (chapter 3). For example, story passages like “they [shoes] looked gorgeous”, “they [shoes] were so pretty”, or “It [car] was so shiny. I loved how it looked” were considered to fit the passion statement “I find the product very attractive”. Having identified in participants’ stories the meaningful interactions and the rewarding experiences related to love components, we then examined the content of the stories in search for a link between these two. First we present here the results based on the small data set. We then discuss what they mean, also in the light of findings from other researchers, and then analyse the remaining stories collected.

5.3.2 Results from the small sample: connections between interactions and the experience of love

Positive affective state

In 6 of the 10 random stories of meaningful interaction involving a rewarding experience of love, participants reported that during the meaningful interaction they experienced happiness, relaxation, joy, or excitement. These can be grouped as positive affective states. They were
followed by a rewarding thought, feeling, or behaviour of intimacy, passion, and/or commitment.

“Then I put the shoes on and looked [meaningful interaction] at them, on my feet, through the mirror, I was so happy [positive affective state], I loved them! I thought they were made just for me [passion].”

“One night I was driving [meaningful interaction] my car (…) it was so peaceful, I was very relaxed [positive affective state]. I felt very connected to my car [intimacy].”

Positive affective state following the occurrence of an incident. In 4 of the 6 stories, with a positive affective state in them, participants reported this state as a consequence of something within the interaction, like a specific incident. Such an incident might be, for example, receiving compliments regarding the loved product.

“I was wearing [meaningful interaction] them when my friend came and complimented me on my shoes [incident] (…) I was so proud [positive affective state] of my shoes.”

“I was driving [meaningful interaction] home that night (…) then my neighbour came to talk about the car [incident] (…) I liked [positive affective state] that other people also like my car.”

Positive affective state following an evaluation of the loved product. In 2 of the 6 stories with a positive affective state in them, that state was not reported as resulting from any specific incident but apparently as resulting from the evaluation of a quality of the product itself such as, for example, the appearance of the product.

“They look awesome [evaluation of product]. (…) I was so happy [positive affective state] that I bought these shoes [meaningful interaction].”

“I looked at it [meaningful interaction] and realized how nice it is [evaluation of product]. I was very proud [positive affective state].”
Negative affective state

In the remaining 4 of the 10 random stories, participants reported the experience of a negative affective state, such as anger, unpleasant surprise or frustration.

"I was so angry [negative affective state]. These shoes tend to be comfortable, but sometimes they really hurt [meaningful interaction - wearing shoes]."

"I went to check the engine oil of my car [meaningful interaction] (...) I was surprised and not happy that my car uses a lot of engine oil [negative affective state]."

Negative affective state following the occurrence of an incident. When a negative affective state was experienced during a meaningful interaction, it also sometimes followed an incident. In this small sample these were, for example, problems with the loved product, such as the shoes causing the user pain and the car having a flat tire.

"Later that day I couldn’t stand to walk on those shoes [meaningful interaction]. My feet hurt so much [incident] (...) I was so angry [negative affective state]."

"I was driving [meaningful interaction] back home (...) and I heard one of the tires ripping off [incident] (...) I was tired and frustrated [negative affective state]."

Evaluations of expectations towards the product and efforts to overcome incidents following a negative affective experience

In the four events involving a negative affective state, we observed in the participants’ stories that after experiencing the negative affective state, the participants seemed to initiate a second evaluation: an evaluation of their previous expectations regarding a product’s performance and the anticipation of efforts they would have to take to overcome the obstacle posed by the incident. A rewarding thought, feeling, or behaviour of love was reported in only one of these events. It is in the first quote below: a thought of commitment. The second quote
is an example of an event and evaluation in which no reward of love is mentioned.

“Then the heel broke [incident]. I was so disappointed [negative affective state] because these are new shoes and the heels are not supposed to break now [expectation that heels should last longer] (...) But I need to fix them. I don’t want to lose these shoes [commitment].”

“I was a bit disappointed [negative affective state] because of that dent [incident]. I wanted to fix it but it costs not only money but also time to take it to the shop [efforts to overcome the incident] (...) but I didn’t expect it to look like this, it is not an old car [evaluation of expectation that a new car should look good].”

5.3.3 Discussion of question 1

These initial findings indicate that positive and negative affective experiences arise from the evaluation of certain incidents and, in the case of positive affective experiences, from what seemed to be an evaluation of a quality of the loved product. The question that arises from this is whether these evaluations are the same kind of assessments that are described in appraisal theory. As seen in chapter 2, the appraisal theory claims that emotions arise from assessments people make of a specific stimulus in relation to their personal concerns (Desmet, 2002). According to appraisal theorists, an ‘antecedent event’ – such as the incidents our findings indicated – and a certain quality of an appraised object – such as its appearance – can be stimuli for an appraisal that results in an affective experience (for example, Russel, 2003; Ortony, Clore, & Collins, 1988; Scherer, 2001; Roseman, 2001). Our findings so far indicate that the positive and negative affective experiences our participants described in their stories do indeed result from appraisals of product qualities or antecedent events during the interaction, just as appraisal theorists claim. These evaluations in an interaction are somehow connected to the rewards of love. However, as discussed earlier in this chapter, we have reasons to believe on the basis of interpersonal love theory that the experience of love does not arise in the same way as other affective experiences do.
These initial findings also indicate that, after a negative affective experience, participants engaged in a second evaluation in which they contrasted their expectations towards the product with the perceived efforts to overcome the problem encountered during the interaction. In interpersonal love theories, such evaluations are also mentioned. People make these evaluations with respect to the standards or expectations they hold for what they feel they deserve (Harvey and Wenzel, 2006): a person compares their experience in an interaction with their personal standard or expectation of what constitutes acceptable outcomes. When outcomes surpass the comparison level the person is satisfied with the relationship; when outcomes fall short of this perceived standard the person is dissatisfied. Our initial findings seem to fit this description, suggesting that person-product love has the same structure. However, our initial findings did not indicate that such evaluations also occur when participants have positive affective experiences. According to Harvey and Wenzel (2006), such evaluation processes may become more salient when a relationship is in trouble. Therefore, although a link between evaluations of rewards and costs and the experience of positive affect were not visible in our participants’ first ten randomly selected stories, it may not mean that such evaluations do not occur.

This second evaluation of rewards and costs that people make may refer to the decision moments within interactions in which people decide on whether to love a product or maintain that love. In chapter 2 we saw such decisions moments being described by participants. We also saw from theory that unlike other affective experiences, love does not arise involuntarily from appraisals, but from one’s deliberate decision to love another. Social Penetration theorists agree that love is a decision one makes, but also pose that this decision is not always deliberate: even without thinking about it, humans weigh their relationship and interaction with another human on a reward/cost scale (for example, Kelley & Thibaut, 1978).

According to our initial findings, appraisals that lead to the experience of positive or negative affect and evaluations of relationships’ rewards
and costs – that happen within meaningful interactions – seem to be the processes that connect meaningful interactions to the experience of love. This provides a preliminary answer to question 1. A more definitive answer can be obtained by examining the remainder of the data.

With these preliminary findings in hand, next, we analyzed the content of the remaining reports of meaningful interactions in search for whether (1) these evaluation processes are visible and connected to the experience of love, (2) positive and negative affective experiences result from the evaluation of other stimuli besides antecedent events and product qualities; (3) negative affective experiences are also involved in the assessment of a quality of the loved product; and (4) evaluations of rewards and costs are also made when positive affect is experienced. These aspects of question 1 have not been answered in our initial findings.

5.3.4 Findings on question 1 (from all the data)

In looking through all of the data, it was found that all the interactions indicated as meaningful by participants had related passages of text in which a positive or negative affective experience was reported.

Positive affective state

In 161 of the 253 reports of meaningful interactions collected (64%), participants reported the experience of a positive affective state. Like in the examples from the initial findings, these were often positive emotions such as desire, joy, and happiness. However, sometimes, participants’ reports only referred to these positive experiences as pleasurable. Other times, they used the word ‘love’ to describe a positive affective experience they had. This was interpreted when the word ‘love’ was not directed at the product itself but at a specific action or experienced quality involving the product. This also indicates that the word ‘love’ is used by participants to simply indicate a momentary affect rather than the experience of love.

“I always feel good [positive affective state] when I wear it [shoes].”

“I just love [positive affective state] the way they [shoes] look on my feet”
“It feels really nice [positive affective state] to drive it [car].”

“I love to drive this car [positive affective state].”

Positive affective states following the evaluation of an antecedent event. In 23 reports of meaningful interactions (14%), participants reported their positive affective experience arising from the appraisal of an antecedent event. In both studies, these referred to receiving pleasant and (sometimes) unexpected compliments on the loved product.

“Then she complimented me on my shoes [antecedent event]. She said they were very pretty and asked me where I bought them (...) I was flattered”.

“I was washing it [car] and a guy who was passing by in the streets said the car looked really good [antecedent event] (...) it is nice to hear that, it made my day (...) I was happy about my car”.

Positive affective states following the appraisal of product qualities. In the remaining 138 reports of meaningful interaction (86%), participants reported positive affective experiences arising from their appraisal of a quality of the product during the meaningful interaction. These qualities referred to the product’s appearance, tactile qualities (for example, comfort), sound, or smell.

“I was admiring myself in the mirror (...) I love the way they [shoes] look on my feet [appraisal of product quality] (...) ”.

“It still had that smell of a new car [appraisal of product quality] (...) I thought it was fantastic”.

Negative affective state

In 91 of the 253 reports of meaningful interaction (36%), participants reported having had negative affective experiences. Like in the examples from the initial findings, these were, for example, disappointment, sadness, or anger. Sometimes, these negative affective experiences were reported as an unwanted experience.
“It drives me crazy [negative affective state]. No matter how many times I clean it [shoes], I can always see these spots”.

“But it kept on making this strange noise every time I shift the gears (...) it is so annoying [negative affective state]”.

Negative affective states following the evaluation of an antecedent event. In 53 reports of meaningful interaction (21%), participants reported the negative affective experience arising from their appraisal of an antecedent event. This referred to unexpected problems participants had during the interaction, such as damage, malfunction, and usability problems. These were evaluated based on participant’s expectations regarding the product’s use or appearance.

“Then the tip of the heel got caught between the cobble stones and broke [antecedent event]. I was so angry! [Negative affective state] (...) They were new and already damaged”

“I guess someone hit me on the side (...) and the passenger door would not open from the inside anymore [antecedent event] (...) it was so annoying [negative affective state], I couldn’t believe my car was broken”.

Negative affective states following the evaluation of product qualities. In the remaining 38 reports of meaningful interaction (15%), participants reported the negative affective experience arising from their evaluation of a particular quality of the product during the interaction. Product qualities mentioned were, for example, its appearance, sound, smell, or tactile qualities such as discomfort. The participants evaluated these based on their expectations for their love relationship regarding the product’s use or appearance.

“It was so sad [negative affective state]. They were not that pretty anymore (...) the fabric was all worn out [appraisal of product quality]”.

“It was very painful [discomfort – appraisal of product quality] (...) these shoes were killing my feet. (...) I was really angry [negative affective state]”.

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“That noise was not normal [appraisal of product quality] (...) I was very disappointed [negative affective state] to see that my car was not the same anymore”.

Evaluations of relationships’ rewards and costs – Negative affect

In all the events in which participants had negative affective experiences (91 events, 36%), they evaluated the rewards and costs of their relationship against each other. The rewards referred to participants’ personal standards for love in the relationship with the loved product (as identified in section 5.3.3). Costs referred to the anticipated efforts participants would have to take in order to overcome the obstacle posed by the antecedent event or the appraisal of product qualities during the meaningful interaction. These evaluations were also made considering participant’s expectations for their love relationship regarding the product’s use or appearance.

“I never had problems with it before. These shoes are always comfortable [rewards] (...) but that day they really hurt me [costs] (...) it is disappointing”

“It seemed like the gearbox was broken. I couldn’t change gears properly (...) I hate when things like this happen. It always takes so much time and money to fix these things [costs] (...) but I had to admit that this car never asked for much. It is always there for me [rewards]”.

Costs outweigh rewards. During these evaluations, participants’ anticipated costs sometimes seemed to outweigh the rewards of their relationship (25 events, 10%). In most of these events (21 events, 8%) participants did not report any rewarding experience of love.

“I decided then not to fix them [shoes] anymore. It just costs too much money and I couldn’t afford it [costs outweighs]”

“The bump is still there [in the car] (...) I wish it [car] looked a bit better, but there are so many of those that one more or one less wouldn’t make a difference [costs outweighs]”.

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Rewards outweigh costs. Some other times, rewards seemed to outweigh the costs (66 events, 26%). In these events, participants reported rewarding experiences of love. In many of these (42 events, 17%) the rewarding experience reported included rewarding thoughts, feelings, or behaviours of commitment.

“Then leather got all scuffed in the front of the shoe (...) but they are so comfortable and nice [rewards] that I thought I should give it a chance (...) it was a bit expensive [costs] and the shoes would not look perfect, but it was probably still worth it. So I had them repaired [thought and behaviour of commitment].”

“There was mud all over my shoes (...) they were so destroyed [costs]. I was so angry, for a minute I thought of throwing them away (...) but of course I ended up fixing them [behaviour of commitment].”

“People usually just do something for the car when it is broken, it does take time to maintain it [costs]. But I don’t see it as a waste of time (...) I’m always maintaining it [behaviour of commitment]. It is nice to see your car always looking nice [thought of passion].”

5.3.5 Discussion of question 1

The findings from the entire data set confirm our initial findings and indicate how participants connect interactions and the experience of love in their stories. When a particular quality or qualities of the product change during an interaction, people evaluate that interaction in relation to their personal concerns. This results in a positive or negative affective experience. When this evaluation resulted in a positive affective experience, participants reported rewards of love. When there was a problem and the evaluation resulted in a negative affective experience, the participant thought ahead to the efforts needed to overcome the problem (costs) and evaluated the interaction in relation to their standards for love (rewards). If the product still fit their standards, they often reported a reward of love (rewards outweighed). If the product did not fit their standards for love, rewards of love were not reported (costs outweighed).
Our findings did not provide enough indications that an evaluation of rewards and costs also occurs when positive affective experiences are reported, and not just when there are negative affective experiences. Still, whether there was such an (unreported) evaluation or not, the experience of a positive affect was always followed by a report of rewards of love (see figure 5.2).

![Diagram of meaningful interaction]

Figure 5.2 – The connection between interactions and the experience of love for products according to participants’ reports: evaluation processes within meaningful interactions.

Considering the first question proposed in this chapter, the analysis of participant’s reports indicated two evaluation processes within meaningful interactions that are connected to the experience of love: an evaluation of antecedent events and product qualities – that resulted in positive or negative affective experiences – and an evaluation of the relationship’s rewards and costs. The first process evaluates the moment of interaction: how people evaluate (or in appraisal theory’s terms, appraise) a particular stimulus (antecedent event or product qualities) within the interaction. The second process, which was only reported when negative affective experiences occurred, evaluates the moment of interaction in relation to the relationship: how the product’s appearance or use at that moment of interaction matches a person’s standards for a love relationship.
Although the second process is the one in which participants evaluate their relationship, both processes may influence the quality of love (rewards) and the longevity of love relationships. In chapter 2, we saw that Levinger (2002) called these evaluated antecedent events critical incidents and emphasized the crucial role they have in the development of relationships. In addition, Berscheid (2002) claimed that the experience of positive or negative affect has a critical influence on the survival of relationships as this can influence people’s decision to maintain the relationship. Moreover, the moments in which people evaluate the rewards and costs of their relationship are also expected to influence people’s experience of love for products and the longevity of love relationships. As seen in chapter 2, these decision moments are vital to the understanding of changes in the experience of love (Sternberg, 2006) and the development of close relationships (Levinger, 2002; Kelley, 2002).

We now know how meaningful interactions are conceptually connected to the experience of love. We do not yet know, however, whether the outcomes of the evaluation processes we identified here lead to a specific intensity and balance of the love experience. Next, we link the outcomes of the evaluations that people make to the intensity and balance of the love components as rated through the love scale. We examine how these affective experiences and evaluations of rewards and costs influence the quality of the experience of love.

5.4 Question 2: how do the connecting aspects in an interaction influence a change in the experience of love?

We now examine the link between outcomes of evaluations within meaningful interactions and the intensity of love measured through the love scale. Our goal is to understand the extent to which the two evaluation processes within meaningful interactions are linked to the intensity and balance of the love components. Findings are expected to indicate, for example, evaluation outcomes that result in higher or lower intensities or balance of love components.
5.4.1 Data analysis on question 2

First, in order to determine the intensity and balance of the love components, we calculated the scores of each component of love – collected through the Love Scale – that corresponded to the meaningful interaction in each of the 253 relationship events collected. The scores were calculated as follows: each item of the scale was rated on a 5-point scale. For each subscale (intimacy, passion, or commitment), we summed up their ratings and divided them by the number of items each contained (intimacy = 5 items; passion = 4 items; commitment = 4 items). Sternberg’s theory (1986/2006) is not specific about the degree of intensity and balance of love components for each category of love (kinds of love) people can experience. He considers that kinds of love are determined by the high/low intensities of love and the presence/absence of love components. It means that if a component is experienced at low intensities, it makes the quality of experienced love unbalanced. Therefore, based on the indications Sternberg provided for kinds of love one can experience, we determined that scores between 1.0 and 2.3 indicated low intensity; scores between 2.4 and 3.0 indicated moderate-low intensity; scores between 3.1 and 3.7 indicated moderate-high intensity; and scores between 3.8 and 5.0 indicated high intensity.

Second, we grouped the findings in search for events in which the 3 components of love were experienced (a) at high intensities and balanced [consummate love]; (b) at high intensities and moderately balanced [passionate, romantic, or companionate love]; (c) at low intensities and moderately balanced [liking, infatuation, or empty-love]; and (d) at low intensities and unbalanced [non-love] (see chapter 2). Third, we calculated the frequency in which each intensity and balance of love (a-d) occurs in the different evaluation processes (1-3). Fourth, we grouped the findings according to (1) momentary evaluations that resulted in positive affective experiences, (2) momentary evaluations that resulted in negative affective experiences and relationship evaluations in which rewards outweighed costs, and (3) momentary evaluations that resulted in negative affective experiences and relationship evaluations in which costs outweighed rewards. Table 5.1 shows these findings.
<table>
<thead>
<tr>
<th></th>
<th>High intensity &amp; Balanced</th>
<th>High intensity &amp; Moderately balanced</th>
<th>Low intensity &amp; Moderately balanced</th>
<th>Low intensity &amp; Unbalanced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consummate love</td>
<td>Passionate, romantic, or companionate love</td>
<td>Liking, infatuation, or empty love</td>
<td>Non-love</td>
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<tr>
<td></td>
<td>(All three components scored high/moderate-high)</td>
<td>(Two components scored high/moderate-high, one component scored moderate-low/low)</td>
<td>(One component scored high/moderate-high, two components scored moderate-low/low)</td>
<td>(All three components scored low/moderate-low)</td>
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<tr>
<td>Momentary evaluations</td>
<td>58%</td>
<td>28%</td>
<td>12%</td>
<td>2%</td>
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<tr>
<td>that resulted in a positive affect</td>
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<tr>
<td>N=161</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>(shoes n=114; cars n=47)</td>
<td></td>
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<tr>
<td>Momentary evaluations</td>
<td>14%</td>
<td>30%</td>
<td>37%</td>
<td>19%</td>
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<tr>
<td>that resulted in a negative affect;</td>
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<tr>
<td>Relationship evaluations in which rewards outweighed costs</td>
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<tr>
<td>N=67</td>
<td></td>
<td></td>
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<tr>
<td>(shoes n=46; cars n=20)</td>
<td></td>
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<tr>
<td>Momentary evaluations</td>
<td>-</td>
<td>8%</td>
<td>16%</td>
<td>76%</td>
</tr>
<tr>
<td>that resulted in a negative affect;</td>
<td></td>
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<tr>
<td>Relationship evaluations in which costs outweighed rewards</td>
<td></td>
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<td></td>
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<tr>
<td>N=25</td>
<td></td>
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<td></td>
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<tr>
<td>(shoes n=3; cars n=22)</td>
<td></td>
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</tr>
</tbody>
</table>

Table 5.1 – Frequency of kinds of love in relation to appraisal processes.
5.4.2 Findings on question 2

The findings that are presented in the table are explained below, in terms of how each of the outcomes from our previous findings (5.3.4) fitted the different intensities and balance of love.

High intensity and balanced love components (consummate love)

Components of love were experienced at high intensity and in balance in 58% of the meaningful interactions in which participants reported a positive affective experience and in 10% of the meaningful interactions in which participants reported a negative affective experience and rewards outweighed costs. In none of the meaningful interactions in which costs outweighed rewards components of love were experienced at high intensities and in balance.

High intensity and moderately balanced love components (passionate, romantic, and companionate love)

Components of love were experienced at high intensity and in moderate balance in 28% of the meaningful interactions in which participants reported a positive affective experience, in 30% of the meaningful interactions in which negative affective experiences were reported and rewards outweighed costs, and in 8% in which the costs outweighed rewards.

Low intensity and moderately balanced love components (liking, infatuation, and empty-love)

Components of love were experienced at low intensity and in moderate balance in 12% of the meaningful interactions in which participants reported positive affective experiences, in 37% of the meaningful interactions in which negative affective experiences were reported and rewards outweighed costs, and in 16% in which the costs outweighed rewards.
Low intensity and unbalanced love components (non-love)

Components of love were experienced at low intensity and unbalanced in 2% of the meaningful interactions in which participants reported a positive affective experience, in 19% of the meaningful interactions in which negative affective experiences were reported and rewards outweighed costs, and in 76% in which costs outweighed rewards.

5.4.3 Discussion of question 2

Our findings indicate that the experience of positive affect stimulated more intense and more balanced components of love than the experience of negative affect. However, when rewards and costs of a relationship are evaluated positively (rewards outweigh costs) after negative affects are experienced, the components of love are as moderately balanced and intense as when positive affects are experienced. For example, when positive evaluations of relationships’ rewards and costs are made, the components of love are more intense and balanced than when negative evaluations of relationships’ rewards and costs are made. When costs outweigh rewards, the three components are experienced at very low intensities and unbalanced, indicating that love is not present (figure 5.3).

![Diagram](image)

Figure 5.3 – Influence of the outcomes of evaluation processes within meaningful interactions on a change in the experience of love.
These findings indicate that the outcomes of momentary evaluations of meaningful interactions (appraisals) and the evaluation of those in relation to the relationship (rewards and costs) influence a change in the experience of love. When the evaluation of a meaningful interaction contained a negative affective experience, participants evaluated how much the product – in the light of its new observable qualities (broken, scratched, old) – fit their standards of how a loved product look, behave, or be like. If the product still (somehow) fit their standards for love (rewards outweigh), participants reported a reward of love and, according to our findings here, experienced love at a specific level. However, if after the interaction the product did not fit a person’s standards for love, the participant did not report a reward of love and, according to our findings, also experienced love at lower quality.

It seems that, as interactions over time change qualities of the product, whether perceived or actual qualities, these qualities influence whether people perceive that product as worthy of love or not, influencing change in the experience of love. Next, we examine these same processes in sequences of relationship events. This should provide us with an understanding of how these processes influence changes in the experience of love for a product over time and in the development of person-product relationships.

5.5 Question 3: How do the connecting aspects in an interaction influence change in the experience of love and the development of the relationship over time?

In this third part of the analysis, we examine how people evaluate their relationship with a loved product over time in order to understand how interactions, product qualities, and evaluations of rewards and costs provoke change in the experience of love over time and in the development of love relationships. Our goal now is to identify (1) which product qualities people evaluate at different phases of a relationship, (2) in which way these are evaluated, and (3) how these evaluations change the quality of love over time and influence relationship development. Findings should indicate, for example, details of how people evaluate their relationship at different phases, and how different
outcomes of their evaluation can change the quality of their experience of love.

5.5.1 Data analysis on question 3

In order to identify the phases of person-product love relationships, we first compared the sequences of events in two relationships – one with shoes and one with cars – to Levinger’s descriptions of each relationship phase (Levinger, 2002, as seen in chapter 2). Levinger’s descriptions provide a general idea of the beginnings and ends of each person-product relationship phase as well as the kind of events likely to occur in each phase. We then compared the kinds of events described by Levinger with the events in the remainder 24 shoe and car relationships. With each of the relationships we looked at, we corrected or adjusted our general or aggregated descriptions of events.

Second, by comparing each of the 253 relationship events collected to the general descriptions of events in the different relationship phases, we identified which events were the most typical for each of the five phases of love identified. Third, we examined the group of events obtained for each phase for (1) product qualities participants often evaluated in the particular phase, (2) similarities between participants on how these were evaluated, and (3) how these evaluations typically changed the intensity and balance of people’s experience of love in that phase. The change provoked in the intensity and balance of the experience of love is presented according to Sternberg’s classification of kinds of love (figure 5.4).

The findings are presented and discussed according to each of the five relationship phases identified, including descriptions of the beginnings and endings of each relationship phase.
5.5.2 Findings

The attraction phase

Phase description. The attraction phase in person-product love relationships starts when a product is seen for the first time and ends when it is purchased. In both case studies, relationship events were reported that matched this phase. The stories reported in each event referred to first encounters, which means, moments in which (1) the product was seen for the first time, (2) was tested (try shoes on, test drive the car); (3) a participant decided on whether to buy the product or not; and (4) the final moment of this phase when the beloved product is purchased. Thirty-six events of the 253 relationship events collected matched at least one of these four types of events.

Product qualities evaluated in connection to the experience of love. Participants’ reports indicated that, in this phase, evaluations of rewards and costs involve product qualities they consider important in order to start a relationship. Because the product was often purchased at first sight, the evaluation of the product was mostly restricted to its appearance, tactile properties, and perceived technical quality. The quotes show interactions and evaluations participants gave. Their corresponding Love Scale rating is shown in brackets.
“They [shoes] were beautiful (…) it was also pure leather, which is always better” (consummate love)

“It [car] looked quite nice (…) the engine was in great condition” (passionate love)

However, if participants are able to learn more about the product in this phase – for example, trying out the shoes or test driving the car – they gain limited awareness of the use of the product: participants know how it fits (shoes), how comfortable it is to use it (shoes and cars), how it drives (car), and what to expect regarding its usability and durability.

“I thought they [shoes] were a bit too high, but as I tried them on I realized how comfortable they were” (consummate love)

“I bought them [shoes] but I knew I would not be able to wear them all the time. The heels are way too high for me (…) it is not comfortable, but it’s ok” (romantic love)

“The guy told me I could drive it [car] around the block (…) It was better than I expected” (companionate love)

Still, often the products were only purchased if participants thought those qualities were worth the price of the product.

“I loved them [shoes], but they were way too pricey for me (…) but I knew I would not give up” (romantic love)

“I had to think about it. It [car] was a bit more expensive than the other car I saw earlier (…) but it looked nicer. So I bought it” (consummate love)

In two cases in the shoes study and one case in the car study, product qualities were evaluated due to an antecedent event: the participant was complimented for the product’s appearance. In these cases, this antecedent event seemed to highlight that quality of the product, which led the participant to report rewards of passion and commitment.

“My boyfriend was very excited about it. He said that I looked much better on these shoes than the other pair I was trying on (…) I liked it, it made me think that these shoes really look nice” (passionate love)
“I really liked the car and my girlfriend did too. She said the car was ‘hot’”
(passionate love)

In which way did participants evaluate product qualities? If product qualities fitted the participants’ standards of what a product should be like, look like, or feel like in order to experience love, they reported rewards of love. Different product qualities were associated with particular rewards of love. For example: comfort, use, and usability were associated with rewards of intimacy. Comfort and appearance were associated with rewards of passion. Durability and price were associated with rewards of commitment.

“They [shoes] looked perfect (...) so I bought them (...) I was so excited about my beautiful shoes [passion]” (consummate love)

“Then I thought to myself: those shoes belong to my feet! [passion] (...) They were really comfortable and of course, gorgeous [passion]” (consummate love)

“Seemed like a robust car, tough. I seemed like it would last long”
(companionate love)

“It really seemed like I could trust it. I was happy about that car” (romantic love)

In cases in which the product did not seem to fully fit a participant’s standards to start a love relationship, the participants tried to cope by enhancing other qualities of the product that seemed dearer to them. For example, enhancing the value of the product’s appearance or durability in comparison with its comfort or price (or the other way round).

“They were not the most comfortable shoes in the world [product did not fully fit participant’s standards for comfort], but they looked good”
(passionate love)

“The price was a bit over my budget [standard to start a relationship], but the car was in great condition (...) that is more important” (romantic love)
“I drove really nicely so I was sure I was going to buy it (...) the paint was just starting to fade and I thought that was a downer [product did not fully fit participant’s standard for appearance]” (companionate love)

Because of the limited awareness participants have of the product in this phase, participants sometimes reported fantasizing about using the product. This way, qualities that are not observable are imagined – fantasized – and also evaluated in relation to their standards for love.
For example, in the shoe study, participants often fantasized about wearing or owning a pair of shoes in order to convince themselves to buy the shoes, even though they did not fully fit the participant’s price range or comfort standard.

“I was walking around in the shop, in front of the mirror and could see myself out in a party, wearing a black dress I have (...) I had to buy them but they were so expensive (...) I bought them anyway” (consummate love).

When shoes did not fit or were not comfortable, not fitting the participant’s standard for love, the participants anticipated stretching or padding shoes (or feet) in order to make the shoes comfortable, so they would better fit their standards for love. Similarly, when a car’s mechanics or appearance did not fit a participant’s standard, he anticipated repairing the car, so that the car would fit his standards for love better.

“There were some little things that I knew I could fix, like the lights and a couple of dents. So it really didn’t matter (...) it would look good, so I knew I could buy it” (romantic love)

One participant in the shoe study and two in the car study mentioned that they did not love the product at the time they purchased it. The products did not fit their standards for love at the beginning of the relationship. Instead, love grew in time, as new qualities of the product were perceived that fit their standards for love.

Event during the attraction phase:

“When I bought them [shoes] I just needed boots that fitted me. They looked ok, but I didn’t think I loved them at the time” (liking)
“It was a nice car (...) it looked good (...) but I didn’t really love it” (empty love)

Event later in the relationship:

“Then she said my boots looked really nice (...) I started thinking that they did look nice (...) I guess that is when I realized that I did loved my boots” (passionate love)

“I was really happy with it because the car proved to be much better than I expected” (passionate love)

**The build-up phase**

*Phase description.* The build-up phase in person-product love relationships starts when the product is purchased and ends when participants have gained experience regarding the use of the product in real conditions and the product is no longer new to the person. Although the end of this phase is slightly blurry, as knowledge about a product can be gained through interactions during any phase of a relationship, the events examined matching this phase (n=74) referred to interactions after purchase in which participants used and/or admired the product. If, while in the attraction phase, participants anticipated improving a particular quality of the product – such as the fitting of the shoes, the mechanics or appearance of the car – these improvements are also made in this phase.

*Which product qualities did participants connect to the experience of love in this phase?* In this phase, participants assessed qualities of the product that could not be assessed before purchase because they mostly only become apparent in use. The product qualities that participants reported here were: tactile properties, comfort in use, quality, usability, appearance and durability of products. The participants seemed to associate these product qualities to particular rewards of love. For example: comfort to intimacy and user experience and appearance to passion.
“It was nice because I could walk the whole day without having any problems with it (...) then I knew that I could really wear them at many occasions” (consummate love – high intensities)

“It drives very smoothly and it really looks nice (...) I thought it really fitted me” (consummate love – high intensities)

In which way did participants evaluate product qualities? In this phase, if after using the product under real conditions a new quality of the product was considered to fit the participants’ standard for love, the participant described particular rewards of love. This happened, for example, when a participant discovered that a pair of shoes thought uncomfortable at the attraction phase turned out comfortable after all. In the car study, this happened when a participant found that her car was less noisy than she imagined.

“They ended up being more comfortable than I expected (...) and that is really important for a pair of shoes” (romantic love)

“While I was driving to work I realized that it was so silent. It almost made no noises (...) I was a bit surprised because it its not a new car (...) it gave me the feeling that it was a really good car” (consummate love)

Antecedent events such as receiving compliments on the car or shoes in this early phase also allowed participants to re-think the appearance or overall qualities of the product in relation to their personal standards.

“I thought they [shoes] were pretty but after that compliment my shoes were prettier than ever! (...) I realized that they were not only pretty but also stylish” (passionate love)

“Then I was in the garage and the neighbour came to say that the car was really nice (...) indeed, it is a nice car (...) I guess I was a bit frustrated before, because it makes a squeaky sound when I turn the car on” (consummate love)

On the other hand if a product that was thought to have certain qualities did not fit a participant’s standards for love when they started to use it, the participant reported the experience of a negative affect. In
these cases, participants tried to cope in order to make the product still fit their standards for love. They did that by (1) fixing the problem that caused the negative affect, such as repairing a broken heal, or fixing a dent in the car.

“I tried to wear them but five minutes after I already had a blister (...) I was a bit angry (...) then I tried to stretch it. I put the shoes on while wearing wet thick socks. I know it sounds weird but I've done it before and usually it works (...) when the shoes dried out they were fitting quite ok” (passionate love)

“But I managed to fix it (...) I didn’t want my car to look like that (...) I loved that my car looked nice again [passion]” (consummate love)

Another way participants coped with disappointments was by (2) adjusting the importance of that product quality to fit their standards for love. For example, by reminding themselves of another quality of the product that could outweigh the quality with which they experienced problems.

“The heel was scratched (...) it didn’t look perfect anymore (...) but at least they are very comfortable [intimacy] and I know I can wear them a lot [commitment]” (consummate love)

“I know it doesn’t look like a new car, but it is my car (...) the engine works pretty well (...) I can trust it [intimacy]” (companionate love)

Participants’ quotes above show that, if they made these adjustments (either fixing the problem or adjusting the importance of the product quality) and considered the product to somehow fit their standards for love, rewards of love were described.

On the other hand, if the product could not be fixed, rewards were not reported. To two participants in the shoe study it happened that their new loved shoes were irreparably damaged in this phase. One of them described how much passion she lost for her new pair of loved shoes when they were irreparably scratched by accident.
"I just couldn’t believe it! My shoes were already damaged! (...) I searched on the Internet to see if I could fix the leather, but once you have a scratch it just can’t be fixed (...) it is just that they didn’t look pretty anymore. I was very sad" (empty love)

The other participant in the shoe study had the leather of her new boots prematurely wrinkled when she wore them for only the 5th time. The events reported after this event fitted descriptions of the deterioration phase and the levels of intimacy, passion, and commitment were unbalanced and moderately low.

"I noticed the formation of folds and wrinkles on parts of the shoe and I didn’t like it (...) I like it when these wrinkles are living signs from use, but these were new shoes (...) and the wrinkles appeared in parts of the shoe I would not expect" (non-love)

The continuation phase

Phase description. The continuation phase in person-product love relationships started when participants seemed to have gathered enough knowledge about the product, have adjusted to the outcomes of previous interactions and have grasped the real qualities of the product (instead of imagined ones). The participants have decided at this point on how the product fits their standards for love, and the relationship then moves into the third phase, continuation. The continuation phase is where most of the relationship takes place. It is characterized by the repetition of events in which person-product interactions of various types take place and can influence, at times, all qualities a product may have. It is difficult to pinpoint when this phase ends since it depends on the outcomes of all events it includes and on how well people can adjust to the outcomes of the interaction, making efforts to maintain the love (repair, care). One hundred and thirty-five of the 253 events reported were considered to fit the description of this phase.

Which product qualities did participants connect to the experience of love in this phase? In the continuation phase, participants associate a great number of product qualities with different rewards of love.
However, the link they make between product qualities and rewards sometimes differs from the link they made in the previous phases. For example, qualities of user experience participants associated in the earlier phases to passion were sometimes in this phase associated to intimacy. Comfort, that was previously associated to intimacy, now was linked to behaviours of commitment. This seems to indicate that product qualities could lead to different rewards of love at different times in a relationship.

“It feels so good every time I wear these shoes [user experience] (...) it makes me feel more connected to them [intimacy]”

“Every time I drive other people’s car I realize how comfortable my car is [user experience] (...) it makes me care a bit more for it [commitment] (...) I don’t want to lose it”.

In which way did participants evaluate product qualities? In this phase, every event contained evaluations by participants that either (1) contributed to a participant’s experience of love (positive affect) – as momentary interactions highlighted a quality of the product that is then re-evaluated and strengthened – or (2) forced the participant to adjust the product to their standards of love (negative affect) – whether by repairing a particular quality of the product affected by the interaction or by reorganizing the importance of that quality of the product in order to ensure fit to the person’s standards for love. These are the same processes as those described in the two previous phases. What differs in this phase is that when problems occur (negative affect is experienced), participants often evaluated openly how much they were willing to adjust their love standards of product qualities so that the product still fit them.

In order to allow the new qualities of the product to contribute to a positive change in their experience of love, participants must first have judged that the product can keep providing rewards of love.

“By the time I went home I had blisters all over my feet (...) I kind of knew they were not that comfortable, but still I was a bit disappointed because every time I wear them they destroy my feet (...) I don’t want to stop wearing
them because these are the most beautiful shoes I have [passion]. They also fit most of my dresses (...) they practically go well with everything I have [intimacy]. So I guess it is ok to keep on wearing them, but then I have to be careful and not wear them when I have to walk for too long” (passionate love)

“It sometimes gives me problems, like it did now. But it is still a great car [intimacy] and I think I can keep on using it for quite some time [commitment] (...) But I hope that it doesn’t give me very serious problems in the future” (consummate love).

As we can see in the participant’s quotes, their judgement of whether the product can keep providing rewards of love depends on how well they can envision the product qualities they consider fitting to their standards for experiencing love in the future. In case the product quality being evaluated is judged to still fit their future standards for love, participants often reported rewards of love.

In case a participant judged the product quality being evaluated as not fitting their standards for love, they sometimes tried to adjust the importance of that quality in relation to other qualities the product is expected to have in the future. For example, a participant expected his car’s usability to still fit his standards for love even though the deteriorating appearance of his car does not fit his standards for love. Transferring the importance of the car’s appearance to its usability helped him to cope with the initial mismatch with his standards and keep on loving the car.

“It was quite a long distance for this car and it did it very well (...) everyday it looks a bit worse but, on the other hand, I feel that it will keep on working like this (...) I really hope it does” (passionate love)

In case a participant evaluated the product and could not adjust the importance of product qualities in their prospect standards for love, they reported an intention to decline the efforts to maintain the relationship.

“It was already the third time that I had to change the heels. It is a bit annoying (...) If I have to change it another time, I would have spent the
same amount of money I paid on the shoes just to repair it (...) it will probably be the end of it. It is sad, but they are not that new anymore” (empty love)

In one case in the shoe study and another one in the car study, both the beloved pair of shoes and car were owned and used for 7 years. It shows that whether the relationship continues or moves to the deterioration phase depends on whether it is possible to keep on using the product. It depends on whether the product breaks or is seriously damaged, and on the efforts participants are willing to make to adjust the qualities of the product.

“I can’t wear them all the time. Only if I’m in the house or I go to a neighbour or somewhere close. I’m afraid they may get damaged and I can’t wear them anymore” (consummate love)

“That’s when I realized I’m also endangering my husband if we keep the car. And I thought I may have to get a safer car at some point” (consummate love)

The deterioration phase

Phase description. The deterioration phase in person-product relationships is characterized by a decrease of efforts or a decrease of use in order to maintain the love. Only 4 relationships in the shoe study and 3 relationships in the car study matched the description of this phase. The product qualities that were evaluated in this phase, varied immensely, just like in the continuation phase.

In which way did participants evaluate product qualities? How participants evaluated the product in this phase differs from the previous phase. Participants either (1) cannot envision a potential for the relationship to continue and, therefore, deliberately diminish the efforts to adjust the product to their standards for love; or (2) can still envision a potential for that relationship to continue, but the product has deteriorated (broken, aged) and cannot be used anymore. In the first case, the rewards of love were often low and unbalanced. In the second case, the rewards of love were often high and balanced.
“It is the third time I have to fix them and it is just so much work (...) these shoes are already quite old and whatever I do won’t make them look any better” (liking)

“It was probably not worth to fix it because the car will probably not last much longer (...) it was great as it lasted, but I’ve been thinking of getting another car. Maybe its time” (empty love)

“When I wear them I feel the heels are almost coming out, they are a bit loose (...) I don’t think I can wear them for much longer (...) it is really a pity, I love them so much (...) I wish I could still use them for a long time” (consummate love)

“I just wanted to keep the car for as long as possible (...) it was obvious that it was not going to live for too long, but I tried not putting it through a lot of effort. Maybe it could last a bit longer” (consummate love)

One participant in the shoe study reported in the diary that as she started to wear her newly loved pair of boots (in the build up phase) she realized that those boots did not fit her standards for love because they deteriorated too fast. The status of her relationship, in her own words and in her ratings, turned from a ‘love’ relationship to a ‘liking’ relationship.

“I was very excited in the beginning about these boots (...) I think that was the problem (...) also because they are new and they don’t look so good anymore (...) I don’t really think I love them now. I like them like some other shoes I have” (empty love)

The quote shows that this participant’s standards for a liking relationship are lower than her standards for love. From then on, she rated her interactions with her boots moderately high in intimacy (corresponding to liking) low/moderately low in passion and low in commitment.

The ending phase

Phase description. Only 1 event in the car study was about actually ending a relationship. Considering this (one) participant’s descriptions, the ending phase begins when the person realizes that important
qualities of the product cannot be adjusted to the participants’ standard for love, because the participant cannot make the efforts to maintain the product or, in the specific case of cars, because using the product could have irreversible consequences to her wellbeing. In this case, driving her old beloved car became so dangerous that she had no choice but to send it to the car scrap disposal.

“I loved that car, but it was just too dangerous to drive (…) it probably could not be fixed and even if we could fix it, we would not be able to afford it (…) it is very sad. We were driving it for the last time, taking it to the car trash (…) as we left it there I thought I was going to cry”.

The participant reported a last story from after the break-up that showed how upset she was about the loss of her beloved car. In this story, she remembers her old beloved car and compares it with her new car. Even though she does not own the car anymore, her ratings for love, in this event, were high and balanced.

“I have so many memories attached to that car, we did so much together with it (…) it is really sad (…) I have a new car now. It is the same brand, the same model, and even the same colour as the old one, but it is not the same as the car I loved (…) I didn’t look for a car that looked exactly the same as the one I had. For some reason the son of someone I know was selling his car and it happened to look like the same one I had (…) we bought it because we could afford it and, from all the cars we have seen, this one was in best condition. Still, in the beginning, I didn’t like the new car. I thought that the old one was so much better, even though I could not trust it anymore in the end. I mean, this one is newer, everything works. The other one was literally falling apart. But I still miss it (…) I thought that the fact that this new car looks the same as the old one is some sort of a sign (…) as if it is an opportunity to start a new relationship. So far, it could be. Who knows?”

This last story reveals that rewards of love can still be experienced from memories when the loved product is no longer owned.
5.5.3 Discussion of question 3

Our findings indicate that change in the experience of love throughout the development of person-product relationships depends on (1) the person’s standards for love in relation to a particular product; (2) the importance the person grants to different product qualities; (3a) how an interaction influences qualities of the product; or (3b) how an interaction changes how the person perceives qualities of the product; (4) how the person evaluates those product qualities as fitting their standards for love; and (5) how far people can or are willing to adjust their assessments, by (a) adjusting the importance of product qualities to their current standards for love or (b) anticipating the importance of that quality to fit their standards (figure 5.5).

Figure 5.5 – Factors within person-product interactions that can influence change in the experience of love over time and the longevity of person-product relationships.

5.6 General discussion

5.6.1 Discussion of the approach

Our choice of conceptually connecting two distinct theories of interpersonal love in order to investigate the experience of love for products and its development over time enabled us to understand two things. First, it enabled us to understand the processes in which the
experience of love arises and changes. Second, we were able to identify differences within these processes at different times in a relationship: our findings explain what provokes changes in the quality of the experience of love over time. Sternberg claimed that the experience of love changes over time but did not yet show what provokes this change, whereas Levinger charted changes in relationships over time but did not explain how these are provoked by different qualities of the experience of love. The development of the Love Scale and the diary tool in chapters 3 and 4 helped us achieve this. Applying these tools as the combined EXITool in the two studies reported in this chapter provided an understanding of how interactions are connected to the experience of love and how they change it over time.

5.6.2 Discussion of the findings

The analysis carried out in this chapter concluded that the experience of love for products arises or changes over time according to two evaluation processes people engage in while interacting with a product.

The first process refers to an evaluation of the moment in which people and products interact. This evaluation involves, according to appraisal theorists, a contrasting of people’s expectations (concerns) with (1) qualities of the product that have changed during the interaction (caused by antecedent events) or (2) with the person’s changed perception of product qualities during the interaction. This first evaluation process results in the person having a positive or a negative affective experience.

People then engage in a second evaluation process, in which they evaluate how well the product at that moment fits their standards for love, considering its actual, perceived, or anticipated qualities. This implies that each person expects different product qualities to give them rewards of love (intimacy, passion, and commitment). This second evaluation process refers to the decision moments in a relationship that exchange/social penetration theorists call an evaluation of rewards and costs. Our findings indicate that when the first evaluation process results in a positive affective experience, people then evaluate how that product adds to their standards for love. And they experience an increase in the
intensity and/or balance of their experience of love. When the first evaluation results in a negative affective experience, people then evaluate how that product fits or could fit their standards for love. This second evaluation changes the experience of love to high or low in intensity and to balanced or unbalanced depending on many aspects that differ according to the moment in time the relationship is in.

We then confirmed that Levinger’s five phases of interpersonal love can also be found in person-product love relationships. Person-product relationships develop over time and several aspects influence changes in the experience of love and in the development of love relationships. They occur during the second evaluation process mentioned above. The influencing aspects in it are a person’s standards for love in relation to a particular product, the importance granted to different product qualities, the way interactions influence qualities of the product or changes in the person’s perception of these qualities, and the way a person evaluates those product qualities as fitting to their standards for love. This fit to a person’s standards for love depends, in turn, on whether the person can or is willing to adjust their evaluation of product qualities. They can adjust their evaluation either by adjusting the importance of product qualities to their current standards for love or by thinking ahead to the importance of that product quality to them in the future.

The findings present factors that can be addressed when one wants to facilitate the experience of love, increase the rewards one experiences with products and foster more longevity of person-product relationships. Some of these factors can be designed for or facilitated, such as product qualities or positive or negative affective experiences. Others could be generalized into patterns to inspire the design of products, such as generalizing people’s standards for love for a specific type of product and designing products that hold qualities that fit these standards. Still, as pointed out in chapter 2, loving a product is the result of a decision a person makes. The studies presented in this chapter (chapter 5) revealed that this decision depends not only on characteristics of the product but also on people’s willingness to adjust
and maintain their love. Could products inspire product owners to be more generous in their assessments? In chapter 6 we discuss these findings in relation to the overall research questions. The implications of these findings are also discussed, especially with regard to possibilities for design researchers and designers to use the findings in order to facilitate the fostering of rewarding and long-term person-product relationships.
General Discussion

The aim of this thesis is to understand how the experience of love arises and changes over time in person-product relationships. This required insights into what the experience of love for products is, how this experience can be investigated in the field of design, how person-product interactions are connected to the experience of love, and how these interactions influence the experience of love over time. In this final chapter we answer these questions and discuss the implications of our findings for design research, for design strategies and for research on love generally. We present the limitations of this research and point to directions for future studies.

6.1 The experience of love for products

Defining the experience of love is not an easy task since love researchers consider love to be many different things. The large number of definitions that has been given for the experience of love is overwhelming and some of these are even in conflict. Defining love in the field of design, specifically, is an even greater challenge. Although people often mention love for products casually, it has rarely been researched. Similar phenomena to love have been researched in the context of first time attraction, for example as a reason for product purchase, but love in the context of long-term product use has not been researched. From the statements of participants in a preliminary study we gathered that the experience of love for products in the context of use refers for them to a very rewarding, long-term, and dynamic experience they have in meaningful relationships with special
products they own and use. This perspective on love provides the opportunity to investigate the rewards of love and the longevity of love relationships.

6.1.1 Investigating love in the field of design

In order to find a way in which love can be investigated, various research perspectives on love were studied and relevant ones selected according to a set of criteria. In chapter 2 we found that descriptions of love in two theories of interpersonal love matched the stories that participants of the preliminary study (chapter 1) told us about products they loved. These theories are Sternberg (1986/2006) and Levinger, (2002). Their match with our data indicated that love in the person-product context has many similarities with love in the interpersonal context. In line with Sternberg’s theory on the experience of love, we found in people’s stories that their love for a product brings them rewarding thoughts, feelings, and behaviours. These rewards can be understood in terms of three components: intimacy, passion, and commitment. In line with Levinger’s theory on close relationships, we found in the same story data that the relationship between people and their beloved product changes and develops over time. It is influenced by decisions people make about their love during interactions with their product. These decisions cause the relationship to develop through various phases. Connecting these two theories provided a conceptual basis for the investigation of love for products and specifically for an understanding of the way person-product interactions are connected to love, how this connection influences change in the experience of love over time and how the connection affects the longevity of love relationships.

Research tools

The operationalisation of this conceptual basis for the research required the development of two research tools. The development of the Love Scale (chapter 3) provided a means to measure the intensity and balance of the rewards of love and to assess the quality of a love relationship at certain interaction moments. We identified particular
rewarding thoughts feelings, and behaviours that characterise the love for products and that differed from interpersonal love. These product-related thoughts, feelings, and behaviours of love made up the items in the product-specific Love Scale. The second research tool that is developed is the Experience Interaction Tool (EXITool – chapter 4), a diary to be used for several weeks. It was developed to help research participants remember times they interacted with a beloved product throughout their relationship with it and to help them organize their stories. This enables them to indicate the moments – identified as meaningful interactions – in which their love starts and/or changes. The Love Scale was incorporated into the EXITool. This made it possible to measure the experience of love at the particular meaningful interaction moments participants identified, and thus to assess the experience love over the course of time.

6.1.2 How are interactions and love connected?

Two evaluation processes that take place during interactions influence the experience of love. The first evaluation process refers to a momentary appraisal of the product, in which a person evaluates the product in that moment of interaction against their personal concerns. This appraisal can result in a positive or negative affective experience, depending on what happens during the interaction and how the interaction changes the product or the person’s perception of the product. The second evaluation process within the interaction refers to the person assessing whether qualities of the product were changed by the interaction, factually or in the person’s perception of these qualities. The person compares the outcome of this assessment with their standards for love. These standards refer to specific qualities of the product that a person expects in order to experience rewards of love.

If the momentary evaluation during the interaction results in a positive affective experience, then a person judges in the second evaluation how much the product fits their standards for love. Evaluations that follow a positive experience often increase the intensity of and balance between the three components of the experience of love. If the first evaluation
results in a negative affective experience, the person also evaluates how much that product fits their standards for love. Just as with a positive experience, the second evaluation following a negative experience also provokes a change in the quality of love. However, whether this change results in the person experiencing rewards of high or low intensity, in balance or unbalanced, depends on an additional set of possible influencing factors.

6.1.3 How do these interactions influence love over time?

Factors influencing the change of the experience of love over time include, for example, the importance attributed to different product qualities. Influencing factors come to play when an interaction changes qualities of the product or a person’s perception of these qualities, and when the interaction results in a negative affective experience. The person then evaluates the product’s qualities on whether they fit the person’s standards for love. Another factor on which this evaluation depends is whether the person can or is willing to adjust their assessment, either by adjusting the importance of product qualities to their current standards for love or by thinking ahead to the importance of that product quality to them in the future, again in terms of standards they hold. Each of these factors can affect both the love experience (causing it to change) and the longevity of a love relationship. The influence of these factors is different in each of the five developmental phases of a love relationship. The influence depends on whether the relationship is in the attraction, build-up, continuation, deterioration or ending phase at the moment in which the person makes an evaluation of product qualities.

6.2 Implications for design research and strategies: can we design for love?

The research described in this thesis aimed to contribute to design by offering design researchers and designers knowledge that can aid the understanding of and ultimately the design for the experience of love for products. The findings that are presented suggest that, in order to facilitate the experience of love and foster rewarding and long-lasting
person-product relationships, one must consider the processes in which love occurs and changes during interactions, as well as the aspects that can influence this change, and how the change in turn affects a relationship at different phases. We now look into the ways our findings could contribute to various areas in the field of design.

Designing for affective experiences

Design researchers have previously engaged with the momentary evaluations people make of products. The link between product qualities, interaction, and people’s concerns has been studied in relation to people’s affective experiences with products (for example, Westbrook, 1987; Desmet, 2002; Yeung & Wyer, 2004; Demir, 2010). By identifying and generalizing people’s concerns and linking them to the experience of specific emotions, researchers have derived strategies to design for these specific emotions. However, these efforts often focus on facilitating positive emotions or dimensions of emotions (pleasure) and avoiding the occurrence of negative ones (for example, Jordan, 2003; Desmet & Dijkhuis, 2003, Desmet, van Erp, Hu & Van der Veen, 2008).

Our findings in this thesis suggest that negative affective experiences can also benefit the quality and development of relationships with products. Meaningful interactions with products are decision moments in which people contemplate and evaluate their experiences against their standards for love and in which they exercise generosity towards a product’s faults. Moreover, we have seen that evaluations of moments in which negative affective experiences occur can result in a positive change in the quality of the experience of love. Further research could look into how and when these negative affective experiences provide benefits to love relationships with specific products. This could help facilitate the experience of rewards of love and motivate people to re-think the fit of their product with their standards for love.

Moreover, design researchers have paid little attention to the possibility of changes in people’s concerns towards the product over time. They have investigated affective experiences with products at early phases of a relationship (for example, Desmet, 2002; Yeung & Whyer, 2004;
Westbrook, 1987) or throughout relationships (for example, Jordan, 2002; Hassenzahl, 2003; Mugge, 2007; Demir, 2010). Our findings suggest that people’s standards for love towards products can change over time. A product that fails to meet a person’s standards at different times in a relationship could lead to a decrease in experienced rewards and early disposal.

The investigation of other longer-term affective experiences such as trust and satisfaction could help design researchers, especially researchers concerned with the usability of products, to better understand how these experiences change over time. The experience interaction tool (EXITool) developed for this research to investigate the experience of love for products could also facilitate the longitudinal assessment of these experiences.

**Identifying people’s standards for love**

Our research suggests that, in order to love a product people expect the product to hold certain qualities that can grant them specific rewards of love. These expectations refer to people’s standards for love. The expectations differ according to the type of product and according to the phase a relationship is in. For example, the expectations people hold towards the appearance or usability of a car differ from the expectations people hold of the same qualities towards a pair of shoes. And people’s expectations of the usability of a car that contribute to their love are different at the attraction phase of a relationship than at the deterioration phase. Identifying people’s standards for love in relationships with different products and at different times in a relationship could help to identify design strategies.

Design researchers who use the appraisal theory in order to design for emotions have identified and generalized people’s concerns in order to predict, among other things, product qualities that can elicit specific emotional experiences (for example, Demir, 2010; Ludden, 2008). Their approach to design is to focus on the emotional intent in order to design products that fit this intent. Similarly, identifying and generalizing
people’s standards for love in relation to different types of products and at different moments in a relationship could be used to inform designers about qualities of products that could match people’s expectations for love. This could help them design with intent for the experience of love. Identifying what people expect from a product (their standards) in order to experience rewards of intimacy, passion, and commitment at different moments of a relationship could help facilitate the design of products people would love.

Investigating the link between product qualities and rewards of love

Consumer researchers in the field of design have been trying to understand consumer passions in order to turn them into marketing opportunities or improve shopping experiences (for example, Richins, 1997). The findings from our research show that passion alone does not lead to a balanced experience of love and could lead to the early disposal of products. Designing products that cannot satisfy one’s standards for love as a whole – considering its three components – could have, in the words of Chapman (2009), “destructive implications for the sustainability of consumerism” (p.31).

In chapter 5 we found that participants often associated specific qualities of products to specific rewards of love. This association also varied according to the specific phases of a relationship. For example, the appearance of a pair of shoes was often associated to the experience of passion in the attraction phase and, sometimes, intimacy in the deterioration phase. The usability of a car was associated to either intimacy or commitment, depending on the phase of a relationship. A further investigation of the link between product qualities and rewards of love at different times in a relationship could be used to inform product developers of the product qualities that need to be addressed in order to promote more balance between the components of love and promote more rewarding and long-lasting relationships.
In the prologue of this thesis, it was suggested that loved products seemed to have the powerful ability to improve users’ perceptions of effectiveness and efficiency of use and, consequently, convey higher levels of satisfaction. In chapter 5, we found that if a particular quality of the product does not fit people’s standards for love in that relationship, they focus their evaluation on other product qualities that do fit their standards and can grant them rewarding experiences. In the case portrayed in the prologue, the appearance and ‘fun to use’ qualities of the nail clipper were more rewarding than its lack of usability. It means that, designing for rewards of love that mainly reflect usability does not guarantee that products will be rewarding, used, or even kept. According to den Ouden et al. (2006) 48% of returned products are not attributed to a violation of product specifications, but are returned for other reasons. Reasons might be that they failed to satisfy users’ needs or just a user’s remorse. Our findings in this thesis show that a balance between rewards of intimacy, passion, and commitment should be aimed at in order to promote more rewarding experiences (in use) and the longevity of person-product relationships.

**Diagnosing, predicting and designing for rewards of love throughout the design process**

Knowledge on the experience of love could be inserted throughout the various phases of the design process. For example, in the ideation of new products, rich representations of the developmental phases of love relationships, the different intensities of love one can experience, or qualities of a product that contribute to the experience of love could be discussed. The person-product Love Scale developed in chapter 3 could be used to assess the intensity and balance of rewards of love that specially created personas or participants in usability tests experience with products. For the re-design of existing products, the EXITool in combination with the person-product Love Scale could be used to assess people’s love for the existing product at different phases of their relationship as well as product qualities that could be improved in a new product.
Knowledge on the impact of product qualities on the rewards of love people experience at different phases of a relationship could help designers prioritize their choices for product qualities to be designed for: for example, selecting materials (appearance/user experience) that could provide rewards of passion at later stages of a relationship; or developing product features that inform about the (perceived) usability at early phases of a relationship; or using technologies that are adaptable and can bring rewards related to the three components of love at different phases of a person-product relationship.

**Promoting contemplation and generosity in a relationship**

So far we have seen that rewards of love could be promoted in order to facilitate the experience of love for products. However, our findings indicate that whether a relationship will be maintained or discontinued depends highly on how dispositioned people are to maintain their love for products. People who are dispositioned to maintain the relationship can be more generous when assessing a product’s match to their standards for love. Earlier, we proposed that carefully planning the design of negative affective experiences at specific moments in a relationship could inspire people to evaluate their relationships positively. Throughout this research, we also found indications of other strategies that can help the longevity of a relationship.

First, our records of participants’ testimony of their experiences with the diary after the study indicate that writing stories about their relationships helped participants analyze their behaviours and be more generous in their interactions. For example:

“I’ve been quite busy lately and I couldn’t dedicate as much time as I wanted to write down stories. But I must say I really enjoyed writing in this diary (...) it was so nice to remember all the stories, all we’ve been through (...) it also made me think a lot about my relationship with other shoes I have, other products also. My fridge for example! I’ve wanted to get a new one, but now I think I will keep it for a while more. It still gives me lots of loving”
“Sometimes I’m not so happy about my car. But while I was writing the stories, it made me feel so great about having it (...) the other day I tried to start the car but the engine was making this strange buzzing sound. It happened a few times already and usually I get very irritated. But not this time. I just smiled and told the car not to worry that I would take good care of it (laughs). Yes, I talked to the car (laughs)!”

Second, the interviews we carried out with shoe lovers before the study as well as the stories they shared in the diaries showed that many of those women – who sometimes owned over a 100 pairs of loved shoes – were not only experienced consumers or users, but also experienced lovers. Their experience taught them to work with the ‘give and take’ in their relationships with pairs of shoes. For example:

“When I buy a pair of shoes I know what I’m looking for in it, I know what I’m getting from it (...) and if in the end that doesn’t happen, I know there is always something special about it that I will love”

“I know that if I go out and damage my shoes, I’ll be very disappointed and maybe will not be able to wear them anymore (...) I don’t even like to think about it (...) so I avoid wearing shoes that are covered in fabric when it is raining or when I have to walk in the streets for too long (...) it’s too risky”

These quotes show that enabling users to be more reflective of their relationships could help them to become more generous towards their products. Perhaps products can stimulate people to reflect at moments of interaction and be more generous in their evaluations.

6.2.1 Can designers foster rewards of love and longevity in person-product love relationships? A workshop

In order to examine how designers could engage with the knowledge this research provides about the experience of love, we organized a workshop with 6 design master students and 2 design PhD students (all female, 23-34 years old) at the Middle Eastern Technical University (METU) in Ankara, Turkey. The objective was not to test any particular design strategy. Instead, we wanted to gather insights into the ways the designers would adopt the theory and express it in a design process.
First, participants attended a 1-hour lecture about the main findings of the research from the shoes study. Then, as part of the workshop, they were asked to form 3 groups and work on 3 exercises. The workshop lasted for 2 hours plus a 30 minutes break between exercises 2 and 3. The first exercise – empathy – was to share with their group members their own love stories with products in order for them to identify with the experience of love (similar to empathy exercises recommended for example by Van den Hende, 2010 or Forlizzi & Ford, 2000). The second exercise – conceptualization – was to propose a fictional relationship between a persona and a beloved product considering all aspects of love they were exposed to during the lecture (similarly to persona exercises recommended for example by Jordan, 2002; Sleeswijk-Visser, 2009). The third exercise – design – was to propose strategies to foster the rewards and longevity of the relationship identified in the first exercise. After the third exercise participants in each group presented their results. Next, we present their strategies in each exercise and then briefly discuss what it could mean to design for love.

Empathising with the data

Each one of the three groups used the offered theories differently in trying to understand their own love stories with products such as a wristwatch, mobile phones, or a pair of shoes. The first group identified components of love in their own relationships and product qualities associated with each phase of their relationship with the beloved product. The second group identified qualities of their loved products that are relevant to each phase of their love relationship, rated the intensity of love they experienced in each relationship phase, and highlighted particular interactions they often carried out with their beloved product in each phase. The third group mapped sequences of events in their relationship and highlighted moments in which interactions changed their experience of love.

During the final presentation, participants in two groups shared their thoughts about this exercise. This is one example of a participant of group 2:
“To be honest, I never thought of me having a relationship with the products I own and even the products I love (...) these phases really helped me understand how my relationship works and how I deal with these products (...) it was also nice to hear other people’s stories and see how they do that”.

**Transferring knowledge from theory to design process**

During the second exercise, the first group conceptualized a series of fictional scenarios that depicted the phases of a relationship between a female persona and a beloved diamond ring. These were presented as a storyboard. Ratings of intimacy, passion, and commitment were given to each of the phases, with respect to the interaction and product qualities involved in each event. The second group conceptualized a relationship between a female persona and a corset and described six sequences of events depicting the attraction and build up phases. In each of these events, descriptions of particular rewards of love experienced by the persona and product qualities associated with it were described. The third group conceptualized a relationship between a female persona and a juicer, highlighting important events that led the persona to have positive and negative affective experiences and describing how she coped with moments in which problems in the relationship occurred.

**Design strategies devised**

In order to design products that promote rewarding experiences of love and long-lasting love relationships, the participants in the first group proposed general design strategies. For example, focusing on the quality of materials in order to prolong passion or predicting how different product qualities would naturally degrade over time and identifying what rewards should be promoted in order for love to be maintained. Although naïve, group one devised an interesting strategy that could help promote reflection and generosity at times people evaluate products. This consisted of designing products that become more expressive when problems in a relationship occur. For example:

“*When problems occur, a product should remind the user to appreciate it and keep on loving it (...) for example, what if my phone recognizes that I’m*
angry at it and displays a message saying 'I'm sorry' or 'please, don't judge me for that' (…) the idea is that people could become more sympathetic about the product's faults”

The participants in the second group used scenarios and personas to describe their predictions regarding influences that could lower people’s commitment to keep the relationship and argued how certain qualities of materials (resistance, colour) could be used to design a corset. The participants in the third group also suggested a strategy that could stimulate reflection and, consequently, help people gain experience in the ‘love game’, being more generous in the judgements. Their strategy was to design a service, such as a website, in which people can share their experiences with loved products and gain inspiration from other lovers on how maintain their relationships for longer.

“People are just not used to think of their relationship with products (...) to be honest, I never thought I had a relationship with products I own. Once it clicked, I feel that I will look at products with a different eye (...) but something like a website could be useful. People can share their experiences and be inspired by other people’s experiences (...) that could help them see more potential in their products and gain experience in this love game”

Implications for the design process and design strategies

Stimulating the designers to use their own love stories to empathise with our findings seemed to have helped them understand the processes in which love occurs during interactions and many of the factors that can influence change in the experience of love and love relationships. Considering the limited time span the designers had to take in our research findings on love for products and experiment with them during the workshop, they provided interesting leads on how to deal with knowledge on the experience of love. For example, the use of storyboards to represent events in different relationship phases and the association of product qualities to rewards of love, and descriptions of how personas coped with problems during interactions.
The strategies they devised, specially the ones aimed at improving contemplation and generosity, are inspiring and seem promising in promoting rewarding and especially long lasting person-product love relationships.

6.3 Implications for love research

Our findings indicate that love for products is not (always) metaphorical or simply a more intense form of liking. Our findings show that love can be truthfully extended to products (as Brown, 1987, suggested) because the processes in which love is experienced and change over time are the same as in interpersonal love. In chapter 2 we saw that the structure of rewards of the experience of love for products and its development and change over time were equivalent to interpersonal love. In chapter 3 we confirmed that the experience of love for products had the same structure of rewards – intimacy, passion and commitment – as proposed by interpersonal love theory. In chapter 5 we were able to confirm that the experience of love for products can be described in terms of the same developmental phases as interpersonal love: attraction, build-up, continuation, deterioration, and ending.

However, as Berscheid (2002) suggested, love for products also differs from interpersonal love because what we can expect from a product-love relationship differs from what we can expect from an interpersonal relationship. In chapter 3, as part of the development of the person-product love scale, we compared expectations people have for love in interpersonal relationships (items in Sternberg’s triangular love scale) to person-product love stories. Our findings suggest that these expectations involve the same components (intimacy, passion, and commitment). However as people and products hold different qualities and, presumably, different importance in people’s lives at most times, there are differences in the actual thoughts, feelings and behaviours that lead to the way love is experienced towards people and towards products. Many of the items from Sternberg’s original 45-point interpersonal love scale did not apply to person-product love. Further research may uncover more items that are specific to person-product
love than the 13 items that could now be identified for the person-product Love Scale.

We saw in chapter 1 that love has been described as an emotion, something involuntary that, at times, seems to have ‘a mind of its own’. However, we have seen in this research that love from the perspective of a relationship is not involuntary and being more generous in our evaluations can help people benefit from this relationship with products. Could research on love for products inspire people to love? It seems so. In all studies presented in this research, participants expressed how unaware they were of the potential of their relationship with the products they own. By remembering, analyzing, and writing about their personal love stories in the diaries, participants were often stimulated to re-think their relationship with the objects around them and work towards strengthening their bonds.

Could research on person-product love inspire research on interpersonal love? Possibly. Kelley and colleagues (2002) claim that interpersonal relationships are so complicated because people “do not have the clear identity and boundedness of physical objects”: “the student of interpersonal relationships is confronted with some 700 variables (terms, concepts, factors) and their possible interrelations” (p. 20). All these are distributed over two individuals that can actively influence change in their relationship (Levinger, 2002) and often hold different expectations towards their relationship (for example, Sternberg, 2006). This research suggests that further research on the experience of love in person-product relationships can portray love as a simpler experience, making it possible to grasp its variables and understand it as a whole.

The research presented in this thesis portrays person-product love as something more stable and, therefore, easier to understand than interpersonal love. Some participants in this research, who learned to contemplate their relationships with objects, reported a transfer of insights on the experience of love from the person-product context to the interpersonal context. For example, a participant who tested the EXITool in a study reported in chapter 4:
“As I was writing the stories, I started thinking about other products that I had in my life, how I felt about them. I started to find tendencies in my relationship with products (…) later I realized that I threat my products the same way I treat my boyfriends (laughs). Amazing how similar it is (…) it made me think a lot. I realized that love is not that complicated. That it is possible to make it work”.

In addition, the link made in this thesis between Sternberg’s theory of love and Levinger’s theory of relationship development and change has never been made in interpersonal context. Doing so could represent additions to both theories as it provides opportunities to understand influences that can change the quality of the experience of love (as an addition to Sternberg) and the link between interactions and the experience of love in the development of interpersonal relationships (as an addition to Levinger). A structured diary-based tool such as the EXITool can provide interpersonal love researchers with the opportunity to carry out often time-consuming and difficult to manage (Vangelisti & Pearlman, 2006) longitudinal studies in interpersonal context.

6.3 Limitations and future research

Although the stories participants shared in the EXITool and the ratings they gave in the Love Scale were essential to our understanding in this research, the retrospective nature of the stories and ratings may have been influenced by people's current experiences. Further research could examine whether this holds true and how this influences the findings presented here. Moreover, having identified many of the influences that can impact the experience of love, these could be incorporated into the EXITool, facilitating the data analysis.

Our choice to focus this investigation on the processes in person-product relationships and on the influences on person-product interactions directed our findings to a focus on the experience of love itself and, consequently, away from more detailed insights on person-product interactions that could also be useful to the field of design. For example, investigating the link between rewards of love and particular qualities of interactions or a closer examination of the link between specific product qualities and specific rewards of love could provide
designers with more specific information regarding the experience of love. Methods such as Necessary Condition Analysis (Dul, Hak, and Goertz, 2010) could help understand particularities between some of the variables (factors) we identified and their influence on the experience of love.

The research presented in this thesis did not particularly consider the influence of certain aspects such as culture or gender on the outcomes of the experience of love and the development of love relationships. Following the research carried out in this thesis, Tumewu (2009) investigated cultural differences and similarities between Dutch (using our data sample) and American women and their love relationships with shoes. Her research provided first indications of the impact of culture on the experience of love and the longevity of love relationships. Her findings suggest that differences in cultural dimensions (Hofstede, 2001) such as masculinity (Americans) and femininity (Dutch) as well as short-term orientation (Americans) and long-term orientation (Dutch) influenced people’s evaluations of rewards and costs especially at later phases of person-product relationships. The findings indicated, for example, that the quality of love Americans participants experienced was often lower than that of the Dutch participants who also kept their relationships for longer.

Tumewu’s study also provided indications that the nature of the experience of love is the same in other parts of the world than the one in which the research presented in this thesis was conducted. American participants reported the structure of interactions, its interrelatedness to the experience of love and to the continuation of relationships, and the phases of love in the same way as the Dutch participants. This indicates that the EXITool and the product lover’s evaluation processes found in this research are not culturally sensitive.

Moreover, an investigation of gender differences in the experience of love could be useful to determine design parameters for products that are exclusive or at least directed at either male or female users. The study of social influence in the experience of love can also be of value to design. In chapter 5, we had indications that people
outside the relationship can influence how lovers evaluate their loved product. For example, the product would be evaluated positively and people would evaluate the interaction as contributing to the experience of love after others complimented them on their products.

In the beginning of this thesis we considered, based on Chapman’s (2005) argument, whether love for products is incapable of mutual evolution and growth as it lacks reciprocity. Following this present research, Halilic (2010) investigated the effect of reciprocity in the experience of love for products. She found that the concept of reciprocity involves a person perceiving the other as reciprocal, whether the other intends to be reciprocal or not. Based on that, she provided indications that depending on how people perceive traits of personality in products during interactions, a product is sometimes perceived as reciprocal. This can influence how people evaluate product qualities during interactions, both when positive or negative affective experiences occur. Further studies on reciprocity and the link between the personality of products and rewards of love during interactions could shed more light on this. Such research could help in designing for interactions that promote generosity, more intense and balanced rewards of love, and longevity in person-product relationships.

The influence of subconscious mechanisms (such as chemical reactions as in, for example, Lewis, Amini, & Lannon, 2001) on the state of love was not taken into account in this research. We have little access to why we make certain decisions and perform certain behaviours because the process of decision-making is mostly unconscious (for example, Nisbett & Wilson, 1977). Instead, we focused on the outcomes of such processes: people’s conscious thoughts, feelings, and behaviours. This reliance on people’s deliberate recall and reflection of their own experiences amplifies this gap. Future research could look into these less observable (and potentially significant to design) aspects of person-product love. Still, in tune with the aim of this research, investigating the conscious aspects of person-product love did provide us with opportunities to understand this experience in ways that are relevant to
the design profession. Social psychologists who investigate love as a relationship (like Sternberg and Levinger) also focused on the conscious aspects of love relationships to promote conscious change in the way people deal with their relationships.

The journey into the experience of love for products, as far as this PhD research goes, has reached its final destination. It has clarified what the experience of love for products is, how the longevity of person-product relationship can benefit people’s wellbeing and the sustainability of the environment, and how design researchers and designers could facilitate it. Some avenues for further research have been pointed out. As it happened to many of those who joined this journey – whether by participating in its studies or collaborating in the data collection and/or analysis – I trust this research has also inspired you to see the potential every product has in granting rewarding experiences. Most importantly, I hope to have conveyed that products can be a source of continuous gratification if you are generous enough to accept their faults and prolong their life span.
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SUMMARY

The initial motivation to investigate the experience of love for products came from a previous research (Russo, 2004 and prologue). I was intrigued by the fact that participants in a usability test seemed to be emotionally involved with some products they owned, stating that they loved them. This involvement seemed to increase their acceptance of the product, moderate their perception of effectiveness and efficiency in product use, and to give them higher levels of satisfaction than should be expected on the basis of the observed usability of those products. People often mention their love for products casually. Does this common phenomenon point to a deeper relationship people have with particular products they own and use? The experience of love has been studied as part of other phenomena in the field of design, and similar phenomena to love have been researched in the context of first time attraction, for example as a reason for product purchase, but particularly love in the context of long-term product ownership and use has not been researched. The research questions for this thesis are: What is the experience of love for products? How can we investigate love in the field of design? How are person-product interactions connected to the experience of love? How do person-product interactions influence the experience of love over time?

In chapter 1, a preliminary study was carried out aiming to clarify what people mean when they say they love a product. At that point we did not know if love for products could be said to exist, or whether whatever it is relevant to design. In that preliminary study, we invited people to share their experiences with loved products in a 40-minute open-ended interview. Over 50 stories about loved products were collected. From the descriptions that the participants gave about their love for a product, it could be gleaned that their love is a rewarding, long-term, and dynamic experience that contains other affective experiences and that arises from a meaningful relationship with a special product they own and use. Love relationships seem to bring emotional
rewards that benefit people’s wellbeing. It seemed that because of these rewards, people engaged in efforts to keep loved products for longer. Promoting such rewarding and long-term relationships in design could help improve wellbeing in relationships with products and even help reduce the impact of products on the environment. The research in this thesis investigates the experience of love for products and seeks to provide insights for design researchers and designers into how they can foster rewarding and long-term person-product relationships.

In chapter 2 we examine how to investigate the experience of love in this thesis. Can existing approaches in the field of design be used to investigate love for products? Design researchers previously studied how the appraisal of products during interactions leads to the experience of emotions, providing a basis to facilitate the design of these experiences. However, although experiences are expected to arise from interactions, others have said that love is not an involuntary emotion and does not fit the appraisal theory. Social psychologists who investigate interpersonal love as an experience that arises from relationships claim that love involves a decision one must be dispositioned to make. These interpersonal love researchers developed a number of theories and classifications of processes through which love occurs in relationships. Their theories were considered useful to this research since they shed light on the rewards and interactions that promote wellbeing and the continuation of love relationships. We found that participants in our initial study indeed mentioned experiencing rewards from the interactions with their products. Two particular interpersonal theories were selected as relevant to our research. They were selected according to a number of criteria we set to ensure relevance to design. The two theories are Sternberg’s (1988) triangular theory of love, and Levinger’s (2002) theory of close relationship development and change. In a second analysis of our data from the preliminary study, we traced in the participants’ stories whether the two theories could explain what the participants’ love for products is like and how it changes and develops over time. We found that the theories matched well with the experience of love as our participants shared it in their love stories.
In line with Sternberg’s (1988) triangular theory of love, our findings suggest that love is experienced through a number of rewards one can have in a relationship. These rewards of love can be understood as being made up out of three components: intimacy, passion, and commitment. The quality of the experience of love depends on two things: the intensity with which these components are experienced, and the balance between the components. In other words, it depends on whether the intensity of experience is the same across all three or stronger in one or two of them than in the other(s). Each combination of various intensities and balances makes up a different kind of love.

Furthermore, in line with Levinger’s (2002) theory of relationship development and change, we saw in the participants’ stories that their love changes over time influenced by moments in which the lovers interact. These moments also affect the development of love relationships over time. Conceptually connecting these two interpersonal theories provided us with a basis to investigate how interactions and the experience of love are connected in person-product relationships and how this connection influences change in the experience of love. Moreover, adding a time perspective to the experience of love could help us describe what aspects influence change in the experience of love and the development of the relationship over time.

In order to assess the quality of the experience of love for products during specific moments in which a person interacts with a product, we need to identify and measure this quality. In chapter 3, through a content analysis of person-product love stories, we identify rewards of love that are specific to relationships with products as opposed to people. These efforts resulted in a set of 18 rewarding thoughts, feelings, and behaviours people have when experiencing love towards a product and that are partly different from interpersonal love. Through a series of studies and statistical analyses, a 13-item person-product love scale is then developed. The scale assesses the intensity and balance (quality) of love at times in a love relationship. The findings support the theoretical assumption that intimacy, passion and commitment are structural elements of the experience of love for products, just as they
are of the experience of love for people. The newly developed research tool – the person-product Love Scale – can be used to measure the intensity in which the three components of love are being experienced and their balance at moments of interaction. The intensity and balance indicate the quality of the love experienced when people and products interact.

In order to identify which aspects of interactions influence the experience of love for products, we need to analyse the participants’ interaction stories. A pre-study in which we collected participants’ stories of moments in time in which they interact with products indicates that it is not easy for research participants to describe their interactions with products. In addition, the stories they share are difficult to manage systematically. Therefore, another research tool was developed in chapter 4: the Experience Interaction Tool (EXITool). The EXITool consists of a set of 12 action cards and a diary. The cards are designed to inform participants how interactions with products can be described and to help them remember interactions with their loved products. The diary provides a structure for the participants’ stories – connecting interactions to the experience of love – and collects sequenced stories of interactions that happened over time in a relationship. The tool was developed through a series of iterative studies. Methods such as content analysis and card sorting were used to develop the set of action cards and diary. The person-product love scale developed in chapter 3 was incorporated into the EXITool in order to be able to conceptually link ratings of love to each story of interaction reported in the diary. This could provide insights into the connection between the experience of love and person-product interactions over time.

In chapter 5, two studies were carried out – one on love for shoes and one on love for cars – to investigate the three questions posed in chapter 2. The tools developed in chapters 3 and 4 were used in these studies, incorporated into the EXITool. The EXITool was given to research participants (for 5 weeks in the shoe study and for 2 weeks in the car study) to collect their stories and ratings of love at moments in
which they interacted with their loved shoes or cars during that space of time.

A content analysis of the stories participants shared in the diary revealed two evaluation processes that connect person-product interactions to the experience of love. The first evaluation was a momentary appraisal that leads to positive or negative affective experiences (emotions). In the second evaluation participants assessed how qualities of the product were changed (or perceived to be changed) by the interaction and also how the product now fitted their standards for love. The findings suggest that people have expectations (standards) about qualities of products and how these qualities give them rewards of love.

As we connected these findings in a second analysis to the ratings of experienced love that participants had given at the same interaction moments, it was found that depending on how the interaction changes qualities of the product (or people’s perceptions of those qualities), the quality of the experience of love changes. When products or interactions are appraised positively, the experience of love was more often intense and the components of love were in balance. When products are appraised negatively, the experience of love can be either rewarding and the components of love are balanced, or it can be unrewarding and components of love are unbalanced. Whether one or the other, change in the experience of love seemed to depend on additional influencing factors such as, for example, the moment in time in a relationship the interaction occur.

Therefore, a third analysis aimed to identify these additional factors that seemed to influence changes in the experience of love. This analysis looked into sequences of events over a period of time during which participants interacted with their loved products. The phases of interpersonal love described in chapter 2 were used as initial codes for this content analysis. The same five developmental phases of person-product love relationships (attraction, build-up, continuation, deterioration, and ending) were also identified in our data and described through a content analysis of all stories of interactions collected in both
studies. The stories of events in each of these relationship phases were analysed, revealing five factors that can influence one’s experience of love throughout a love relationship and influence its development. These are (1) one’s standards for love of a particular product; (2) the importance a person attributes to different product qualities; (3a) how an interaction influences qualities of the product; or (3b) how an interaction changes how the person perceives qualities of the product; (4) how the person evaluates those product qualities as fitting their standards for love; and (5) how far people can or are willing to adjust their assessments, by (a) adjusting the importance of product qualities to their current standards for love or (b) anticipating on the value of that quality to them in the future.

The findings of this research inform us not only about what it is to love a product. They also present opportunities for design researchers and product developers to foster rewarding experiences and long-lasting person-product relationships. In chapter 6, we discuss the implications of the thesis for design research and design strategies and present opportunities for future studies. Opportunities lie, for example, in investigating the link between the rewards of love and specific product qualities; in designing products that can grant rewards associated to the three components of love; and in designing tools that can improve contemplation and generosity during the evaluation of products. Future research could also look into other influences on the experience of love for products than those found in this research, such as social influences or the influence of different cultures.
SAMENVATTING

De aanvankelijke motivatie om de liefde voor producten te bestuderen kwam uit een eerder onderzoek (Russo, 2004 en proloog). Ik was geïntegreerd door het feit dat deelnemers aan een gebruiksonderzoek zo emotioneel betrokken waren bij een aantal producten dat zij bezaten, dat ze zeiden er van te houden. Deze betrokkenheid leek hun acceptatie van het product te vergroten, de waargenomen bruikbaarheid in termen van effectiviteit en efficiëntie te beïnvloeden en een grotere voldoening te geven dan verwacht op basis van de geobserveerde bruikbaarheid van die producten.

Liefde voor producten komt vaak terloops ter sprake. Ligt aan dit fenomeen een diepere relatie ten grondslag tussen mensen en de producten die zij bezitten en gebruiken? De ervaring van liefde is eerder bestudeerd als onderdeel van andere verschijnselen op het gebied van design, zoals in de context van de eerste aantrekkingskracht als reden tot aankoop. Liefde in de context van langdurig bezit en gebruik is echter nooit onderzocht. De centrale onderzoeksvragen in dit proefschrift zijn: wat is de ervaring van de liefde voor producten? Hoe kunnen we liefde op het gebied van design bestuderen? Hoe beïnvloeden mens-product interacties de beleving van liefde over de tijd?

In hoofdstuk 1 is een inleidende studie uitgevoerd om na te gaan wat wordt bedoeld als iemand zegt dat hij of zij van een product houdt. Voor deze studie hebben we mensen uitgenodigd hun ervaringen over liefde voor producten te delen in een open interview. Meer dan 50 verhalen over geliefde producten werden verzameld. Van de beschrijvingen die de deelnemers gaven over hun liefde voor producten kon worden afgeleid dat hun liefde een bevredigende, langdurige en dynamische beleving is, die andere affectieve ervaringen insluit die voortkomen uit een betekenisvolle relatie met een product dat mensen bezitten en gebruiken. Liefdesrelaties blijken emotionele voldoening te geven die bevorderlijk is voor het welzijn van mensen. Het leek erop dat
als gevolg van deze voldoening mensen zich inspannen om geliefde producten langer te behouden. Het bevorderen van dergelijke lange termijn relaties zou dus welzijn bevorderend kunnen werken en wellicht zelfs bijdragen aan duurzaamheid. Met het onderzoek in dit proefschrift willen we begrijpen hoe de ervaring van liefde voor een product zich ontwikkeld om zo inzicht te krijgen in hoe design onderzoekers en ontwerpers waardevolle en lange termijn mens-product relaties kunnen bevorderen.

In hoofdstuk 2 hebben we bekeken hoe de ervaring van liefde kan worden onderzocht. Kunnen bestaande methodes op het gebied van design onderzoek worden gebruikt om liefde voor producten te onderzoeken? Veelal bestuderen onderzoekers hoe de evaluatie van producten tijdens interacties leidt tot emoties, waarmee een basis wordt gelegd voor het ontwerpen van deze ervaringen. Echter, hoewel alle ervaringen voortvloeien uit interacties, zeggen anderen dat liefde geen enkelvoudige emotie is en niet past in deze taxatietheorie. Sociaal psychologen die inter-persoonlijke liefde onderzoeken als een ervaring die voortkomt uit relaties, beweren dat liefde gaat om een beslissing die men neigt te maken. Deze onderzoekers ontwikkelden een aantal theorieën en classificaties van de processen die zich voordoen in liefdesrelaties. Hun theorieën zijn bruikbaar voor dit onderzoek omdat ze inzicht geven in de interacties die de voortzetting van liefdesrelaties bevorderen. Twee specifieke inter-persoonlijke theorieën werden geselecteerd voor ons onderzoek vanwege hun relevantie voor designonderzoek. De twee theorieën zijn Sternberg’s (1988) ‘driehoekstheorie van de liefde’ en Levinger’s (2002) ‘theorie van hechte relatie ontwikkeling en verandering’. In een tweede analyse van de data van de eerste studie gingen we na of de twee theorieën ook van toepassing zijn op de liefde voor producten en hoe die liefde verloopt en zich ontwikkelt over de tijd. We concludeerden dat beide theorieën de ervaring van liefde, zoals beschreven in de verhalen van de deelnemers uit onze studie, goed konden beschrijven.

Om de kwaliteit van de ervaring van liefde voor producten te bepalen op specifieke momenten van interactie met een product, moeten we deze kwaliteit kunnen meten. In hoofdstuk 3 identificeren we beloningen van liefde die specifiek zijn voor relaties met producten op basis van een analyse van de inhoud van mens-product relatie verhalen. Dit heeft geleid tot een set van 18 items waarin gevoelens en handelwijzen worden beschreven die mensen hebben wanneer ze liefde voor een product beleven, en die deels verschillen van inter-persoonlijke liefde. Op basis van een serie studies en statistische analyses is vervolgens een schaal voor mens-product liefde ontwikkeld. Hiermee kan men de intensiteit en balans (kwaliteit) van liefde beoordelen op momenten in een liefdesrelatie. De schaal is gebaseerd op de theoretische veronderstelling dat intimiteit, passie en toewijding structurele elementen zijn in de ervaring van liefde voor producten, net zoals ze dat zijn in de ervaring van liefde tussen mensen. De mens-product liefde schaal kan worden gebruikt om de intensiteit te meten waarin ieder van de drie componenten van liefde wordt ervaren en hun onderlinge balans op een
bepaald moment. De intensiteit en balans geven zo de kwaliteit van de ervaren liefde weer.

Om te identifieren welke aspecten van interacties de ervaring van liefde voor producten beïnvloeden, werden de verhalen van de deelnemers aan het onderzoek geanalyseerd. Een voorstudie van dergelijke verhalen gaf aan dat mensen vaak niet weten hoe ze hun interacties met producten moeten omschrijven. Bovendien zijn de verhalen die mensen delen moeilijk systematisch te structureren. Hiervoor is een tweede research tool ontwikkeld in hoofdstuk 4: de ervaring interactie tool (EXITool). De EXITool bestaat uit een set van 12 actiekaarten en een dagboek. De kaarten zijn ontworpen om de deelnemers te laten zien hoe interacties met producten beschreven kunnen worden, en te helpen de interacties met hun geliefde producten te onthouden. Het dagboek geeft een structuur voor de verhalen van de deelnemers (door interacties te verbinden met de ervaring van liefde) en verzamelt verhalen van interacties in een relatie. De tool werd ontwikkeld in een serie van iteratieve studies. Methoden zoals inhoudanalyse en kaartsortering werden gebruikt om de actiekaarten en het dagboek te ontwikkelen. De mens-product liefde schaal zoals ontwikkeld in hoofdstuk 3 werd toegevoegd aan de EXITool om de beoordeling van liefde conceptueel te verbinden aan elke beschrijving van een interactie uit het dagboek. Dit kan inzicht geven in het verband tussen de ervaring van liefde en mens-product interacties over de tijd.

In hoofdstuk 5 zijn twee studies uitgevoerd, een over liefde voor schoenen en een over liefde voor auto’s, om de drie hoofdvragen te onderzoeken die gesteld zijn in hoofdstuk 2. Beide tools ontwikkelt in hoofdstuk 3 en 4 zijn gebruikt in deze studies. De EXITool werd aan de deelnemers van het onderzoek gegeven (over een periode van vijf weken in de schoenen studie, en twee weken in de auto studie) om hun verhalen en beoordelingen van liefde te verzamelen op momenten van interactie met hun geliefde schoenen of auto’s in die periode.
Een inhoudelijke analyse van de verhalen van de deelnemers in het dagboek brachten twee evaluatie processen aan het licht die mens-product interacties verbinden met de ervaring van liefde. De eerste evaluatie was een kortstondige inschatting die tot positieve of negatieve affectieve ervaringen (emoties) leidt. In de tweede evaluatie beoordeelden deelnemers hoe de kwaliteiten van het product veranderden (of gedacht werden te veranderen) door de interactie, en hoe het product nu aan hun normen voor liefde voldoet. Deze bevindingen suggereren dat mensen verwachtingen hebben over kwaliteiten van producten en hoe deze kwaliteiten hen beloning van liefde geven. Terwijl we deze bevindingen in een tweede analyse koppelden aan de beoordeling van liefde die deelnemers ervaren tijdens dezelfde interactie momenten, bleek dat afhankelijk van hoe de interactie de kwaliteiten van het product veranderden (of de waarneming van de kwaliteiten) de kwaliteit van de ervaring van liefde ook veranderd. Wanneer producten of interacties als positief worden beoordeeld, dan was de ervaring van liefde vaker intens en de onderdelen van liefde in balans. Wanneer producten als negatief worden beoordeeld, kan de ervaring van liefde ofwel belonend zijn en de onderdelen van liefde in balans, ofwel niet belonend zijn en de onderdelen van liefde niet in balans. Verandering in de ervaring van liefde leek af te hangen van andere factoren zoals het moment in een relatie wanneer de interactie plaatsvond.

Om deze reden is een derde analyse uitgevoerd naar de bijkomende factoren die de verandering in de ervaring van de liefde leken te beïnvloeden. In deze analyse is gekeken naar opeenvolgende gebeurtenissen in een tijdsperiode waarin deelnemers omgingen met hun geliefde producten. De stadia van inter-persoonlijke liefde omschreven in hoofdstuk 2 zijn gebruikt als aanvangscodes voor deze inhoudsanalyse. Dezelfde vijf ontwikkelingsstadia van mens-product liefdesrelaties (aantrekkingskracht, opbouw, voortzetting, achteruitgang en beëindiging) werden ook geïdentificeerd in onze data en beschreven door een inhoudsanalyse van alle verhalen van interacties verzameld in beide studies. De verhalen van de gebeurtenissen in elk van deze fasen in een relatie werden geanalyseerd, waarbij vijf factoren naar voren kwamen die
de ervaring van liefde gedurende een liefdesrelatie en de ontwikkeling ervan kan beïnvloeden. Deze zijn (1) iemands normen voor liefde voor een bepaald product; (2) het belang dat een persoon hecht aan verschillende producteigenschappen; (3a) hoe een interactie kwaliteiten van het product beïnvloedt, of (3b) hoe een interactie de kwaliteiten die de persoon waarneemt verandert; (4) hoe een persoon de product kwaliteiten beoordeelt zodat deze passen in zijn/haar normen van liefde; en (5) hoe ver mensen hun beoordeling kunnen aanpassen of bereid zijn om hun beoordeling aan te passen, door (a) het aanpassen van het belang van product kwaliteiten aan hun normen van liefde of (b) het anticiperen op het belang van die kwaliteit om het aan te passen aan hun normen.

De bevindingen van dit onderzoek geven niet alleen weer wat het is om een product lief te hebben, maar bieden ook kansen voor design onderzoekers en product ontwikkelaars om waardevolle ervaringen en langdurige mens-product relaties te bevorderen. In hoofdstuk 6 bespreken we de implicaties van het proefschrift voor designonderzoek en ontwerpstrategieën, en stellen mogelijkheden voor toekomstige studies voor. Mogelijkheden liggen bijvoorbeeld in het onderzoeken van de schakel tussen de beloningen van liefde en specifieke productkwaliteiten, in het ontwerpen van producten die beloningen kunnen toekennen geassocieerd aan de drie onderdelen van liefde, en in het ontwerpen van tools die reflectie en vrijgevigheid kunnen verbeteren tijdens de evaluatie van producten. Toekomstig onderzoek zou ook kunnen kijken naar andere invloeden op de ervaring van liefde voor producten dan die in dit onderzoek, zoals sociale invloeden of de invloeden van verschillende culturen.
satis magnum alter alteri theatrum sumus

(“for each is to the other a theatre large enough” Epicurus, 341 BCE – 270 BCE)

Every person I have in my life – even if for a short period of time – has the power to show me two things: who they are and who I am not. By showing me who they are – even in the simplest ways – you inspire me to see things through other perspectives, search for new experiences, and integrate things in my life that help me be a better and happier person. By showing who I am not, you provide me with opportunities to learn more about myself.

A group of very dear and special people – my family and old time friends – have been accompanying me for long. In the past 5 years, as I have changed surroundings, a whole new group of people have entered my life: friends, colleagues, housemates, acquaintances, neighbours... Some have definitely come to stay. Others dropped by or accompanied me for shorter or longer periods of time. All I have met have affected me for good and I’m very thankful for that. Without your presence, wisdom, support, gestures and (most importantly) – LOVE – I would not be who I am. Thank you!

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Beatriz Russo was born on the 19th of November 1979 in Rio de Janeiro, Brazil. She began her studies – product design – in 1998 at the Industrial Design Department of the Centro Universitario da Cidade (UniverCidade). As she completed her bachelor degree in 2002, she began a specialization in the field of Human Factors at the Pontifical Catholic University of Rio de Janeiro (PUC-Rio). In 2003 she was accepted as a student in a master research program in the same institution – at the Department of Arts & Design – with a project that investigated the impact of people’s affection for products in their usability. During her masters she was awarded with a grant for academic excellence (CAPES, Brazil) and worked as an assistant researcher at the Laboratory of Ergonomics & Usability of Interfaces (LEUI). Besides lecturing and supervising students’ projects in post graduation courses in a number of academic institutions, she organized two yearly conferences (ErgoDesign & USIHC).

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