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Design with Symbolic Meaning

Introducing well-being related symbolic meaning in design

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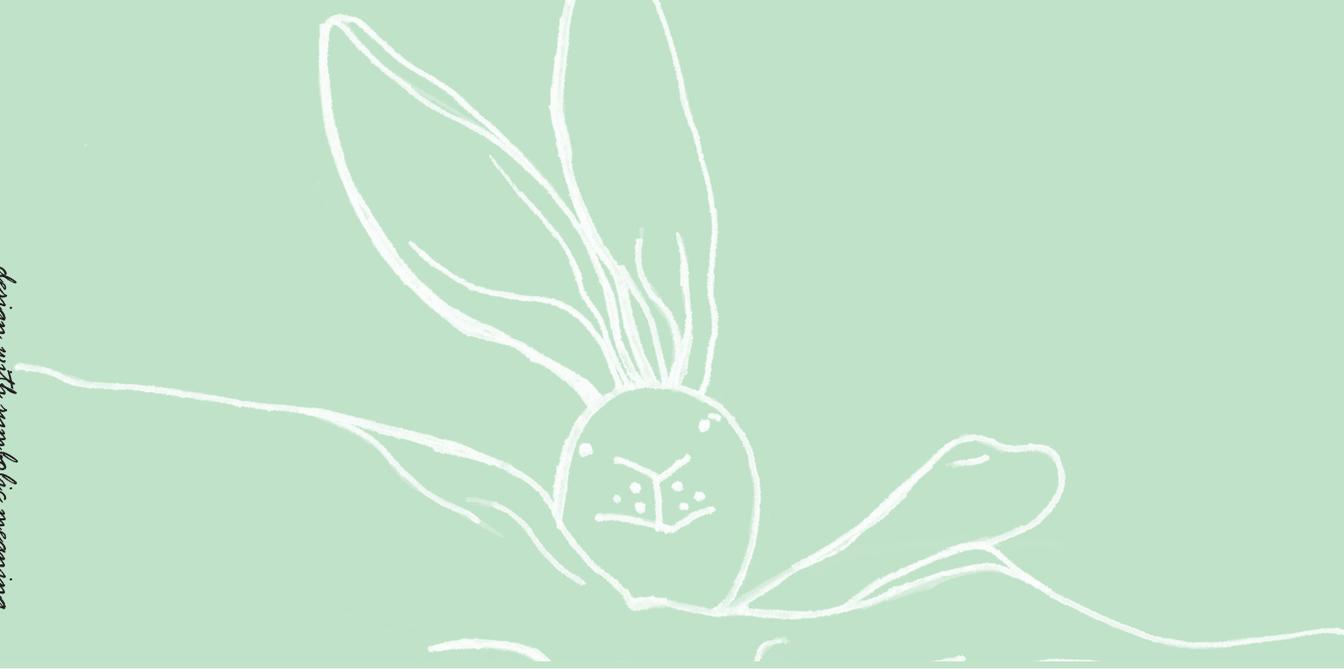
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design with symbolic meaning



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positive design

■ **IDStudioLab**

Mafalda Casais

design with symbolic meaning

Introducing well-being related
symbolic meaning in design

Mafalda Casais

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Design with Symbolic Meaning

Introducing well-being related symbolic meaning in design

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INTRODUCTION

When I began studying design I had many ideas about what it would be like. I wanted to design seamless functional products like my idols. I was excited about my first design exercise: the brief was to design something for a catastrophe context using only plastic trash. For this exercise, no tools were allowed; it should be as if we were in the catastrophe ourselves. I designed a product that combined a seed dispenser and a watering can. Similarly, most of my colleagues designed practical things, like rafts, shelters, or water filters.

Much to my surprise and to that of my colleagues and teacher, the design that stood out was not a problem-driven product. It was a colourful puppet, resembling a child's toy, intended to provide solace and company to the victims of the catastrophe. It was open to a narrative, to the attribution of meaning, and it did not seek to solve a utilitarian problem but rather to support well-being. That moment opened my eyes to the possibilities of design: to how much it could speak of— and to the human condition. From that moment, I grew an interest in the potential of design to connect and influence people's well-being.

This thesis is about the ability of products to support well-being through their symbolic meaning. Objects are just objects, until we give them meaning — and with that meaning, they help us find the meaning of our own lives.

Research topic, aim, and research goals

Past research has stated that what people do — **their** activities and intentional behaviour — accounts for a large part of what makes their lives meaningful, happy, and fulfilling (Lyubomirsky, King, & Diener, 2005). Such meaningful activities, like having dinner with friends, going on a pleasurable boat trip, or enjoying a family vacation, can be supported by design—directly through products, or indirectly through designed contexts and environments, tangible and digital. Supporting people's well-being is, therefore, an opportunity for design (Desmet & Hassenzahl, 2012).

Design research has grown and found diverse routes to improve people's well-being, for example focusing on eliciting certain emotions (Desmet, 2003; Desmet, Porcelijn, & Van Dijk, 2007), or enabling certain experiences (Desmet & Hekkert, 2007; Desmet & Schifferstein, 2011). Desmet and Pohlmeier (2013) presented the concept of *positive design*, which represents a holistic view on designing for well-being. As a knowledge domain, positive design has proposed three routes to design for well-being. One of these routes is *experience design*, which is design with the deliberate intention to evoke or facilitate positive, enjoyable, or meaningful experiences (e.g., Desmet & Hassenzahl, 2012; Hassenzahl, 2013). With an experience design approach, designers can develop interventions that enable activities linked to well-being, such as spending time with friends, listening and sharing music, or having fun.

Other strategies to design for well-being have been proposed. Pohlmeier (2012; 2015) developed the 'Design Well-Being Matrix,' in which several other ways for design to support well-being are described. Specifically, design can support well-being as a direct source (for example, a beautiful mobile), as a symbol (for example a wedding ring), by directly enabling (being an integral part of) an engaging activity, or by indirectly supporting well-being (motivating with feedback or cues). Some of these possibilities to design for well-being have been well studied, like design for activities (e.g., Desmet & Sääksjärvi, 2016) and design for experiences (e.g., Pohlmeier, 2014). Others have not yet been the topic of systematic study, like design with symbolic meaning. Design with symbolic meaning can potentially contribute to people's well-being by making apparent what makes life worthwhile —

symbolizing important events, people, or ideas from the past, the present, and the future (Pohlmeyer, 2012; 2015).

This thesis, therefore, focuses on design with symbolic meaning as a means to support well-being. Specifically, we seek to investigate products that have obtained symbolic meaning related to well-being, and translate that knowledge into design directions, as a means to design for well-being. In this thesis, we understand the symbolic meaning of a product as what it represents (such as memories, people, ideals, achievements, and aspirations) to the owner. Well-being related symbolic meanings are those representations that support or signify the owner's wellbeing (see glossary for a more detailed description). This research is relevant because it can result in a new approach to design for well-being (focusing on symbolic meaning), to be added to the existing repertoire of well-being driven design approaches.

The main research questions in this thesis are: What is well-being related symbolic meaning, and how can we apply it to design? In order to answer these research questions, we formulated the following research goals: (1) *to understand the phenomenon of well-being related symbolic meaning in products*; (2) *to develop design directions using well-being related symbolic meaning (i.e. a design toolkit)*; and (3) *to apply the design directions in practice and gain feedback on its impact for the design process, to improve it.*

Methodological approach

This thesis can be described as *research for design*, i.e., research that is 'interested in creating tools and methods for different activities in the design process' (Horváth, 2008, p. 67). Specifically, it is framed as *design inclusive research*, because it is interested in producing a toolkit to use in context, for the purpose of communicating and generating new knowledge (Horváth, 2007; 2008). Characteristics of this methodology are the iterative development of prototypes (in this case, a toolkit for designers), which evolve through recurring feedback; and the unfolding of research in different phases, namely an explorative research phase, a creative design phase, and an evaluative research phase.

Due to the relative novelty of the subject, the studies reported in this thesis have a qualitative and explorative nature. Table 1 provides an overview of the studies, including the research goals, methods, and respective outcomes.

Thesis outline

This thesis is organized in three parts and seven chapters (Figure 1).

Part I presents the theoretical foundations that support this thesis, describing the core concepts of well-being and symbolic product meaning. Specifically, *chapter 1* examines the concept of well-being and describes positive design, indicating our particular approach within this field. *Chapter 2* reports a literature review on product meaning, providing definitions and determinants, and clarifying what we mean by symbolic product meaning. *Chapter 3* reports the first empirical study (study 1), which explored the relationship between symbolically meaningful products and well-being, and identified six well-being related symbolic meanings. These well-being related symbolic meanings provided the starting point to develop design directions.

Part II reports the development of the 'SIM toolkit', which is a toolkit for designers that enables them to design with symbolic meaning. Specifically, *chapter 4* translates the insights reported in chapter 3 and reports a study (study 2) with designers and design researchers that uncovered sixteen design directions from a selection of 50 symbolically meaningful product examples. *Chapter 5* details the iterative process of constructing the SIM toolkit to communicate and disseminate the developed design directions, with the input of design educators, design students, and designers (study 3). *Chapter 6* reports the application and assessment of the SIM toolkit, describing several workshops (study 4) and industry cases (study 5), through which we evaluate and discuss the use and impact of the toolkit in designing with well-being, resulting in recommendations for improvement. It also presents the refined version of the SIM toolkit, detailing each component, showing and discussing designs that resulted from its use.

Part III, which corresponds to *chapter 7*, provides a general discussion of the project and findings. It discusses potential consequences of designing with well-being related symbolic meaning, provides a reflection on the research process, and considers its limitations.

Reading guide:

Chapters 1 and 2: We recommend these chapters if the reader is interested in the fundamental concepts that guide this dissertation.

Chapter 3: We recommend this chapter if the reader is interested in learning from rich product stories, which illustrate how meaningful possessions affect people's well-being.

Chapters 4, 5, and 6: We recommend these chapters if the reader is interested in the development of design tools and their application.

Chapter 7: We recommend this chapter if the reader is interested in the discussion and implications around design for well-being and research on symbolic meaning.

Table 1. Thesis overview with research goals, methods, and outcomes.

Part	Chapter	Research goals (RG)
PART I. THEORETICAL FOUNDATIONS	1. Design for well-being	
	2. Symbolic product meaning	
	3. Six well-being related symbolic meanings	RG1: To understand the phenomenon of well-being related symbolic meaning in products
PART II. DEVELOPING A TOOLKIT FOR DESIGNERS	4. Sixteen directions to inspire design with symbolic meaning	RG2: To develop design directions using well-being related symbolic meaning
	5. Development of a toolkit for designers (SIM toolkit)	
	6. Assessing and refining the SIM toolkit	RG3: To apply the knowledge in practice and gain feedback on its impact for the design process, to improve it
PART III. DISCUSSION	7. Implications of this thesis	

Table 1. (continuation)

Research methods/study	Main outcomes
Literature review	Definition of well-being and distinction between well-being related concepts
Literature review	Definitions and determinants of symbolic product meaning; categories of symbolically meaningful products
Study 1: Study with thirteen participants exploring well-being related symbolic meaning in personal possessions	Framework of six well-being related symbolic meanings; videography (conference *)
Study 2: Categorization and analysis of existing meaningful products and formulation of design directions, with seven designers and design researchers	A collection of 16 symbolic meaning-based design directions (journal paper **)
Study 3: Discussion sessions to explore the toolkit: with 2 design educators; with 4 design students; and with 3 designer professionals	SIM toolkit: card set and website (conference paper ***)
Study 4: Design workshops with 7 design students; Design workshop with 52 design students; Design workshop with 33 students, designers and researchers; Study 5: 8 industry cases	Input about the format, use, and impact of the SIM toolkit in the design process; recommendations for improvement; Improved SIM toolkit; design cases using the SIM toolkit
	Main insights and respective implications of the research

* Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Meaningful Things: Exploring the symbolic meaning of the material environment and its impact on happiness (videography). *North American Association for Consumer Research Conference (ACR) Film Festival*. Berlin, 28-29 October, 2016. <https://vimeo.com/179011005>

** – (2018). Objects with symbolic meaning: Sixteen directions to inspire design for happiness. *Journal of Design Research*, 16(3/4), 247-281.

*** – (2016). Using symbolic meaning as a means to design for happiness: The development of a card set for designers. In P. Lloyd & E. Bohemia (Eds.). *Proceedings of DRS2016: Design+Research+Society: Future- Focused Thinking, Vol. 4* (pp. 1553-1571). Brighton: Design Research Society.

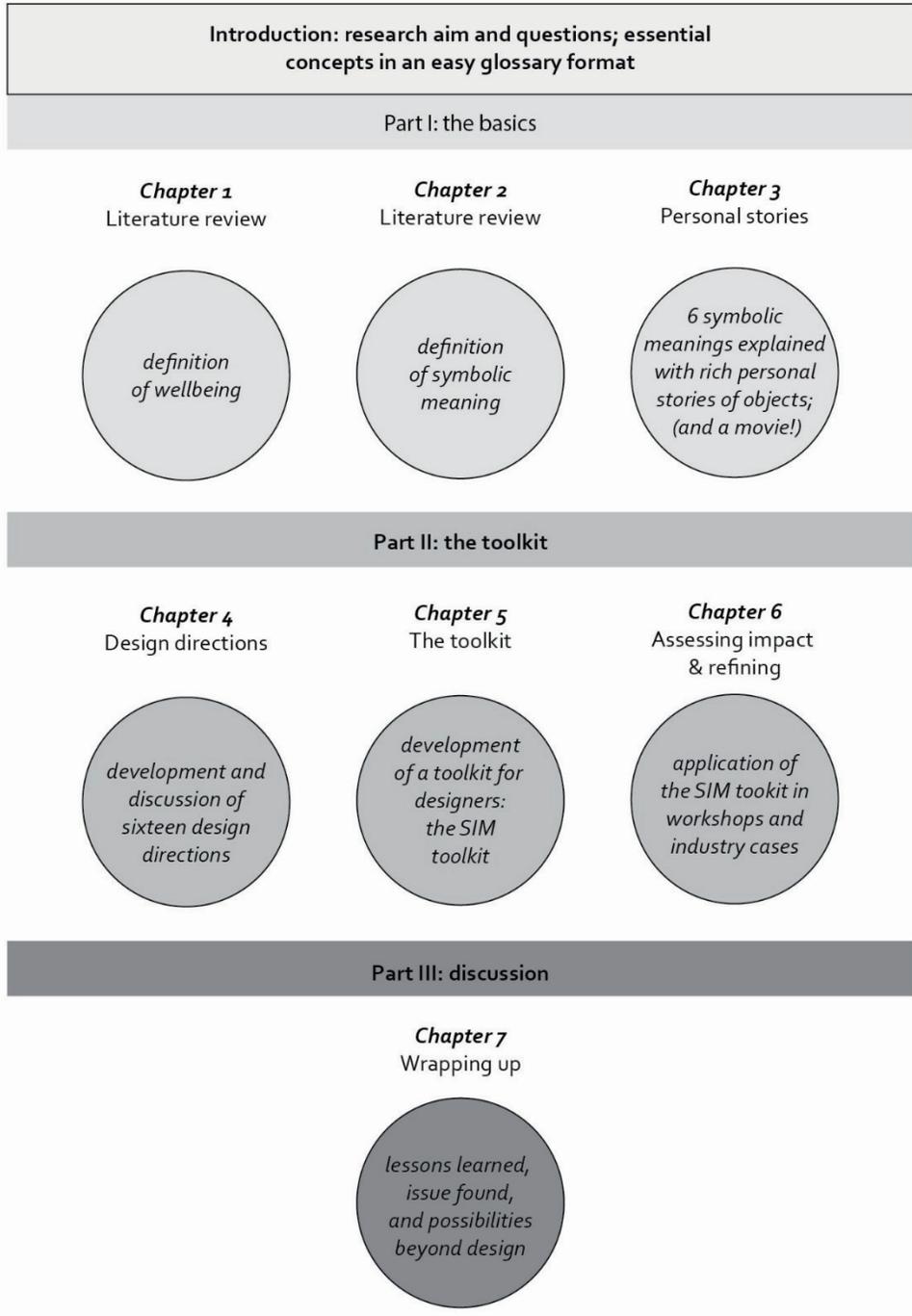


Figure 1. Overview of the thesis' parts and respective chapters.

Glossary

this section presents working definitions of key concepts that were used in this thesis.

Well-being is an umbrella term used in the positive psychology literature to signify human flourishing, i.e., an ideal state in which a person functions well psychologically (has psychological well-being [Ryff, 1989]) and evaluates his/her own life as being meaningful and worthwhile (experiences subjective well-being, that is, perceiving his/her own life as being happy, satisfactory, and with more positive than negative affect [Kafka & Kozma, 2002]).

Positive Psychology is *'an umbrella term for the study of positive emotions, positive character traits, and enabling institutions'* (Seligman et al., 2005, p. 410). Positive psychology focuses on the positive spectrum of human functioning with the intent to have a more complete and balanced scientific understanding of the human experience.

Positive Design is *'an umbrella term for all forms of design, design research and design intention in which explicit attention is paid to the effects of design on the subjective well-being of individuals and communities'* (Desmet & Pohlmeier, 2013, p. 6). In positive design practice, the design's raison-d'être is determined by its effect on subjective well-being.

Product meaning is an umbrella term for what a product represents to a person at a functional or at a symbolic level: *'a functional meaning (...) highlights the attributes and benefits associated with the product, and a symbolic meaning (...) captures more intrinsic and abstract notions about [it]'* (Ligas, 2000, p. 983).

Symbolic product meaning is what a product represents to the owner and the significant it has built from repeated contact, exchange, and transactions with it (Csikszentmihalyi & Rochberg-Halton, 1981; Richins, 1994a).

Well-being related symbolic products meanings are those representations that support or signify the owner's wellbeing. In this thesis we consider six types of well-being related symbolic meanings in products (based on Ryff's [1989] model of

psychological well-being): Self-acceptance, Positive relations with others, Autonomy, Environmental mastery, Purpose in life, and Personal growth.

Design tools are instruments that assist in the design process; they are ‘*resources, which intrinsically seem to reinforce [designers'] capabilities and capacities*’ (Lutters et al. 2014, p.607). Design tools are graphic supports (printed, digital, or both) for communicating about theory, design directions (what to do), design methods (how to do), examples of solutions, or other types of information to designers. They came in various formats (Sanders, Brandt, & Binder, 2010) like card sets, canvases, booklets, websites, mobile applications, etc.; can use different media, like visual or sound; and often contain game elements. Different tools can be combined into a toolkit (i.e., a collection of tools). These aim to trigger one or various parts of the design process (Roy & Warren, 2018), and often articulate different fields of knowledge.

Design directions are paths designers can take to reach a goal or effect with their designs, assisting them in the ideation phase of the design process. Design directions can be general (e.g., *design for mindfulness*) or can include specific strategies to make it actionable (e.g., *design for mindfulness by slowing down processes or disclosing mechanisms behind products to promote mindful living*, cf. chapter 4).

Part I

Theoretical foundations



Chapter 1. Design for well-being

Chapter 2. Symbolic product meaning

Chapter 3. Six well-being related symbolic meanings

CHAPTER 1: Design for well-being

1.1 What is well-being?

In psychology, *well-being* is defined as an umbrella term that refers to the way people function mentally (psychological well-being - PWB) and the way people judge their own lives globally (subjective well-being - SWB) (Lyubomirsky, 2008). On the one hand, the '*positive attitudes toward oneself*' people have constitute their psychological well-being (PWB [Ryff, 1989a, p.1071]). Specifically, psychological well-being is characterized by different elements like self-acceptance, autonomy, or positive relationships (Ryff, 1989a). On the other hand, complementary to this, the way people feel about their own lives as a whole constitutes their subjective well-being (SWB). This concept is characterized by an affective balance — more positive affect than negative —, and a cognitive component — evaluation of contentment and life satisfaction (Kafka & Kozma, 2002).

When a person experiences positive psychological functioning (psychological well-being) — a sense of identity, authenticity and independence in thoughts and actions, purpose, self-esteem, etc. (Ryff, 1989a; Ryff & Singer, 2008) —, together with a feeling that his/her own life is good and worthwhile, with pleasurable and meaningful experiences (subjective well-being [Diener, 1984]) —, then that person is experiencing well-being. This state of global well-being has been designated as *flourishing*, i.e., an optimal state that signifies the opposite of illness and ill-being, called *languishing* (Keyes, 2002; Fredrickson & Losada, 2005; Diener et al., 2010).

In addition, people's experiences (activities, acquisitions, interactions with their environment, etc.) influence their well-being, because they provide pleasure, or because there are meaningful. The term *hedonic well-being* is used to signify the maximization of pleasure and reduction of discomfort, and the term *eudaimonic well-being* is used to signify a sense of meaning and self-realization in life (Ryan & Deci, 2001; Biswas-Diener, Kashdan, & King, 2009).

For example, in an ideal situation, a person is mentally strong, has his/her own ideas and knows who s/he is (PWB). This affects how s/he acts towards others, forms new relations and networks, cultivates existing ones, and builds his/her life through meaningful experiences and actions, taking lessons from the bad moments and growing from them. S/he finds pleasure (hedonic well-being) and meaning (eudaimonic well-being) in his/her life, and in the interactions therein. In turn, this affects how s/he evaluates his/her life as a whole, as a positive, happy, and meaningful life (SWB). As such, subjective well-being is a consequence of psychological well-being (Keyes, 2002). Psychological well-being is also affected by subjective well-being and, to a lesser degree, by external conditions (Diener, 1984; Lyubomirsky, King, & Diener, 2005). (See this process illustrated in Figure 2.)

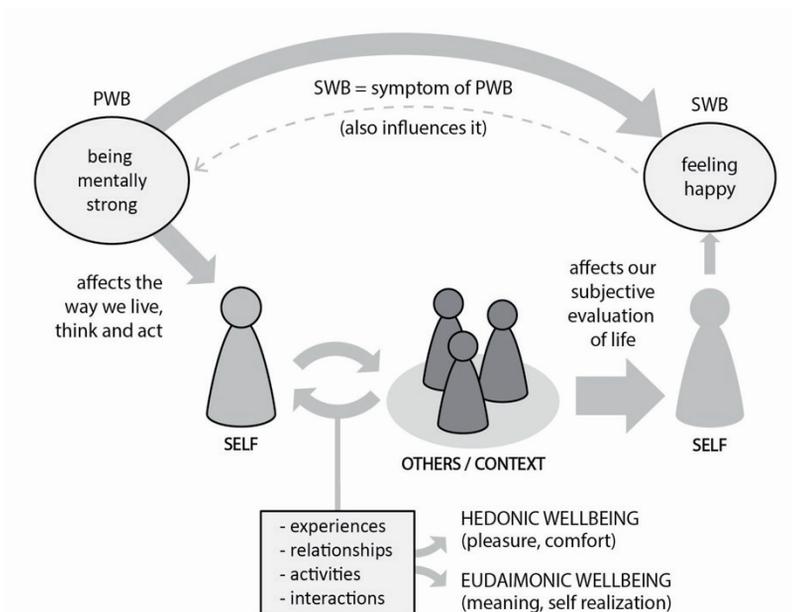


Figure 2. Well-being: the link between PWB and SWB.

In sum, well-being includes the way people function (PWB) and feel (SWB), and considers both the pleasure and meaning perspectives in life. Past research has proposed the designation *human flourishing* to include all this (Keyes, 2002). In this thesis, we use well-being and flourishing to signify the same, that is, the experience of well-being.

1.2 Positive psychology and positive design

Positive psychology is a branch of psychology that focuses on understanding well-being, its determinants and consequences, aiming to devise and test strategies to support it (Snyder & Lopez, 2002; Boniwell, 2012). It complements the traditional approach of psychology that focuses on negative functioning and mental illness. Research on positive psychology has explored and proposed certain activities that can contribute to people's well-being (e.g., Emmons & McCullough, 2003; Bryant & Veroff, 2007; Lyubomirsky & Kurtz, 2008; Parks & Biswas-Diener, 2013). For example, expressing gratitude, practicing kindness, nurturing social relationships, savouring life's joys, committing to goals, or practicing spirituality are possible strategies one can take to become happier. (For other examples, see the list of activities in Lyubomirsky, 2008, p.81).

Based on the findings from positive psychology, *positive design* has emerged as a field of research and practice of design that aims to understand and better conceptualize the phenomenon of design-mediated well-being, and build a portfolio of methods and tools to inform designers (Desmet & Pohlmeier, 2013). The 'Positive Design Framework' (Figure 3) proposes three ingredients that provide different foci when designing for well-being: *design for pleasure*, *design for virtue*, and *design for personal significance*. Pleasure relates to the experience of positive affect; that is, feeling good or enjoying the moment. Design can facilitate, support, or enable pleasurable activities, like sailing, or driving. Virtue relates to honourable behaviour, like being altruistic, trustworthy, or environmentally conscious. Design can facilitate virtue, for example, by helping people prioritize ethical or ecological choices at the supermarket or at home. Personal significance relates to goals as personal aspirations. Design can support people in following their dreams and goals, and keep them motivated; for example helping people track their progress towards a fitter lifestyle.

In addition to considering the three ingredients in a balanced way, positive design acknowledges the unique characteristics of the user (personal fit), the willingness of the person to make the design work (active user involvement), and aims for long-term impact. Finally, positive design is possibility-driven, meaning it focuses on possibilities for flourishing beyond a problem-solving perspective or short-lived positive reactions to products (Desmet & Hassenzahl, 2012).

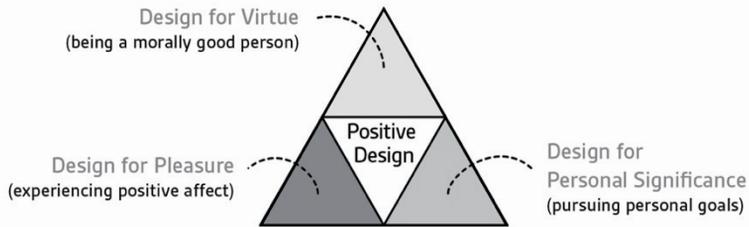


Figure 3. Positive design framework (source: Desmet & Pohlmeier, 2013).

For example, positive design interventions can help people reflect on the meaning of anticipated purchases and savour them in a lasting way (De Francisco Vela, Casais, & Desmet, 2014; see Figure 4); facilitate intimate relationships (Hassenzahl et al., 2012); help people become who they desire to be in a specific role (Zimmerman, 2009); or encourage mindful living by decelerating the pace of life in everyday tasks (Grosse-Hering et al., 2013).



Figure 4. Cash Pack by Santiago de Francisco.¹ Image reproduced with permission.

¹ This example is a product-service system that aims to uncover the value and meaning of a desired purchase. It works in two stages: reflection and exploration. *The reflection stage (...) is stimulated through printed thought-provoking questions related to the saving intention (...). The exploration stage aims to prolong the satisfaction the user gets from the purchased objects, after the saving period (...) [providing] challenges related to [the purchase that] make the user explore the product in a different and active way, adding meaning to it.* (Online: <http://santiagodefrancisco.com/cashpack/index.html>)

Design can have different roles in people's well-being. Pohlmeier (2012) proposed that design can contribute to people's well-being by being a 'source,' an 'enabler,' a 'supporter,' or a 'symbol.' To start, design can be a direct source of well-being by primarily focusing on pleasure. For example, a beautiful sculpture that is enjoyed for its aesthetic value. In addition, design can be an enabler of activities and experiences, or improve skills that are personally relevant for people, thereby contributing to their well-being. For example, a camera that allows a person to develop his/her photography hobby. Also, design can contribute to well-being by being a supporter, in a more indirect way, of certain behaviours or thoughts, easing activities or the savouring of special moments. For example, a keychain with a message that reminds a person to take the scenic route when walking to work. And finally, design can support well-being by acting as a symbol of relevant things for people. For example, a trophy for best dad given by his loving daughter.

Most of these routes to support well-being have been explored in design research (e.g., Vetere et al., 2005; Balaam et al., 2010; Patterson, 2016; Desmet & Sääksjärvi, 2016; Klapperich, Laschke, & Hassenzahl, 2018). However, the route to design with symbolic meaning with the specific intention to support well-being has, thus far, lacked exploration and operationalisation into usable tools or methods. In our view, this gap represents an opportunity to contribute to the field of positive design because products can act as tangible reminders of who people are, who they have been, what they have been through, and where they wish to go in life, along with their values and beliefs, motivations, accomplishments, and memories — and through the representation of these aspects, contribute to their well-being.

1.3 Designing with meaning

Introducing some type of meaning intentionally or tacitly has been proposed in design practice to render products more relevant and emotionally durable, more sustainable, to create attachment, etc. Ultimately, these strategies, by rendering symbolically meaningful products and interactions, may also have an effect on people's well-being. However, the question how symbolic meaning can be deliberately used to contribute to user well-being, for example by using well-being determinants as design input, has not yet been addressed. Our first step in the exploration of how design with symbolic meaning can improve people's well-being, is to look at how symbolic meaning has been

deliberately used in design for other purposes. In this section we provide examples of how designing with symbolic meaning has been explored throughout different design domains. Without aiming to be complete, our intention was to provide a broad overview. Our search focused on special issues of conferences and journals that related to symbolic meaning, and in indexation databases using key-words such as 'design with meaning' or 'meaningful design.'

In the field of Human Computer Interaction (HCI), we found examples of design for personal memories (Oleksik & Brown, 2008; Odom et al, 2012; van den Hoven, Sas, & Whittaker, 2012), with a focus on reminiscence (Frohlich & Murphy, 2000; van Gennip, van den Hoven, & Markopoulos, 2015), and sharing (Meerbeek et al., 2010). The use of personal memories, as well as activities of reminiscence and sharing are potential strategies to increase the value of a design and make it personally meaningful. In addition, we found examples of cherishable interactive objects (van den Hoven & Eggen, 2005; Smith et al., 2011; Golsteijn et al., 2012) within the field of IoT (Internet of Things), and of using technology to make objects come alive (Darzentas et al., 2016). Akin to introducing personal memories, the use of technology to make designs responsive and interactive is an interesting way to potentially increase their meaning. In a similar line of thought, we found examples of personally relevant elements (e.g., companionship qualities, cultural references) used as a strategy to design companion objects (Zijlema, van den Hoven & Eggen, 2016), and in the development of robotics for children (Bers & Urrea, 2000).

The strategy of storytelling or using narratives in design (Grimaldi, Fokkinga, & Ocnarescu, 2013) — attaching a real or fictional narrative to a product to render it more relevant — also has been shown to increase perceived value and meaning (e.g., Glenn & Walker, 2012). For example, in the case of repurposed products, highlighting the past identities has been used a strategy to improve the demand for this category of products (Kamleitner, Thüridl, & Martin, 2019), resulting in increased meaning in products and more sustainable consumption practices.

Also in the field of design for sustainability, we found meaning associations as a way to develop longer lasting, more relevant products, and to delay or minimize discarding (Chapman, 2005; Lilley, Lofthouse, & Bhamra, 2005; van Nes & Cramer, 2005; Odom et al., 2009). We also found research focusing on specific meanings (e.g., memories, self-expression, etc.) as a way to generate product attachment and

postpone product replacement (Mugge, Schoormans, & Schifferstein, 2005; Geen, Porter, & Bingham, 2017). These strategies indicate potential effects of product meaning in creating relevant and enduring person-product relations.

Products with personal meaning have been proposed as having a potential positive effect on people's well-being (Goodman et al., 2016; Mekler & Hornbæk, 2016; Yang et al., 2017). In Goodman et al.'s studies (2016), products that represent special life events that are rare and meaningful were found to provide a strong connection and transport users back to those moments and the positive emotions felt then. In Mekler and Hornbæk's analysis (2016), user experience (UX) products (i.e., interactive technology) were found capable of producing reports of eudaimonic well-being, which relates to meaning from need fulfilment. Yang et al.'s study (2017) analysed reports of product-mediated happiness and found both hedonic and eudaimonic motives for the products' happiness effects, stating that these acted as mediators of meanings and enablers of experiences.

Past research has found that some special objects can evoke positive emotions years after they were acquired, such as items used in rites of passage (Friese, 1997), heirlooms (Jung et al., 2011), or souvenirs (Love & Sheldon, 1998). By embodying meaningful memories or ideas, products can gain certain meanings and have the potential to remain relevant for longer, even when they lose the ability to function (Ball & Tasaki, 1992; Chapman, 2009; Mugge, Schifferstein, & Schoormans, 2010).

Correspondingly, material possessions with sentimental value (Fletcher, 2009) have been reported to slow down the process of hedonic adaptation (Yang & Galak, 2015). The term *hedonic adaptation* refers to the adjustment to a set point of normality that follows the achievement of a peak of emotion from a highly positive or negative event (Brickman & Campbell, 1971). In this context, it refers to the adaptation phase that follows a peak of consumption-driven pleasure. This phenomenon can lead to a *hedonic treadmill effect*, which is a metaphor for the cycle of achievement of highly positive peaks of emotion and the tendency for a subsequent adaptation, followed by a need to compensate with more peaks of pleasure. In other words, it refers to the engagement in material acquisitions with the purpose of fulfilling a person's life that ends up in a progressively faster adaptation to consumption-driven pleasure, resulting in anxiety for increasingly more consumption (Chancellor & Lyubomirsky, 2011). Consequently, it is important for design that aims to support well-being to

consider this effect. We assume that products with personal meanings, being potentially resistant to hedonic adaptation, have a good chance of becoming part of a long-lasting person-product relationship with a positive and enduring effect on well-being.

Imagine a guitar given by a father as a gift for his son's sixteenth birthday. This guitar had been used by the father to learn how to play, and together with the son, they played with it many times. In his adult life, the son finds himself holding on to the guitar that has come to represent the cherished relationship with his father, along with many meaningful memories. These memories in turn support his sense of belonging, reinforce his positive relation, and support his well-being. The contribution of this thesis focuses on introducing symbolic meaning associated to well-being in design, that is, not only to help develop personally relevant products that people find hard to dispose of, but also to represent determinants of well-being in order to help cultivate it in people's lives.

The story of the guitar is an example of a product that gained its meaning and its consequent ability to support well-being through being experienced, interacted with, and 'lived.' To design something to be meaningful in such a specific way is expectedly challenging. As seen above, there are strategic decisions a designer can make to render a product more open for meaning attribution. However, to design with symbolic meaning to support well-being intentionally requires a more specific approach. We define **design with symbolic meaning** as design with the deliberate intention to represent significant aspects of life linked to people's well-being. Our approach is to develop design directions based on well-being determinants. Design directions are paths designers can take to reach a goal or effect with their designs, assisting them in the ideation phase of the design process. Design directions can make complex processes easier (Daalhuizen & Badke-Schaub, 2011), such as generating several diverse ideas, or getting a basic understanding of how to apply an intricate topic in practice. We propose that, since the concepts of symbolic meaning and well-being can be seen as somewhat abstract, designers can benefit from having clear directions for how to achieve this in practice.

In order to understand how to design for well-being by introducing symbolic meaning, we should define what we mean by 'well-being related symbolic meaning,' and distinguish it from other types of (symbolic) meaning. In the next chapter, we go deeper into the literature on product meaning, focusing on how it has been characterized and categorized, and what constitutes *symbolic* product meaning.

CHAPTER 2: Symbolic product meaning

2.1 Specifying types of product meanings

Product meaning is an umbrella term for what a product represents to a person at a functional or at a symbolic level (Ligas, 2000; Helfenstein, 2005). The way a product looks can point out certain purposes it may have. That is, in its tangible attributes we can observe that a product was designed with a particular aim. Products that provide function- and task-related value and offer convenience are considered as having utilitarian meaning (Babin, Darden, & Griffin, 1994). This type of meaning *'represents the overt function the product serves in allowing the user to control his or her environment. (...) [It] centres on the product and its physical performance (...) and "arises" from the object through the senses'* (Allen & Ng, 1999, p.9).

When we zoom in on the parts that compose a product (a handle, a lid, a switch) — i.e., a product's tangible attributes —, we can perceive them as enabling (or 'affording') certain actions or ways of use (You & Chen, 2007). The concept of *affordances* originated in the field of psychology by James Gibson and was adapted to the design and HCI fields by Donald Norman, who describes it as conceivable action possibilities when interacting with a product (Norman, 1988). For instance, a handle usually means that the product is designed to be grabbed in a particular way. We understand this because of the shapes we observe and due to the range of direct or indirect experiences

we have collected about such shapes, product types, and corresponding interactions (You & Chen, 2007).

Products' tangible features create their appearance, and can give them a certain 'style.' For example, being angular or having soft lines, being dark or having strong colours, etc. This formal and communicative aspect of products is designated as *product semantics* (Krippendorff & Butter, 1984). Product semantics can have either indicating functions related to the identification of the product category or use, or functions linked to the association of aesthetic properties of products to certain time periods or adjectives—being 'cold,' 'modern,' 'feminine,' 'elegant,' etc. (Steffen, 2010). These interpretations can be collectively shared and conditioned by culture, or be individual and idiosyncratic interpretations, influenced by situational factors such as a person's place and role in society or personal experiences and associations (Krippendorff & Butter, 1984).

A product's *shared meanings* depends on its cultural context, because cultural factors have implications on how we collectively categorize and identify products and product typologies (Solomon, 1983; Hirschman, 1986). Richins (1994a) refers to these as 'public meanings,' the meanings of products that are acquired through socialization and enculturation processes, and thus shared by society. Moreover, products can also have very specific, *personal*, and idiosyncratic meanings. Richins (1994a) refers to these as 'private meanings,' that is, meanings that are unique to individuals, cultivated through time, linked to personal narratives and acquired experiences (Table 2).

Table 2. Three categories of product meaning.

Type of meaning	Symbolic value	Example
Utilitarian meaning	Not symbolic	A teapot is something to brew tea leaves in warm water.
	Commonly understood, not necessarily significant	In western countries, silver cutlery is perceived as exclusive and expensive.
Shared meaning	Highly significant (culturally, historically, etc.)	In some indigenous plain tribes of North America, the feather headdress is highly significant, representing status.
	Not necessarily significant	A gift from an acquaintance.
Personal meaning	Highly significant	A gift from a dying grandparent, to whom a person was very close.

In sum, three main categories of product meaning can be distinguished (see Table 2 and Figure 5):

- *Utilitarian meaning*, which refers to the performance of a task, i.e., the utility of a product for accomplishing something practical.
- *Shared meaning*, which can be common to a culture due to certain practices associated with products, manufacturing processes, typical colours, shapes, decorations, rituals, etc., or shared within a society, for example due to advertisement.
- *Personal meaning*, which refers to the meaning individuals attribute to products due to the role these have in their lives, or their associations with other people, moments, ideas, etc.

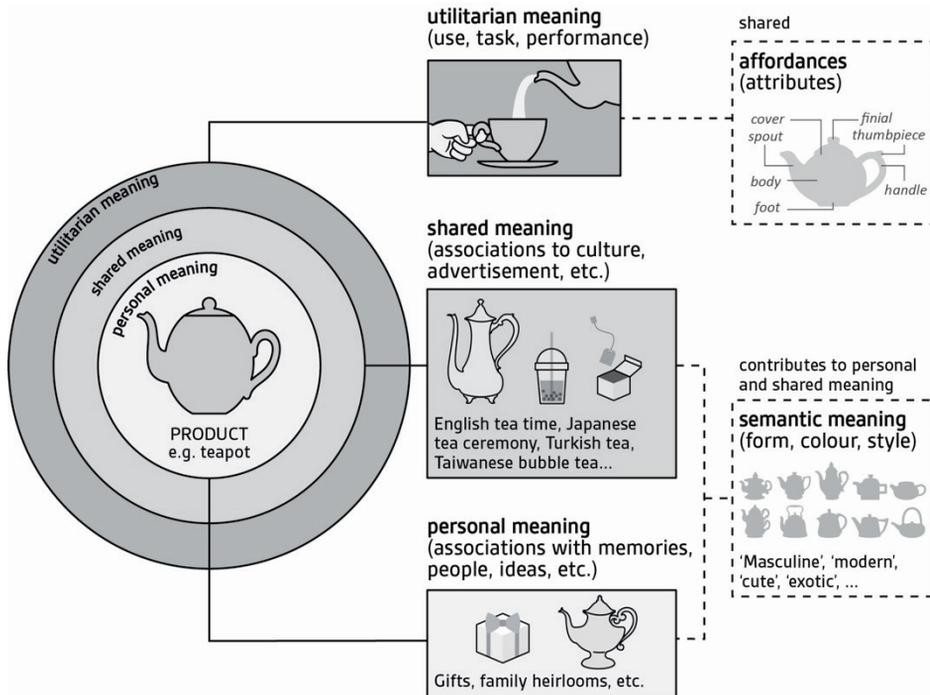


Figure 5. Different types of meaning illustrated with a product.

Products have meaning when they represent certain things that are culturally or individually linked to their features, story/use, or context (Figure 5). Product meaning is constructed by associations people make socially or individually, through

shared or private experiences, and strengthened by brands, advertising, culture, etc. This can have a hedonic association, that is, it can be related to a pleasurable experience with the product because it performs well, makes the person feel good when using it, or because it provides a pleasurable fruition experience or enjoyment (Hirschman & Holbrook, 1982). It can also have a eudaimonic association, that is, be related to a deeper meaning of human potential achievement and personal fulfillment (Ryan & Deci, 2001; Ryff & Singer, 2008).

2.2 Characterizing symbolic product meaning

In order to address Research Goal 1: *to understand the phenomenon of well-being related symbolic meaning in products*, we looked at the existing literature focusing on three questions: *What defines symbolic meaning (in products)? How does a product become symbolically meaningful?* and *What makes a product symbolically meaningful?* In the next subsections we answer these questions through a literature review.

2.1.2 What defines symbolic meaning?

We define symbolic meaning as what it represents (such as memories, people, ideals, achievements, aspirations, rituals, activities) to the owner. This corresponds to a highly significant type of 'private' or personal meaning, although certain shared meanings are also highly valued (Table 2). In the following section we go deeper into existing definitions and determinants to understand the elements that constitute symbolic product meaning.

In certain instances, a symbolically meaningful possession is described as being a literal surrogate for an important relationship, in which case the meaning is inevitably linked to *that* object (Dittmar, 2008; Bell & Spikins, 2018) — that is, there is *attachment* to that product. Nevertheless, a product can also have a great symbolic meaning to a person without there being an experience of attachment towards the product. That is, symbolic meaning can be anchored in the product category or in the experience it provides, rather than a specific specimen. In certain instances, possessions are symbolically meaningful despite being mass produced and easily

replaceable. There are several reasons that make products meaningful, connected to the product's story and context. When a product has a strong sentimental value generated from *'familial love, romantic love, and the sentiments involved in friendship'* (Fletcher, 2009, p. 56-7), they can stand in as a proxy for those strong relationships. In such cases, the product itself is part of the symbolic meaning. Other products, whose symbolic meaning originates from what they enable, might be replaceable because the meaning originates from what the products does, or allows a person to do, not so much the product itself (Fournier, 1991).

The symbolic meaning of products is not necessarily either positive or negative, that is, it can have positive or negative associations, and not necessarily correspond to positive or negative feelings evoked by the product. For example, some positive product association, like the representation of an ideal self or an ideal life, might, at times, generate negative feelings of inadequacy (Friese, 2000). Similarly, an association of an object to something negative, like the loss of a loved one, might generate positive feelings of overcoming and growth (e.g., Gibson, 2004; Fokkinga & Desmet, 2013).

Emotions are elicited by all kinds of products, and are a pivotal part of the interaction with products (Hirschman and Holbrook 1982; Fournier 1991; Desmet, 2003). In research on products with symbolic meaning, the emotion of nostalgia emerges frequently, mentioned in connection to cherished personal possessions, particularly of older people (Belk, 1990), but also among adolescents (Holak & Havlena, 1992); linking these to the recollection of the past, memories, relationships, people, places, eras, etc. (e.g., McCracken, 1986; Belk 1990, 1991). It is a complex emotion made up of several basic ones (Xue & Almeida, 2011), with both pleasant and unpleasant components (Holak & Havlena, 1992). In the context of consumer research it has been defined as a preference towards products from one's past (Holbrook & Schindler, 1991). Loveland, Smeesters, and Mandel (2010) proposed that the consumption of nostalgic products helps fulfil the human need to belong, supporting the idea that this type of symbolic meaning affects well-being.

Products with symbolic meaning can also evoke future-oriented emotions, such as anticipation, hope, or motivation. Such is the case of the lucky charm category of objects (discussed in section 2.3). For example, in Punsmann's (1962) description of

the Daruma doll, a type of auspicious figurine with religious connotations, we can identify such emotions through the words 'blessing' and 'eagerness' (p.244).

Another emotion commonly associated with symbolically meaningful possessions is love. Past research has proposed that love for products is not comparable to love for people, in that it does not evolve due to lack of reciprocity (Russo, 2010). However, it is not necessarily less strong or less relevant (Ahuvia, 1993; Whang et al., 2004). In addition, the components that make up the experience of love — intimacy, passion, and commitment — are possible to design for (Russo, 2010), which makes this an interesting emotion to consider in design with symbolic meaning.

Symbolically meaningful products elicit emotions that are positive or negative, but also ambiguous or multi-faceted emotions, as is the case of nostalgia. Ambiguous or multi-valenced emotions are very frequent in the descriptions of symbolically meaningful product relations. The strong symbolic meaning attributed to such products is a result of those emotions, because the things that are remarkable and represented by products are often emotionally complex (Fokkinga & Desmet, 2013). Emotions that have a more negative character can still support well-being (Wilson & Gilbert, 2008), triggering positive actions or thoughts such as motivation, resilience, and a feeling of directedness.

2.2.2 How does a product become symbolically meaningful?

To answer the second question, we begin by looking at the work of Csikszentmihalyi and Rochberg-Halton (1981). The authors proposed that it is through a process of *cultivation* that people infuse and maintain the meaning of cherished products in the home. This cultivation process is the intentional, selective, and focused attention given to things, which channels a person's inner goals and thus makes them who they are. In that sense, cultivation — *'how meaning involves an active process of interpretation oriented towards goals'* (p. xi) — is essential to the construction of the meaning of things, and consequently, life's meaning. The process of repeated contact, exchange, and transactions with products, by which their value solidifies through time, has also been pointed out in more recent research (Richins, 1994a; Folkman Curasi, Price, & Arnould, 2004; Dittmar, 2008).

Furthermore, when a product has symbolic meaning (or in the creation of that symbolic meaning) two aspects seem to have particular influence in its reinforcement — the product's story and the context it is owned/used in. The *story* of a product can influence its symbolic meaning; for example, consider the way a product is acquired. A product that is purchased by a person has a certain meaning (which might be utilitarian), but if that same product is received as a gift from someone very special its meaning is likely much greater, due to its symbolic representation of that relationship (Holbrook & Schindler, 2003). Moreover, the story of a product regarding the way it is used also influences its symbolic meaning. Repeated use and interaction adds to a product's meaning (the process of 'cultivation,' described by Csikszentmihalyi and Rochberg-Halton, 1981). Similarly, the *context* in which a product is kept or used also influences its symbolic meaning (Ligas, 2000). For example, a traditional product from a person's place of origin or culture, which in normal circumstances might have little relevance to a person, can become especially meaningful in a context of migration because it represents this person's background.

2.2.3 What makes a product become symbolically meaningful?

In the attempt to specify what elements constitutes symbolic meaning in products, we reviewed literature from different fields related to the consumption, ownership, and use of products. We looked for symbolic meaning related constructs such as 'importance,' 'value,' or 'attachment,' particularly when these referred to meaning beyond the utilitarian (Table 3). While each discipline has its own unique set of theories, models, and concepts, it is evident that several overarching themes emerged from the literature.

Table 3. Overview of elements of symbolic product meaning.

Authors	Designations	Elements of symbolic meaning
Csikszentmihalyi & Rochberg-Halton (1981)	- Special - Significant	Non-person related: - past: memories, associations - present-future: experience, style, personal values Person-related: - self, immediate family, non-family
Bloch & Richins (1983)	- Enduring importance	- Link to core needs and values/self-image - Long-term involvement or interest/engagement
Solomon (1983)	- Product symbolism (social)	- Structure/guide social reality - Shape self-image to social role performance - Act as responses and as stimuli
Olson (1985)	- Importance - Personal meaning - Special significance	- Certain story/occasion/origin - Unique moments/milestones/common experiences - Future plans - Past experiences of the couple as a unit - Ancestors and descendants/close relationships
Belk (1988; 1990)	- Extension - Symbolic importance	- Persons/places/things one is attached to - Life story, sense of past, accomplishments, memorable experiences, nostalgia/memory - Group affiliations, family, community, group identity - Status representation - Security, transition
Fournier (1991)	- Symbolic meaning (subjective and objective)	Objects with a subjective symbolic basis meaning (subjective, interpreted through experience and dependent upon associations): - objects of appreciation; of personal identity; of position/role; ritual enhancers Objects with an objective symbolic basis meaning (objective, tangible and verifiable through the senses): - objects of action; of transition; of utility; of childhood
Richins (1994a)	- Symbolic meaning	- Interpersonal ties - Self-expression - Achievement - Ties to past
Dittmar (1994)	- Symbolic functions	- Categorical symbols: social status/group membership - Self-expressive symbols: person's unique qualities, values and attitudes, personal history/memories, relationships
Gentry, Menzel Baker, & Kraft (1995)	- Symbolic role	- Personal identity

Tobin (1996)	- Personal significance - Meaningfulness	- Legacy/preservation of the self - Historical past - Memories
Arnould, Price, & Folkman Curasi (1999)	- Cherishing - Narrative	- Culture/family - Self, narrative sense of identity - Product stories, associations, memories - Mediation of relationships
Ligas (2000)	- Symbolic meaning	- Future potential success - Expression of attitudes and beliefs
Habermas & Paha (2002)	- Symbolic meaning - Favourite	- Memories - Past events, people, places, and sometimes aspirations that point to the future
Folkman Curasi et al. (2004)	- Inalienable wealth - Irreplaceable	- Group identity - Linked to storytelling
Ahuvia (2005)	- Love	- Sense of self, self-expression, self-transformation - Identity - Life narrative (key events/relationships)
Mugge (2007)	- Attachment	- Memories - Self-expression - Group affiliation - Pleasure
Adler (2008)	- Treasure	- Family rituals and traditions - Past, ancestors - Sense of self
Dittmar (2008)	- Symbolic meaning/significance	- Social identity - Personal identity - Projected identity
Kroger & Adair (2008)	- Symbolic meaning - Cherishing	- Relationships - Sense of comfort, connection and continuity - Achievements/overcoming of difficulties - Souvenirs from travels - Special events/phases of self, social status - Sensuous enjoyment of the object itself
Goodman et al. (2016)	- Meaningful happiness	- Relevant milestones

Firstly, we encountered the theme of 'self;' we found strong evidence of the link between material possessions and completion, expression, and communication of the inner-self and of personal values (e.g., Ahuvia, 2005), wherein personal possessions have been found to often act as a '*personal anchor*' (Kroger & Adair, 2008, p. 23) in the creation, maintenance and preservation of identity throughout

life (Gentry et al., 1995; Kroger & Adair, 2008). Across studies focusing on diverse aspects related to the self, from personal values (Richins, 1994b) to identity (Gentry et al., 1995; Arnould et al., 1999), products have been considered to be able to effectively construct and extend the self (Belk, 1988; Dittmar, 2008), signalling to others who a person is (Tobin, 1996; Ligas, 2000; Mugge, 2007), or what beliefs they hold (Bloch & Richins, 1983) — and thus be considered symbolically meaningful.

Secondly, we found the theme of 'self in relation to others.' Literature across disciplines has found material possessions to be strongly linked to interpersonal relationships through direct mediation (Arnould et al., 1999), for example, products used in rituals and celebrations (e.g., Fournier, 1991; Adler, 2008; Goodman et al, 2016), or indirectly through communication of status (Belk, 1988; 1990; Dittmar, 1994; 2008), or by aiding in the definition of a social reality and ensuring appropriate roles therein (Solomon, 1983). Products have been found to be linked to group identity (Folkman Curasi et al., 2004; Mugge, 2007; Adler, 2008), namely, its construction and expression (Solomon, 1983; Tobin, 1996; Arnould et al., 1999; Dittmar, 2008). Furthermore, products have been found to extend family ties throughout generations, and to carry links and associations that reinforce the sense of self, kinship, belonging, and culture (Arnould et al., 1999; Adler, 2008), rendering them symbolically meaningful to their owners.

Thirdly, we encountered the theme of 'time' (e.g., Csikszentmihalyi & Rochberg-Halton, 1981; Olson, 1985), both 'past-related' (Belk, 1988), and 'future-related' (Bloch & Richins, 1983). Perhaps overlapping with the theme of 'self,' the literature indicated that when products represent the past — one's origins and background (Adler, 2008), accomplishments (Goodman et al., 2016), life narrative (Olson, 1985), memories (Belk, 1988; 1990; Fournier, 1991; Arnould et al., 1999; Mugge, 2007) —, or the future — goals and dreams (Olson, 1985), directions and aspirations (Habermas & Paha, 2002; Dittmar, 2008), or one's own potential (Ligas, 2000) — they were valued and considered symbolically meaningful.

Fourthly, we identified the theme 'product features' (e.g., Csikszentmihalyi & Rochberg-Halton, 1981; Kroger & Adair, 2008), concerning the direct interaction with products and their attributes and respective pleasure and meaning derived from their fruition or use (Bloch & Richins, 1983; Fournier, 1991; Mugge, 2007). This theme, however, seems to be at a different level than the previously

identified themes in terms of symbolic meaning. While *'consumers may attend to perceive and appreciate a product for itself without regard to the utilitarian functions of benefits it may provide'* (Friedmann and Lessig, 1986, para. 2), without there being a representation of something this theme is less relevant for the study of symbolic meaning in products. This is unless there is attachment to the product from what it represents, which somehow is linked to its appearance. For example, when a product stands in as a proxy for a person, there might be characteristics in its appearance that make it symbolically meaningful.

When researching the literature on symbolic product meaning, the concept of *product attachment* was mentioned as a being closely linked to it, and products with symbolic meaning often being described as products people are highly attached to (Belk, 1988; Mugge, 2007). These concepts do not mean the same thing, however. Product attachment is a consequence of product meaning. This means that if a person is highly attached to a particular product, it is expected that the product has a symbolic meaning to them, i.e., *'the product has obtained a special meaning that is distinctive for this particular variant or specimen'* (Mugge, 2007, p. 28-29). Nevertheless, a product can also have a great symbolic meaning to a person without there being an experience of attachment towards the product. That is, symbolic meaning can be anchored in the product category or in the experience it provides, rather than a specific specimen. Simply put, product attachment is directed towards a specific product (Savaş, 2004; Schifferstein & Zwartkruis-Pelgrim, 2008).

2.3 Categories of symbolically meaningful products

Certain types of symbolically meaningful possessions, with unique designations, are considered objects of study on their own, given the richness and depth that can be attained when researching them. Below, we will discuss five types of meaningful possessions: (1) Souvenirs, (2) heirlooms, (3) gifts, (4) lucky charms, and (5) collections.

Souvenirs

Souvenirs have a particular symbolic meaning linked to stories and narratives, which renders them important both personally and socially because these can be used to

recollect special moments and places, and to share these accounts. Since early on in human history, people have collected tokens of their travels to remind them, and to share with others what they encountered and experienced (Swanson & Timothy, 2012). Souvenirs can have different natures. They can be mass-produced, for instance a miniaturized version of a well-known monument, or one-of-a-kind, and they can be bought or found (Stewart, 1993). A souvenir embodies a memory of a place (Csikszentmihalyi & Rochberg-Halton, 1981) or an intangible experience (Swanson & Timothy, 2012). Furthermore, souvenirs are material goods through which people authenticate meanings of travelling (Love & Sheldon, 1998). Previous research (Love & Sheldon, 1998) found that experienced travellers associate more abstract meanings to souvenirs, such as experiential components of travelling, relationships, events, or people, whereas less experienced travellers associate more concrete locations with acquired souvenirs.

Heirlooms

Another category of symbolically meaningful product that is prevalent in the literature is the *heirloom*. Heirloom is a designation given to an object owned by a family for several generations, which is handed down (Csikszentmihalyi & Rochberg-Halton, 1981; Adler, 2008). Once a type of object (and practice) reserved for upper classes, it has become increasingly common due to the democratization of consumer markets and increase in home ownership (Finch & Mason, 2000). Such possessions are of great social relevance because they have a rich contextual value (Folkman Curasi et al., 2004), stimulate the continuity of familial traditions and stories, and preserve the family history as a whole (Belk, 1990; Ekerdt et al., 2004). It are not just the physical objects and their (monetary or sentimental) value that are transmitted, but the meanings associated with them (Finch & Mason, 2000). This category of possessions is symbolically meaningful because the objects were directly owned and used by people and families in the past (Belk, 1990), often being considered inalienable wealth (Folkman Curasi et al., 2004). Research on the topic has focused largely on the concerns of older individuals in bestowing heirlooms to subsequent generations (e.g., Price, Arnould, & Folkman Curasi, 2000); how family heirlooms retain and remind members of their social identity (e.g., Folkman Curasi et al., 2004); and how heirlooms create distinct boundaries and structures between groups (e.g., Finch & Mason, 2000).

Gifts

An overarching category that also has dedicated scholarly literature is the *gift*, along with the act of gift-giving. This category can include souvenirs or heirlooms, for instance, and the gift-giving act increases their significance. The word gift refers to both the thing that is given, as well as the act of giving a present (Gift, n.d.). Gift-giving is a type of ritual which involves the premeditated acquisition or choice of a product to bestow, and an occasion or obligation that merits the giving (Belk, 1976). The exchanging of gifts can have several functions, such as social, religious, and moral. (Komter, 2007). Gifting rituals are of particular relevance to the study of person-product relations because, among other factors, it is an exchange of goods as well as of meaningful properties (McCracken, 1986). A gift may imply in its characteristics how the giver sees the recipient (Belk, 1976), varying according to giver involvement (Belk, 1982), which in turn can affect interpersonal relationships (Ruth, Otnes, & Brunel, 1999). Gifts have been frequently found among the most personally valuable and symbolically meaningful possessions of individuals (Csikszentmihalyi & Rochberg-Halton, 1981; Bell & Spikins, 2018), often with symbolic meaning of the gift-giving intention overcoming the objective value of the gift (Zhang & Epley, 2012). It is a somewhat ambiguous category to consider from the standpoint of specific determinants of symbolic meaning, due to the fact that nearly anything can be a gift, from something ephemeral or intangible, to a consumer durable with a predominantly utilitarian function, to an art piece, which results in all sorts of interactions and experiences.

Lucky charms

Another interesting category in the literature on symbolically meaningful products includes *lucky charms*. Lucky charms form a category that merits its own discussion, particularly in the context of cultures in which superstition plays an important social and psychological role (Cadbury, 2015). Objects in this category can be described as affording some auspicious benefit beyond the utilitarian or instrumental (Lewis & Dittmar, 2004), such as protection or good fortune. For example, the Daruma doll (Punsmann, 1962) is a Japanese Buddhism-based figurine that is offered as a good-luck token for goal setting, with centuries of tradition (Figure 6). Another well-known example is the rabbit's foot amulet (Ellis, 2002), originating in North-American culture, used for protection.



Figure 6. A Daruma figurine offered to bring good luck in the completion of this thesis.

Lucky charms — also referred to as good luck charms, amulets, or talismans — are linked to positive superstitions, and their meanings predominantly derive from commonly shared beliefs that are passed down within groups, communities, and societies (Wiseman & Watt, 2004). Instead of acquiring more personal and unique symbolic meanings, lucky charms tend to be used by groups as a part of their work and lives, such as in sports or entertainment industries (Vyse, 2014), linked to certain rituals (imagine a baseball pitcher who wears a 'lucky hat'). Research on the topic has focused on the forms that this type of object category has (e.g., Ellis, 2002; Cadbury, 2015), their link to personal and shared superstitions, rituals, and culture (Lewis & Dittmar, 2004; Vyse, 2014), from the perspective of history (e.g., Wallis Budge, 1978) and folklore studies (e.g., Punsmann, 1962; Ellis, 2002).

Luck and superstition are very much linked to magic, spirituality, and religion (Vyse, 2014). Like lucky charms (a baseball player that wears a 'lucky hat'), rituals use objects that facilitate and represent them, and therefore become filled with symbolic meaning. Rituals can be described as *'a type of expressive, symbolic activity constructed of multiple behaviours that occur in a fixed, episodic sequence, and that tend to be repeated over time'* (Rook, 1985, p. 252). There are different types of rituals: the commonly performed daily rituals (e.g., relaxing after a workday), and those more solemn and less frequent (e.g., a graduation ceremony). Rituals are often mediated by products, which, through their involvement can become endowed with symbolic meaning. Such is the case of religious artefacts. Artefacts that take part in ritual ceremonies or that are used as cult objects embody these religious themes (Keenan & Arweck, 2006). Religious artefacts are relevant from a symbolic meaning perspective because they are used as a means of self-expression (Elias, 2015), they

are part of intimate and introspective practices (Saramifar, 2018), and often express a common heritage which reinforces a sense of belongingness and group identity (Walker, 2006).

Collections

Another category worth mentioning due to its prevalence in the literature is the *collection*, here considered within the domestic context, by individuals, and not in a professional capacity (e.g., art collectors). Collections are not random accumulations, but rather systematic aggregations of similarly themed objects. This ritualization implies effort and directed energy from the owner, which in itself merits value, due to a continuous determination to keep and possibly expand a collection. One might find it unique, personal, or meaningful, regardless of its monetary worth. Clifford (1994) proposed that this type of accumulation impacts the user in the sense that the more dedicated the collector is, the more s/he is expected to know about his/her own collection, the origin of the items, their authenticity, and 'interesting stories' about them. Collections can be made up of objects in series (e.g., a collection of model Ferrari cars), in classes of objects (e.g., a collection of photo cameras), or in a sequence that is logical to the owner (e.g., a collection of porcelain figurines) (Pearce, 1994). In fact, collections can gather any type of object, with or without *a priori* significance, creating their own frame of reference. Objects become meaningful in relation to other objects within a collection (Kirshenblatt-Gimblett, 1989). Collections are relevant from a symbolic meaning perspective because people construct them, selecting each element, and therefore they afford a sense of control and are incorporated into the sense of self (Belk, 1988).

These categories of meaningful products exemplify how their story and context influence the attribution and reinforcement of symbolic meaning. Being aware that certain categories of products are, through their goal or context, more prone to become symbolically meaningful is a relevant insight to the approach of design with symbolic meaning. Symbolic meaning is connected to the way people perceive and classify a product based on their own experiences, and it can originate from the representation of important things like memories and achievements, or from relevant interactions like rituals or meaningful activities.

2.4 Conclusion

In this chapter we aimed to develop an understanding of symbolic meaning in products — partly addressing Research Goal 1 (to understand the phenomenon of well-being related symbolic meaning in products). We began by specifying types of meaning in products, distinguishing three main categories (see Table 2 and Figure 5). Utilitarian meaning refers to the performance of a task and the utility of a product for accomplishing something practical. Shared meaning refers to meaning that is common to a culture due to certain practices associated with products, manufacturing processes, typical colours, shapes, decorations, rituals, etc., or shared within a society, for example due to advertisement. Personal meaning refers to the meaning individuals attribute to products due to the role these have in their lives, or their associations with other people, moments, ideas, etc.

We then went on to characterize symbolic product meaning. We looked at the existing literature focusing on three questions: What defines symbolic meaning (in products)? How does a product become symbolically meaningful? and What makes a product symbolically meaningful? Finally, we illustrated this type of meaning by describing five types of symbolic products.

Symbolic product meaning corresponds to a highly significant type of 'private' or personal meaning, although certain shared meanings are also highly valued (Table 2). We defines it as what it represents (such as memories, people, ideals, achievements, aspirations, rituals, activities) to the owner. Products that are intentionally designed to represent or symbolize something can result in attachment, which can support a longer person-product relation and have consequences for the way they are kept and maintained. Furthermore, emotions play an important part in product interaction, and it is possible to consider these when designing with symbolic meaning as a way to strengthen the bond with the product owner.

The literature states that products can be symbolically meaningful when they represent the self, the self in relation to others, the past and the future, and when their features are outstanding (to the person). Csikszentmihalyi and Rochberg-Halton (1981) found that symbolically meaningful possessions are not only vessels of meaning that people build *a posteriori*, but also means by which people construct themselves, that is, that help 'build' people through a process of focused attention — cultivation —

wherein people anchor and direct inner goals and build meaning in life. Considering this process of cultivation when designing with symbolic meaning can add to the success of new designs in becoming relevant and valuable.

In the next chapter, we focus on well-being related symbolic meaning in products — those representations that support or signify the product owner's wellbeing, and particularly on the types of symbolic meanings that support well-being.

CHAPTER 3: Six well-being related symbolic meanings

3.1 Introduction

In the home, people curate their accumulated possessions, care for, share, store, and appropriate them (Hecht, 2001). These processes of repeated interaction are essential for people to construct their identities and give meaning to their lives (Csikszentmihalyi & Rochberg-Halton, 1981). In addition, the home, its contents, and the related processes are revealing of people's life journey (McDonagh, 2017). To study the role of the symbolic meaning of products that support people's well-being, we will look at this intimate environment, which offers a unique perspective into person-product relations. In this chapter, we present a study (study 1) that aimed to identify symbolic meanings that support well-being in products people keep in their homes.

Well-being has to do with the way people function mentally (i.e., their psychological well-being) and consequently, the way people feel (i.e., their subjective well-being) (see chapter 1 for a discussion). We focused on psychological well-being in this study because we expect it is most affected by products with symbolic meaning (cf. Figure 2, chapter 1), which in turn can result in the owner/user feeling happy and

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fulfilled (i.e., subjective well-being). Psychological well-being relates to human potential development, its assessment, the study of its determinants, and related factors (López-Torres Hidalgo et al., 2010). It also relates to the concept of *eudaimonia*, which means to live well and to actualize human potential, viewing well-being as a process rather than an end state (Ryan & Deci, 2001; Deci & Ryan, 2008). Psychological well-being has been conceptualized by Ryff (1989, 1995) as having six dimensions:

1. *Positive relations with others*, which refers to engaging in affectionate reciprocal relations with other people;
2. *Personal growth*, which refers to being open to new experiences and having a sense of continued personal development;
3. *Purpose in life*, which refers to having a sense of directedness from personal beliefs and goals;
4. *Environmental mastery*, which refers to being able to choose, adapt, or create a suitable environment for personal needs and values;
5. *Autonomy*, which refers to being self-determined and authentic in thoughts and in actions, living according to one's own standards, and being able to resist social pressure;
6. *Self-acceptance*, which refers to being compassionate and accepting of oneself.

The aim of the study was to understand whether these determinants of well-being can be found in people's meaningful products, and as such, to find out if they are useful in our research mission. To address this aim, we used them to analyse several product stories. To present results, each determinant is introduced with a story, and results are discussed within the well-being literature.

3.2 Method (study 1)

Thirteen participants (7 women and 6 men, average age=32) residing in the Netherlands volunteered to participate in study 1. They were recruited based on diversity of age, life stage, household type, cultural background, education, and professional occupation (Table 4). A pilot study (n=8) was conducted to refine study materials and procedure.

Study 1 was composed of three parts: a booklet, an interview, and a video. Participants were asked to fill in a sensitizing booklet (Figure 7), and subsequently invited to

participate in a semi-structured in-depth interview, about products from their home that had symbolic meaning related to Ryff's (1989) determinants of psychological well-being. Following the interview, participants were invited to talk about their home and possessions in an unscripted video. These three parts are detailed below.



Figure 7. Spreads from the sensitizing booklet.

The sensitizing booklet stimulated participants to explore the topic of meaningful products in order to help them be more articulated in the interview (Sleeswijk Visser et al., 2005). The use of sensitizing booklets draws from the idea that bringing an instrument of research directly into people's lives makes them respond more naturally and helps avoid biases from a delayed recollection of certain activities or feelings (e.g., Kahneman et al., 2004). Such sensitizing procedures have been found useful in previous studies exploring qualities of person-product relations (e.g., Yoon, Desmet, & van der Helm, 2012).

The sensitizing booklet (Appendix 1) contained seven reflection exercises based on Ryff's (1989) determinants of psychological well-being:

- Day 1: *Look around... Pick up an object that relates to or represents a positive relationship, identify it and construct a mind map around it. Then, write a text telling a story about the object you chose.*
- Day 2: *Find an object that relates to or represents a personal achievement, identify it and draw a mind map about it. Then, write a text telling a story about the object you chose.*
- Day 3: *Choose an object that helps you feel like your life has purpose, identify it and build a mind map. Then, write a text telling a story about the object you chose.*
- Day 4: *Identify an object that makes you feel good about yourself and tell a story about it.*
- Day 5: *Think of an object that has helped you develop as a person over time, identify it and tell the object's story in your life using a diagram, or writing a text.*
- Day 6: *Think of an object that helps you feel in charge of your life, identify it and tell a story about it.*
- Day 7: *Please think of some other products that make you feel good, identify them in a diagram, and write a small text about why you chose them.*

The booklet exercises asked participants to engage in different verbal and visual exploration techniques, such as diagrams, text, and mind maps, to explore fully their relationship with the product. Examples of the exploration techniques were provided in the booklet (see Figure 7). Furthermore, the sensitizing booklet asked for general information (name, age, gender, professional occupation, education, type of household, religion, and family size) that would provide grounds to explore the participant's context later in the interview.

After each participant used the sensitizing booklet for two weeks, they were invited to share and develop the resulting insights in a semi-structured in-depth interview (ranging from 50 minutes to 2 hours; cf. interview script in Appendix 2). The interview was conducted at the participant's home to allow for an interaction with the products being discussed, and to provide a safe and familiar environment. The interview provided an opportunity for participants to expand on what they wrote in the booklet. For that purpose, participants were asked to describe their experiences and relationships with their meaningful products, in order to determine if and how these influenced their well-being. During the interview, other topics that we considered likely to influence symbolic meaning attribution were discussed, such as the context and particular life story of the participants, their current life stage, and life goals.

Table 4. Participants of study 1.

Alias	Age	Nationality	Occupation	Household	Life story	Life stage
E	23	French-English	Bachelor student	Lives with partner	Brought up in expat culture	Doing internship/ 2nd Bachelor
Al	29	Portuguese	PhD candidate	Lives with partner	Strict upbringing	9 months pregnant
D	49	English	Assistant professor/ PhD student	Lives with partner and 3 children	Military background	Finishing PhD
N	29	Italian	Systems engineer	Lives with partner	Very close family; moved to NL to study and work	First job, first house
L	26	Spanish	Interaction designer	Lives with partner	Moved to NL to study and work	New house
F	26	Spanish	Works in retail/ studied occupational therapy	Lives with partner	Very close family; moved to the Netherlands to work	First time living abroad, learning Dutch to change jobs
R	26	Dutch-German	BSc student/ working at a mail and logistics company	Lives with partner	Very close relationship with parents	First time living 'alone'
JA	35	Dutch	Project manager	Lives with partner and toddler	Close relationship with family	Doing an MBA
M	32	Iranian	Post-doctoral fellow	Shared household	Religious, close to family	Living abroad
JJ	26	Chinese-American	PhD student	Shared household	Hoarding behaviour in the family	Beginning of PhD; living abroad
IB	60	Dutch	Retired nurse	Lives with husband	Heart condition	Retirement
ET	26	Dutch	PhD student	Lives with partner	Lives in the same city he was born in, close to family	Feels lonely, partner is abroad for internship
JD	33	Dutch-Indonesian	Spatial planner/stay-at-home dad	Lives with partner and child	Multi-cultural household	Unemployed

About two weeks after the interview, participants were asked to reflect on their domestic material environment in a non-scripted video recorded in their homes (ranging from 30 minutes to 50 minutes). This provided an opportunity for them to share freely their experiences about the entire home context. Participants were asked to go around their home and pick up random products to tell stories about. Being aware of the study's topic, participants were predisposed to pick up the most meaningful products and thus guided the video themselves. This added richness to the booklet and interview data, and provided additional information about the lives, context, goals, and possessions of participants. The collected videos were edited in a film to share with a wider audience (Figure 8). (See the voice-over introduction in Appendix 3. The full videography can be accessed at <https://vimeo.com/179011005>.)

Previous research has proposed that videography is a valuable research tool (Belk & Kozinets, 2005). Its value lies in that it displays reality rather than an interpretation or theoretical abstraction of it, which adds a rich dimension to the story. In addition, it provides a more vivid and closer account of the phenomenon because it is a multi-sensorial medium (Jewitt, 2012). Moreover, the video format provides a holistic view of the phenomenon, including potentially new variables besides words, and resonates deeper with audiences.

Videography is a medium that can translate research to a broader audience, using less jargon-laden language than a regular research paper, providing a multisensory experience, and illustrating sometimes complex concepts – such as symbolic meaning or well-being – in a palpable way. The videographic record aimed to revisit the stories that were described in the booklets and provide a different means of communication to reach designers and researchers – enriching the data and displaying additional information that writing alone limits, such as a free associative narrative that links different stories, emotions, objects, and life stages.



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MEANINGFUL THINGS

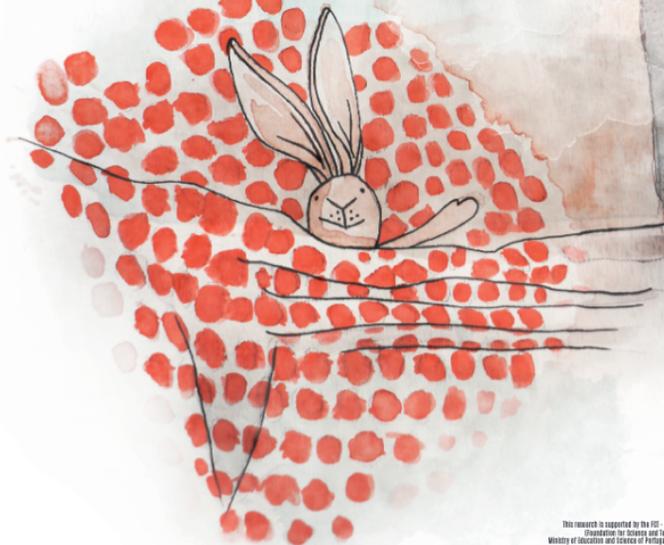
EXPLORING THE SYMBOLIC MEANING OF THE MATERIAL
ENVIRONMENT AND ITS IMPACT ON HAPPINESS

TU DELFT AND DIOPD PRESENT A VIDEOGRAPHY BY MAFALDA CASAIS WITH RUTH MUGGE AND PIETER DESMET

SCRIPT AND DIRECTION MAFALDA CASAIS WITH RUTH MUGGE AND RICARDO BATALHEIRO
EDITED BY MAFALDA CASAIS AND PATRÍCIA PINHEIRO DE SOUSA WITH RICARDO BATALHEIRO AND MAFALDA CASAIS
PRODUCTION YORICK HEERKENS EDITOR SUSANA AYRES DIRECTOR OF PHOTOGRAPHY INÉS MARQUES

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Delft Institute of Positive Design

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Figure 8. Stills from the videography and poster (pp. 42-43).

3.3 Data analysis

The meaningful products that were named in the booklets and in the interviews provided a collection of 129 stories in total. In order to understand these person-product relations and how their symbolic meaning represented and influenced well-being, we conducted a two-part analysis (Table 5).

First, the transcripts of the interviews were coded by the main researcher (the author of this thesis) using the coding software *Atlast.ti*. The coding scheme emerged from the texts, seeking to identify commonalities among different types of products, stories, and contexts in terms of symbolic meanings and their link to well-being. To verify this coding, several quotes belonging to the created codes were discussed with the research team and in some cases codes were rephrased to better represent the underlying codes. A second level of coding grouped different categories of codes into more coherent clusters, which clarified the origin of the meaning of these products. The codes were then clustered according to Ryff's (1989) six determinants of well-being: positive relations with others, personal growth, purpose in life, environmental mastery, autonomy, and self-acceptance. Secondly, three colleagues joined the main researcher in selecting the most compelling and interesting examples to illustrate each symbolic meaning (see 'results and discussion' section). This was a relevant step because the product stories fitted multiple categories of meaning, as discussed below.

3.4 Results and discussion

From the 129 stories of meaningful products that were mentioned in the booklet and in the interview, 49 were of consumer durables with notable symbolic meaning (Table 6). We focused on consumer durables because this is the type of product we aim to learn from to inform our research on design with symbolic meaning. For this reason, we did not include stories about photographs, plants, and animals in our analysis. In addition, we excluded stories about laptops and phones because their value lies mostly on intangible digital content, which is not within the scope of our research.

Table 5. Coding cycles from study 1.

Product examples	First cycle of coding	Second cycle of coding	Symbolic meaning	Description
Grandfather's pen; family necklace; grandfather's owl	Belonging; care; culture; family; friendship; gift; group affirmation; group identity; heirloom; love; nostalgia; origin; relationship; sharing; social; storytelling	Belonging; relationship; family; friendship; culture; heirloom; storytelling	Positive relations with others	Symbolizes quality relations and affiliations that contribute to a sense of belongingness
Old photo camera; military name tags; piano	(Self) development; challenge; childhood; coping; creativity; loss; personal achievement; reflection; growth; maturity; overcoming	Development; growth; maturity; overcoming; coping	Personal growth	Symbolizes the acceptance of past experiences, the openness to new challenges; continued development and maturity
Parent ring; praying carpet; wedding ring	Motivating; aspirations; excitement; expectations; future; goals; meaning; purpose; trying new things; spirituality	Purpose; future; goals; expectations; motivation; spirituality	Purpose in life	Symbolizes personally significant ideals, goals and aspirations, and a sense of directedness
Brogues (shoes); sewing machine	Connecting; achievement; activity; adapting; affirmation; challenge; comfort; communication; concerns; context; effort/ investment; hobby; needs/ values; network; skills	Connecting; context; needs/values; achievement; challenge; skills; affirmation; adapting	Environmental mastery	Symbolizes the ability to manage or create a suitable environment to accommodate personal needs and values
'Coagucheck' (blood measuring device); car keys; soccer shoes	Enabling; autonomy; confidence; control; independence; own standards; pride; self-reliance; trust	Enabling; autonomy; independence; control; pride; responsibility	Autonomy	Symbolizes a sense of independence and self-reliance in thoughts and in actions; resisting external pressures
Fluffy bunny; bass guitar; stuffed tiger	Identify-related; aesthetics/ beauty; attachment; creativity; past lessons; self-compassion; self-esteem; self-expression; transition	Identify-related; self-acceptance; self-esteem; confidence; self-expression; transition	Self-acceptance	Symbolizes the acceptance of positive and negative aspects of oneself; self-compassion and a positive self-image

Table 6. Results of study 1.

Product stories (consumer durables)	Symbolic meaning
Family necklace; grandfather's pen; grandfather's owl; owl chalk board; reflex camera; son's pacifier; ukulele	Positive relations with others
Baby's tuto; camera; lava lamp; military name tags; old photo camera; piano; record player	Personal growth
Ballet shoes; family ring; fluffy monkey; grandfather's military name tags; kitchen knife; parent ring; praying carpet; sewing machine; wedding ring	Purpose in life
Bed frame; bicycle; brogues (shoes); diploma; doll house; driver's licence; lomographic camera; PhD thesis book; school bag; sewing machine; soccer shoes; Warhammer game; work badge	Environmental mastery
Bicycle; blood control device (Coagucheck); car keys; handbag; work uniform	Autonomy
Bass guitar; bicycle; dress; fluffy bunny; horn bracelet; sport shoes; stuffed tiger; The Clash record	Self-acceptance

3.4.1 Products that symbolize positive relations with others

In the interviews, participants provided product narratives expressing close loving relationships that contributed to their well-being. In these stories, the products were described as symbolic representations of meaningful affiliations.

Grandfather's pen

R is a 26-year-old Dutch-German bachelor student who works at a mail and logistics company. He is an only child and has a very close relationship with his family. When asked in the interview for a product that he associated with a close personal relationship, he mentioned his grandfather's pen. He described how it came to be in his possession: *'I inherited it from my grand-mother, but [my grandfather] said already once [that] because I was fond of drawing, all his pens and things should go to me.'* As time passed after he got the pen, his perception of it changed, and a sense of ownership grew: *'When I wrote with it for the first time, I got it two years ago, I was really feeling like that's my grandfather's pen but now it also, sort of, became my pen.'*

During the interview, R shared what this meaningful product represented to him, and the emotions it evoked: *'[My grandfather] got it for his retirement from the navy and to me it expresses a few things. The achievement — that he got it from the Navy, 40 years in service — it makes me proud that I got that, because he passed away a few weeks ago and ... I'm proud for what it stands for. I always wanted to get it ... It makes me proud to have gotten it, and for what it stands for. And it reminds me of my family of course. We have a warm bond and always had.'* When expanding on the details of his relationship with his grandfather, R explained that this feeling of closeness was relatively recent: *'Ever since I moved to Delft, because he lived quite close, I could visit him more often than when I was a kid, so I built up a relationship from 18 until like 22 than I ever did before that.'* The importance given by his grandfather to the pen added to its uniqueness and significance: *'It was his favourite pen. He always signed — his generation still wrote letters and signed stuff — and he always wrote with this pen. And the fact that it's ... well he wrote a lot with it and it's engraved with his name on it ... Physically it is replaceable, but not really. Because I don't have much that I got from my grandfather, so this is something that's one of the only things I have.'* The narrative of this product shows that R is part of a close family, and had a great admiration for his grandfather. The pen is not only a representation of that idea of closeness and belonging, but also a symbol of the grandfather himself, because it was awarded to him and was part of his own life and stories.



Figure 9. 'Grandfather's pen'

Our results demonstrate that some products that can play an important role in experiencing and mediating interpersonal bonds. As a consequence of specific interactions and experiences, people may associate material possessions with positive relationships and with a sense of intimacy and belonging. Merely looking at or holding such products can support well-being as a result of this symbolic meaning. The well-being determinant 'positive relations with others' (Ryff, 1989)

was found in *R*'s story because the pen symbolized an important person for *R* and their own backstory, as well as a close relationship that evoked positive emotions like pride, respect, admiration, and love (Figure 9).

Previous research has shown the importance of having personal relationships for well-being: they provide love (Hendrick & Hendrick, 2002), emotional and physical support (Lyubomirsky, 2008), reciprocal investment and empathy (Ryff, 1989), and give meaning and purpose to life (Seligman, 2011). The cultivation of close relations is an important part of the thinking and behaviour patterns of happy individuals (Lyubomirsky, 2008). In addition, research on belongingness has shown that this is an essential aspect of human development (Baumeister & Leary, 1995). Having positive relations with others can imply relationships with family, friends and groups that share common interests; however, even sharing a belief system can bring people together and make them feel like they belong (Ellison, 1991). In sum, the meaning of positive relations with others symbolized by material possessions provides a salient contribution to well-being because it nourishes the innate desire of humans to be part of something greater than them (Mellor et al., 2008).

3.4.2 Products that symbolize personal growth

Among the collected stories, participants mentioned products that related to a sense of continued personal development. These products were described as representations of transitions into different stages of life, able to inspire reflection and acceptance of past experiences and a sense of progressive growth.

Old photo camera

Al is a 29-year-old Portuguese researcher who has been living in the Netherlands for six years. *Al* lives with her partner and she is nine months pregnant. During the interview, she was asked about a product she associated with personal growth. *Al* mentioned an old photo camera: *'I received a very old camera from my mother when I was 16 or so. With still the [film] roll. And I did a very small course of photography and I sort of tried to develop myself over time.'* Expanding on the booklet exercise, *Al* explained how the camera supported her throughout life: *'I made a timeline to help me think a little bit about that. I did from zero years old to thirty, and how it lived with me — it was also the camera of my parents, when they lived in Mozambique.'*

The camera was present at important stages of Al's life: *'Until I was 11 or 12, my mother would be the one taking pictures of me, and so I learned about my childhood. And then I received the camera from my mother. She gave it to me and I dared to explore it.'* The product's aesthetics also played a part in how it made Al feel: *'Because it was so stylish, so cool ... The camera always made me feel like I'm pretending I'm older, like "I look really old, I look really adult". So this was about my rebellious time.'* Investing in a photography course enriched her skills, which provided further opportunities for exploration: *'I also got some help to learn how to do it and I was doing a lot of black and white photography. And that allowed me also to go around the city, to have always an excuse to do something more crazy, and go around the city alone taking these pictures, getting to know the centre of the city. So it turned out to be a really good time to do that, at this age.'* Al started making the most of the opportunities the camera allowed: *'For example, if you want to be alone, you take the camera and you take pictures, and that's okay. It's not like "oh, I'm going out for a walk" and that's always a bit "oh, you're going out for a walk alone?", "Oh no, I'm just going to take some pictures." So yeah, I can always find an excuse with my camera.'* Al even mentioned how it helped her deal with certain negative emotions: *'The time I invest is really about dedication, so I still take really bad pictures sometimes, but you see it more as an ongoing process and it's okay, it's okay to be frustrated.'* In her interview, Al explained how the camera supported her intentional efforts to explore herself and her context: *'I explored, I feel good, it makes others feel good ... I really dare, always did, and so I always sort of explored different things ... I had it always with me and it was my excuse to go out and to be independent.'* This story demonstrates that this product promoted Al's personal development, as it also provided a tool for reflection: *'Nowadays I record my life, print it in an album, and reflect upon it ... It did allow me to become independent, and do that for my own, and dare, also show other people what I was doing, so that is also a bit of a step forward.'*

Even though personal growth takes place in behaviour and thoughts, products can encourage it through the associations they evoke and the situations they afford. Products that stimulate openness to new experiences and challenges can foster growth and improvement over time, thus providing a salient contribution to well-being. Such products may also serve as means for reflection on positive and negative events that help build a person's perspective on their maturity. The story of the old camera shows that products are able to assist and symbolize personal development and the expansion of one's horizons, by affording new and enriching experiences, while also allowing reflection on those experiences. The ability of a person to change and evolve in light of his or her experiences in life provides an important contribution to well-being.

Previous research has described personal growth as a person's active and intentional effort in developing and improving him or herself (Robitschek, 1998). It occurs when people challenge themselves and grow psychologically, change their perspective on life (Lyubomirsky, 2008), and show more self-knowledge (Ryff, 1989). This can happen when people are faced with self-imposed positive challenges that allow them to expand, but it also can result from unintentional negative traumas (Lyubomirsky, 2008). The determinant 'personal growth' (Ryff, 1989) is the criterion of well-being that comes closest to Aristotle's concept of *eudaimonia* as the self-realization of one's potential through a meaningful life (Ryff & Singer, 2008). It is associated with a sense of continued development that derives from learning and growing from past experiences, while being open to new ones. While other determinants of well-being represent ideal end states, personal growth constitutes a process of advancement and expansion (Ryff, 1989). In sum, personal growth can be mediated by products and thereby generate symbolic meaning in them, and it is fundamental for well-being because it improves self-knowledge, helps people change their perspective on life, and improve resilience when faced with negative situations.

3.4.3 Products that symbolize purpose in life

In our study, we encountered narratives about aims and hopes that give a sense of meaning to life. These were embodied in products that motivated and supported a sense of directedness.

Parent ring

JD, a 33-year-old Dutch-Indonesian stay-at-home dad spoke about his role as a parent, and how that changed his life. He mentioned that becoming a father was one of the most important experiences he has gone through: 'You are born and then you become who you are, then you change as a couple and now [as a parent] ... Becoming a dad changes you and who you are ... Being a parent makes me become aware of a lot of things ... Basically your whole world changes, you get into a different system ... You get a bit less selfish.'

Expanding on his recent parenthood, *JD* described a special product: 'A "parent ring" — I invented it ... We were in [my wife's home country] and they had a lot of lapis lazuli, and we saw rings and we thought "yeah, we would like one". But I never buy those sorts of things without a purpose or story or whatever. And then [my wife] was pregnant,

I thought “yeah, maybe we can buy both one and we can make it a parent ring” — I mean, you buy one when you get into an eternal relation, they say, but a kid — there’s nothing more eternal than that in a way, so why not make it a parent ring that marks when we became parents.’

JD described the ring as having a direct connection not only to his child, but also to his partner: *‘She has also the same, but smaller. And it’s marked with the date because we didn’t know what it was when we got it back then ... When we are young it’s always “me, me, me”; and then it goes “me and you” if you are lucky; and if you are even more lucky, it becomes “me, you, and you” — [you] get a whole cluster of people that are number one.’* The meaning uncovered in this narrative is threefold: the ring’s origin and its material (it was acquired in the home country of JD’s wife), the fact that it is one of a pair, and, most evidently, the intentional attribution of meaning related to parenthood.



Figure 10. ‘Parent ring’

The story of JD’s ring illustrates how a product can symbolize a life stage (parenthood) that gives purpose to life (Figure 10). There are other ways in which products can symbolize purpose in life. For example, products can facilitate reflective practices related to purpose in life, like praying. In one of the collected stories a participant mentioned the strong symbolic meaning of his prayer mat, which symbolized and facilitated his religious beliefs and practices. Furthermore, products can provide an element of tangibility to goals and aspirations by directly enabling them or motivating their pursuit, and thus become symbolically meaningful. In one of the stories, a participant mentioned a dress that she used to motivate herself to lose weight, which she then kept as a cherished reminder of her success in this effort.

Past research has indicated that having purpose is vital for a sense of well-being (e.g., Diener et al., 1999; Lyubomirsky, 2008; Seligman, 2011). When purpose in life is unaddressed, a sense of meaninglessness characterized by dejection-related emotions, alienation, and low self-esteem can occur (van Selm & Dittmann-Kohli, 1998). Having purpose in life contributes to well-being because it is associated with meaningfulness (Baumeister & Vohs, 2002), with a hopeful and meaningful life (Feldman & Snyder, 2005), and with transcendence and utility of life (Veenhoven, 2000). In some studies, it has been associated with spirituality and religion (e.g., French & Joseph, 1999). While beliefs, goals or successes in life are intangible, material possessions can symbolize important life achievements, such as getting married or having children, thereby giving tangible form to aspects that make life feel worthwhile. In sum, purpose is pivotal in life. Products that tangibilize purpose, for example making a person's ambitions or accomplishments visible, can become very valuable and be a means to support their well-being.

3.4.4 Products that symbolize environmental mastery

In the collected product stories, we found accounts of products that supported and represented the participants' sense of adjustment to their surrounding context.

Brogues

D is a 49-year-old English assistant professor with experience in different sectors like engineering and business. He lives in the Netherlands with his wife and three children and enjoys the company of people, calling himself 'outgoing.' When asked about a product he considered symbolic for the feeling of being in charge, D spoke about his shoes: *I chose a pair of shoes, which I haven't had that long, but I quite like them — my "Loakes" brogues shoes. "Loake" is the brand, so, a British brand, and then brogues are those brown patterned type shoes. They allow me to walk places so I'm in charge of things because I can go somewhere.* D specified how the shoes support his sense of control over his environment, indicating that they were a good investment: *They'll wear for work and play so, I wear them socially and I wear them for work, and sometimes quite formal things. You have to break them in, so they're not comfortable straight away. They're not easy to live with in the beginning, you have to develop with them. They are solid yet comfortable ... They help me feel in charge of my life because I can wear them to formal events — they make a statement — or a weekend where I*

can feel relaxed in them ... I like the way they look. And I like the way they age. So they develop and improve with age. The older they are they better they look.'

Another interesting aspect noted in this narrative concerns *D*'s ability to make his environment fit his beliefs and values by deliberately favouring durability: *'They're not cheap, but they will last ... They are long lasting and timeless style, they're made to be refurbished. I was really pleased in the little booklet that came in the box [which] said "if you want you can send them back and we'll completely refurbish them for you", which I'm sure it's just an expensive service they offer. I'm sure I can go into town here and somebody ought to do it as well, I thought that was quite nice.'* Throughout the interview *D* mentioned how this is an important aspect of his value system: *'I enjoy repairing objects as well, making them last longer or finding solutions ... I am a bit concerned about where things are going, I think I like to keep hold of some of my skills of repairing and making and doing and stuff, because I think that could be the way things might go.'* In sum, the narrative about this product expresses a double symbolic meaning: on the one hand, this meaning relates to the aesthetics and performance of the product, and how it makes *D* feel physically in charge. On the other hand, it is characterized by its ecological features, which are aligned with *D*'s personal values and concerns.



Figure 11. 'Brogues'

Environmental mastery is described as the ability to create or adapt the environment to fit personal needs and values (Ryff, 1989). Specifically, it concerns the agency to manipulate and control complex environments and to actively participate in- and take advantage of external opportunities (Ryff & Singer, 2008). This ensures the creation of a suitable context for a person to be happy and flourish in. In *D*'s story, his shoes gave him a sense of control and symbolized some of his values and concerns, thus contributing to a suitable environment in which he could thrive, and to his well-being (Figure 11).

The well-being determinant 'environmental mastery' is associated with concepts such as self-efficacy, life-ability (Veenhoven, 2000), wisdom (Bergsma & Ardelt, 2011), and creativity. Products can support environmental mastery in different ways: they can assist with expressing and reinforcing personal values; or they can directly enable control over one's environment by stimulating and supporting certain skills, which allow a person to have a degree of power over external factors. In one of the product stories, a participant described how a sewing machine symbolized the 'Do It Yourself' principle and became a source of pride for her, because she taught herself how to use it. In addition, products can gain a symbolic meaning of environmental mastery because they are associated with the ability to build beneficial networks and partnerships. Accordingly, the cultivation of social capital (Portes, 1998) can be considered part of a spectrum of strategies towards environmental mastery, and products can facilitate and represent it. Products can represent a sense of adjustment, can actively assist in honing skills and having control over one's environment and gain such symbolic value, can represent and express personal values, enable competence development, or help cultivate and symbolize relevant networks.

3.4.5 Products that symbolize autonomy

Among the stories that resulted from the interviews, participants made reference to products that supported and symbolized a feeling of independence and autonomy.

Coagucheck

Sixty-year-old *IB* is a Dutch retired nurse who grew up with a limiting heart illness, which she referred to as isolating: *'My world is a little bit small. I travel but it's a little bit small because I've got a handicap.'* In addition, *IB* revealed that her heart problem forced her to an early retirement.

When describing her illness, *IB* mentioned the 'Coagucheck' (a blood measuring device) as her *'little black box.'* *IB* stated that the small device gave her a feeling of being able to take care of herself: *'Like a lot of my age, when you are retired, the only [important] thing is to take care of yourself, and stay that way ... I always had to go to hospitals and now with this little [device] I can go and stay where I want to, and I can measure my own blood ... You're no longer dependent [on] the laboratory or the doctor, you learn to calculate your [medication] and everything.'* *IB* affirmed that the product

enables her to feel in control: *'You can have influence [on] your own health. That's very important for me ... After several heart operations, I have a little black box, which gives me the freedom to control [my] blood wherever I am.'* While using the device, IB gained confidence in her decisions and was able to indulge in travelling and in other activities: *'You know that every day can be the last day and every day you have to enjoy ... I have invested time in myself, because I said "what others can do, I can do too".'*



Figure 12. 'Coagucheck'

IB's story revealed that being able to regulate one's health is very important, particularly when in ageing. In that sense, products with a distinct meaning of competence offer a feeling of control and autonomy. In the story, the 'Coagucheck' supported IB's physical autonomy, which affected her psychological autonomy (Figure 12). This is of particular interest when considering ageing or illness, which may compromise the ability of individuals to function independently, both physically and psychologically. Previous research has indicated that people who favour personal independence, as opposed to expecting assistance from family or institutions, are more likely to experience continued functional autonomy (Ford et al., 2000).

The well-being determinant 'autonomy' refers to the regulation of behaviour from within, having own standards and values, and resisting external pressure (Ryff, 1989). This criterion of well-being is closely related to self-determination and authenticity (Wood et al., 2008). Products that enable independent functioning support such attitudes of autonomy. In turn, these attitudes contribute to well-being. In other life stages, particularly in adolescence when psychological autonomy is developing (Zimmer-Gembeck & Collins, 2003), products might also have an important role. Specifically, when the adolescent reduces his or her dependence on parental guidance and starts to become a self-governing and self-reliant individual, products (such as personal diaries) may provide support as tools for self-reflection and

projection of dreams and goals (Sosin, 1983). Accordingly, such products become symbolically meaningful. If a teenager keeps a register of secrets, dreams, failures and successes, reporting all kinds of first experiences in a diary, this can become a symbol for his or her ability to be(come) unique and stay true to him or herself.

3.4.6 Products that symbolize self-acceptance

In the collected narratives, participants mentioned products that symbolize people's self-perception and the acceptance of positive and negative aspects of the self; such products were described as being able to foster a sense of worthiness and self-appreciation.

Fluffy bunny

E is a 23-year-old English-French woman who was born in Germany and lived in the Netherlands since childhood. With British and French nationalities, *E* was raised in an expat culture. She described herself as somewhat insecure, and looking to fit in. She lives with her boyfriend and values friendship. Growing up in an unstable context, *E* became somewhat insecure: *'I had a few childhood problems. My parents divorced and [we were] moving a lot as well.'*

She found support in her fluffy toy: *'It helped me with feeling safe and confident.'* She referred to the toy as her 'safety blanket' and shared the story of how it became special: *'I got it when I was really small. Actually I stole it from a shop when I was like five or six ... And then my dad had to send it back, and I had to draw a card saying I was really sorry. And they sent it back! They said the rabbit missed me, so it was really, really valuable.'*

The fluffy bunny acted as a comforter throughout *E*'s life: *'It really was like a comforter ... It was my friend.' It still does to some extent: 'I still have it in bed to hold sometimes.'* *E* explained how this product has been important to her: *'I think it's a really big part of my childhood, because it's been with me throughout my childhood, and it's still with me now. As a teen I relied on this bunny to fight off nightmares and now I still have it with me. I like having it when I go on holiday and I sleep in a strange bed or [go] camping.'* Furthermore, it encouraged her self-expression and creativity: *'Actually I started writing stories with my rabbit that became a character.'* *E*'s fluffy bunny supported her by acting as a confidant and a comforter, and by providing a creative outlet, and thus it gained a symbolic meaning of self-acceptance.

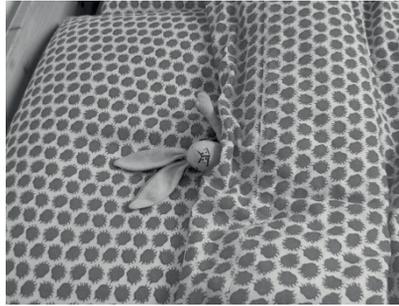


Figure 13. ‘Fluffy bunny’

The story of *E*'s fluffy bunny showed how a particular product fostered *E*'s self-assurance by helping her accept her insecurities, and consequently, grow and develop into a confident adolescent (Figure 13). It represented her transition into becoming a more mature and confident individual.

Products can symbolize past experiences and lessons learned, the self's many aspects, and transitions people go through. Those symbols remind people of who they are and what they have learned, which helps them accept themselves. That makes such products relevant and impactful for their well-being. The well-being determinant 'self-acceptance' is described as the acceptance of various aspects of oneself and one's past experiences (Ryff, 1989). It relates, to a certain extent, to the constructs of self-concept — what people identify with/as — and self-esteem — how worthy people perceive themselves to be (Baumeister, 1999); however, in terms of its definition it is more closely aligned with the concept of self-compassion, which is defined as having a healthy attitude towards the self (Neff, 2003).

The acceptance of positive and negative experiences in one's life can find support in material possessions. Specifically, products can symbolically represent challenges that a person went through, relating to the past and present, and encourage reflection on personal behaviour and values. This adds to a more complete, nuanced, and positive notion of one's self-image, thus contributing to well-being. In addition, products can symbolize the acceptance of positive and negative aspects of the self in other ways: previous research has shown that products can assist in the definition, clarification, and communication of one's identity (Csikszentmihalyi & Rochberg-Halton, 1981; Belk, 1988), which can influence self-perception and self-acceptance. When individuals attempt to define themselves, they use various labels and material

symbols to affirm their self-definition, which also gives cues for other people to recognize and respond. Products, in that sense, can act as 'symbolic extensions' of the self (Belk, 1988).

3.5 Conclusion

In this chapter, we reported a study (study 1) with thirteen participants, which explored whether and how products can symbolize six determinants of psychological well-being (Ryff, 1989). We found anecdotes for each of the six determinants, indicating that these determinants represent six distinct symbolic product meanings. At the same time, we found that the six symbolic meanings were often overlapping or complementary. For example, a ring can represent both a special personal relationship and a sense of purpose in life. While there is no ideal one-to-one correspondence between the symbolic meanings and the overall origin of meaning, some conclusions can be drawn:

- Products that symbolize positive relationships with others are meaningful because they represent something 'bigger than the self'; for example, they are given as a gift by a loved one, inherited from a family member, or play a role in marking an important moment in a relationship. Material possessions with this symbolic meaning support a sense of belongingness.
- Products that symbolize personal growth often have both a past and a future related meaning, because they focus on reflective and prospective practices that overlook life as a whole; for example, they mark a transition moment, evoke experiences and lessons learned, or enable the engagement in new opportunities or challenges. Products with this symbolic meaning support a sense of continuous development and maturity.
- Products that symbolize purpose in life have a both self- and future related meaning, linked with personal goals and aspirations; they are tangible representations of important aspects that make life worthwhile. Such symbolic meaning in material possessions supports a sense of directedness.
- Products that symbolize environmental mastery are related to skill development and to the creation of relevant networks, therefore, they have both self- and 'bigger than the self' meanings; for example, they enable and represent certain skills or competences, facilitate and represent the construction of

beneficial networks and partnerships, or symbolize personally significant values and concerns. Material possessions with this symbolic meaning support a sense of adequacy and of personal and social thriving.

- Products that symbolize autonomy are enablers of an independent and successful life, thereby having a self-related meaning; for example, they support physical autonomy and independence, or they allow and represent the expression of authenticity. Material possessions with this symbolic meaning support a sense of self-determination and self-reliance in thinking and acting.
- Products that symbolize self-acceptance are meaningful because they allow self-expression of personal identity and show a person's creativity. They have mostly a self-related meaning; for example, they help in the construction and communication of one's identity, or they trigger self-reflection whereby one sees oneself as a whole composed of good and bad parts. Material possessions with this symbolic meaning support a sense of self-awareness and self-compassion.

The results indicate that the large majority of meanings stem from personal narratives related to the self (with some prevalence of skill development), personal relationships, and past experiences (with predominance of childhood memories).

While carrying out the study, an interesting question emerged about the activity of recalling product narratives and its influence on well-being: would such detailed descriptions be in people's minds unless elicited? During the study, participants were encouraged to think about their meaningful products. People made their products come to life with rich and detailed accounts, and consequently started noticing their material environment and the positive things in it. Consequently, we can assume that the strong positive meanings described might have been influenced by the study setup to some extent. On the positive side, this suggests that intentionally asking people to describe their symbolically meaningful possessions may promote a greater awareness of what makes life meaningful (stories, people, moments, experiences, and so on). Lyubomirsky (2008) suggested that savouring and appreciating the existing is an exercise that can promote a happier life. Furthermore, Chancellor and Lyubomirsky (2011) proposed that a mindful way to counter adaptation of purchases or experiences is through savouring and attention giving. Employing such appreciation strategies to the material environment — such as observing, sharing, or telling stories — might help revive personally significant narratives, and

in that sense make people more aware and more grateful of the richness of their lives and experiences, and support well-being (Bryant & Veroff, 2007).

Part II

Developing a toolkit for designers



Chapter 4. Sixteen directions to inspire design with symbolic meaning

Chapter 5. Development of a toolkit for designers

Chapter 6. Assessing and refining the SIM toolkit

CHAPTER 4: Sixteen directions to inspire design with symbolic meaning

4.1 Introduction

In the current chapter, we explore possibilities to develop design directions that can inspire designers when designing with well-being related symbolic meanings. While previous research has shown that symbolic meaning can contribute to a person's well-being and elicit attachment to products, it is not yet known if (and if so, how) products can be designed with the deliberate intention to support people in attributing such symbolic meanings, particularly with the aim of having a well-being effect.

As symbolic meaning is subjective, we do not expect to find one-to-one relationships between product features and associated meanings. A product's symbolic meaning is obtained through cultivation in the personal consumer-product relationship and is determined by the person's situated experiences and the degree to which this person associates the product with these experiences. Essentially, any product can have any symbolic meaning. Something as simple as a paperclip can be cherished — perhaps it was used to bind the pages of someone's first contract as an

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independent consultant. In this example, it seems illogical to search for qualities of the paperclip design that contributed to the meaning formation. However, that does not imply that it is impossible to formulate design directions that can support designers in designing for symbolic meaning attribution. The challenge is similar to the one faced in the field of experience or emotional design (e.g., Ozkaramanli & Desmet, 2012; Desmet et al., 2016). Like symbolic meaning, emotions are subjective and cannot be designed directly. At the same time, a variety of useful tools are available to support designers in addressing the emotional impact of their designs. Rather than being prescriptive, these tools are inspirational. Some inform designers about the variety of emotions, the process of emotions, and manifestations of emotions (e.g., Yoon et al., 2016). Others can inspire by offering multiple examples of how products have evoked certain emotions in real-life experiences (e.g., Desmet, 2012; Fokkinga & Desmet, 2013; Huisman et al., 2013). Our current aim is similar.

We report a study in which designers and design researchers analysed existing products in order to identify design directions. Here, we refer to design directions as directed plans of action that can inform and inspire designers to include well-being related symbolic meaning in their design activities. The aim was to formulate a variety of design directions that, as a collection, shed light on the variety of well-being related symbolic meanings and provide inspiration for addressing these meanings in creative idea generation. The study resulted in 16 design directions, which are described below. In the general discussion section, we reflect on the implications of this study for the field of positive design.

4.2 Method (study 2)

In the previous chapter (chapter 3, study 1), we found that consumer products can support well-being with at least six symbolic meanings. These symbolic meanings, which represent the determinants of psychological well-being formulated by Ryff (1989), are:

1. *Positive relations with others*: products that symbolise meaningful and reciprocal relations and affiliations that provide a sense of belongingness;
2. *Personal growth*: products that symbolise acceptance of past experiences or openness to new challenges, which afford a sense of maturity and development;

3. *Purpose in life*: products that symbolise personally significant goals that give a sense of purpose and direction in life;
4. *Environmental mastery*: products that symbolise social thriving and the ability to build a context that is suitable for personal needs and values;
5. *Autonomy*: products that symbolise self-reliance in thought and action, and a sense of authenticity; and
6. *Self-acceptance*: products that symbolise self-compassion and a positive self-image.

To explore which design directions can embody these six meanings, 50 existing products were analysed. First, 50 products were selected that were interpreted (by design researchers with expertise in well-being) as having the ability to support one or more of the six symbolic meanings. Next, in individual sessions, these products were discussed with seven designers and design researchers. They were asked to categorise and analyse all products. They reflected on the relationship between the designs and the symbolic meanings, hypothesised what design decisions may have supported that relationship, and, based on these considerations, formulated design directions.

4.2.1 Stimuli collection

In order to select the 50 product examples used in this study, three expert researchers (see Table 7) collected 100 product designs that they considered to be examples of products to which well-being related symbolic meaning could be attributed. Potentially, any product can gain symbolic meaning through its evolving relationship with the user. However, in this procedure we were looking for products that seem to have been designed specifically with the well-being effect in mind. The sources for images and descriptions were well-established online design blogs, such as *Dezeen* (<http://www.dezeen.com>), *Design Milk* (<http://design-milk.com>), *Yanko Design* (<http://www.yankodesign.com>), *Core 77* (<http://www.core77.com>) and *Mocoloco* (<http://mocoloco.com>). From the blog posts, they retrieved, as much as possible, objective descriptions about the product, avoiding personal opinions. Meaning-related keywords were used in the search engines of the design blogs, such as the six symbolic meanings and other descriptors like 'symbolic meaning', 'sentimental value', 'cherished possessions', and 'meaningful interactions'. Furthermore, specific types of meaningful possessions were used as search

keywords, such as 'heirlooms' and 'souvenirs' (for the complete list of keywords see Appendix 4).

Table 7. Profiles of two sets of experts who collected and selected the product examples (each expert code refers to a different individual).

Stage	Code	Qualification	(*) Age	Gender	Role	(*) Refereed publications
Initial collection of 100 product examples	EX01	PhD in Industrial Design Engineering	42	Male	Professor in Design for Experience; researcher in Design for Emotion and Positive Design	125
	EX02	PhD in Industrial Design Engineering	37	Female	Associate professor in Consumer Research; researcher in Product Attachment	55
	EX03	MSc in Product Design	30	Female	Design researcher in Positive Design	4
Selection of 50 product examples to be used as stimuli in the study	EX04	MSc in Industrial Design Engineering (Design for Interaction)	31	Male	Researcher in Design for Rich Experiences	12
	EX05	MSc in Industrial Design Engineering (Design for Interaction)	30	Female	Researcher in Design for Dilemmas	6
	EX06	MSc in Industrial Design Engineering (Design for Interaction)	35	Male	Researcher in Design for Emotional Granularity	6
	EX07	MA in Creative Industries Design	27	Female	Researcher in Design for Loss	1

(*) at the moment the study took place

4.2.2 Stimuli selection

The collection of 100 items was narrowed down to a manageable size by selecting those with the closest links to well-being related symbolic meaning. This was done in a one-hour session with four design researchers with expertise in positive design (Table 7). A set of 100 stimuli cards was printed, each card depicting one of the symbolically meaningful product examples. The cards measured about 10 by 5 cm, and featured a photograph or concept image, information about the product, the name and designer of the product, and sources of image and text (Figure 14). The images were selected in order to be as clear as possible (e.g., in use, as a standalone), thereby making it quick and easy to understand the product example.

The experts were introduced to the six symbolic meanings and subsequently instructed to use these six to select 50 symbolically meaningful products. Specifically, they were requested to read the product descriptions and infer their effect on people's well-being. The experts were instructed to consider the products' ability to be a likely candidate for symbolic meaning attribution, which potentially could have a well-being effect. Initially the choice was individual, in three piles of 'yes', 'no', and 'maybe' respectively, followed by a discussion on the final collective selection. Examples of quotes retrieved from the discussion referring to the ability of a product to be a likely candidate for symbolic meaning attribution are: *"The user has to do something with it in order for it to work, and also the user is left to use his or her imagination. I would say this is meaningful because every time you see it, you also see something that you did with it and it makes it personal"* (EX04); *"Some objects don't connect to six symbolic meanings because they are meaningful universally. However, this one has the "self" element. It's about self-development"* (EX05). *"There are these kind of communication devices that intentionally restrict how people communicate. It's about making it somehow poetic, and that's what makes it meaningful"* (EX04).

Following the discussion, the experts were able to reach consensus about the final selection of 50 products. All six symbolic meanings were taken into account in the product selection. The final selection of 50 products with the respective descriptions can be found online: <http://symbolicmeaningresearch.weebly.com> (see also Appendix 5).



Figure 14. Examples of stimuli cards used in the study.

4.2.3 Participants

Following the stimuli selection phase, seven participants joined the study. Four were design researchers and three were designers (Table 8). The main criterion for selecting participants was that they had to have sufficient experience with product design (having at least a bachelor degree in industrial design). Recruiting both designers and design researchers aimed to bring both a practical and a reflective perspective on the study. A pilot session was conducted beforehand to refine the study procedure.

Table 8. Participant profiles of study 2.

Code	Qualification	Age	Gender	Years of experience in design	Role/field of work
DRP01	MSc in Product Design	29	Female	11	Design researcher in the field of Design Methodology
DP02	MSc in Industrial Design Engineering (Design for Interaction)	27	Male	10	User-centred designer
DRP03	MSc in Industrial Design Engineering (Design for Interaction)	30	Female	12	Design researcher in the field of Positive Design
DP04	MSc in Industrial Design Engineering (Integrated Product Design)	29	Male	11	Industrial designer
DRP05	MSc in Design	31	Male	12	Design researcher in the field of Design for Sustainability
DP06	Bachelor in Engineering (Industrial Product Design)	35	Male	8	Industrial designer
DRP07	MSc in Industrial Design Engineering (Design for Interaction)	29	Female	10	Design researcher in the field of Co-Design

4.2.4 Procedure

The study was conducted in individual sessions, which were structured in two parts (taking on average 3 hours and 50 minutes), preceded by an introduction to the research and the well-being related symbolic meanings: part 1, the categorisation of product examples in the meaning categories; and part 2, the analysis of the resulting groups and exploration of potential design strategies, and elaboration of specific meaning-driven design directions. The study was split into two sessions held on different days, in order to keep the tasks feasible for the participants.

Three days before the study, all participants received the selection of 50 product examples in the form of stimuli cards. Each card contained a photograph or concept image of the product and textual information (see Figure 14). Participants were sent the designs before the session to provide them with the opportunity to familiarise

themselves with the designs. They were instructed to take some time (as much as they needed) to get acquainted with the designs by looking at the pictures and reading the descriptions on the cards. We decided to include this step in the procedure because we expected that the participants would feel overwhelmed if we asked them to get acquainted with the designs at the start of the session.

During the introduction (approximately 25-30 minutes) the researcher explained the framework of six symbolic meanings, and provided a short summary of each category for the participant to read, including examples of stories of meaningful products for each symbolic meaning (see chapter xx). The framework categories were presented in the form of cards (in a similar format as the product example cards) to provide the participant with a visual reminder of the symbolic meanings.

Next, the 50 product example cards were provided, and the participant was instructed to go through them and check if all examples were clear, and to indicate anything they found ambiguous. This lasted for about 10 minutes. Subsequently, the participant categorised the products using the six well-being related symbolic meanings. The participant was instructed to divide the product examples into the six categories quickly and intuitively, while vocalising his/her thoughts, and to use post-it notes to indicate examples that fit multiple categories. At this point, the participant was reminded not to fixate on specific features of the product examples, and instructed to focus on the essence of the designs. The categorisation task lasted approximately one to two hours.

Following the categorisation task, the participant engaged in exploring and uncovering preliminary 'design for well-being' directions. This lasted approximately two to three hours. Specifically, the participant was instructed to explore each group of categorised product examples, inferring what could have been the intended strategy behind each product or group. Once more, the participant was encouraged to vocalise his/her thought process, and to write keywords and possible strategies embodied in the products using post-it notes. During the categorisation and analysis exercises, participants intuitively created sub-groups according to the perceived approaches of the products in terms of symbolic meaning. Once all the categorised groups were analysed, the participant paired similar approaches into better-defined, potentially promising design directions and identified multiple examples to illustrate them.

4.2.5 Data analysis

The sessions were recorded with video and photos. The tasks were conducted thoroughly, and the participants seemed satisfied when they had finished; each generated 10 to 30 design directions. The produced design directions were analysed by the main researcher using the 'Gioia methodology' (Gioia et al., 2012), which offers a well-guided generative analytical procedure. This methodology, which is based on the idea that qualitative data can be rigorous and systematic in the generation of new ideas, proposes three steps: grouping direct quotes from participants in first-order 'informant-centric' descriptions, organising them into second-order 'research-centred' themes, and refining these into new concepts. It has been used in several studies, mostly in the fields of administration, management and human relations (for an overview of examples, see Gioia et al., 2012). An example of the analysis of a product is presented (Table 9).

Table 9. Example of the analytical process of one product.

Product example	Examples of participant quotes	First-order descriptions (condensed)
<p>999bottles: '999bottles is a stainless steel bottle that includes three numbered dials around its base. Every time the user refills the bottle, he/she advances the dial a notch, adding up the number of plastic bottles saved, thus encouraging sustainable behaviour.' Text adapted from: http://999bottles.com/</p>	<p>'The numbers themselves give you a clear sense of progress, it's measured'; 'It somehow enables you, makes you more consistent, makes it easier and more consistent. When you know how you are doing, you can measure your progress to feel more confident'; 'The brief would be to make the motivation or the goals tangible, that you can count it, or that you can grasp it'; 'The strategy here is about giving subtle rewards'; 'It's all about having an external trigger that triggers intrinsic motivation. The trigger, in this case, is a subtle reward or seeing the numbers, but it can be anything'</p>	<p>The product helps to track progress; Makes user consistent and confident in a sustainable lifestyle; Reflects achievements by visualizing growth or good behaviour; It is designed for intentional behaviour by giving feedback to the user (e.g., allowing the user to control choices, keep track of progress, providing challenges).</p>

In this example, participants discussed a product and tried to infer a possible underlying design strategy by analysing its features and affordances, its commercial promises, and its potential effects on the owner's well-being. The result is a strategy that can be used in other product typologies with the aim of producing a certain effect. For the analysis, participants' descriptions of preliminary design directions on post-it notes were used as units of analysis, and audio recordings were used as a complementary source to clarify any ambiguity.

These 'first-order' descriptions (using participant-based terms) were combined according to their semantic similarity and simplified while still preserving the core meaning intended by participants. The first-order descriptions were then abstracted into 'second-order' themes (using terms and concepts constructed by the researchers) that aimed to better outline clear and usable design directions. This process was conducted in an iterative way and by simultaneously considering all the participant descriptions, to ensure that data saturation had been reached, that is, to ensure that all possible themes were generated, and that they were not ambiguous or likely to be divided into new or sub-directions. Lastly, the themes were narrowed down to one or more well-defined and clear design directions.

Table 9. (continuation)

Second-order themes	Design direction and description	Symbolic meaning
Facilitating a specific lifestyle (e.g., active/ fitness); Showing progress and achievement; Facilitating the achievement of goals; Providing support / feedback toward important goals or meaningful activities; Making the intangible, tangible; Making goals or achievements (and progress) perceptible, visual, measurable.	'Keep track of progress': by providing visual feedback on progress towards personally significant goals.	Purpose in life

4.3 Results and discussion

In total, the coding process resulted in 16 design directions (Table 10). In this section, the design directions are explained and illustrated with product examples, and their potential effects are discussed along with the relevant literature.

4.3.1 Design directions for the symbolic meaning of positive relations with others

The symbolic meaning of positive relations with others symbolises quality relations and affiliations that contribute to a sense of belongingness. Two of the resulting design directions aim to trigger this symbolic meaning:

1. Support meaningful affiliations;
2. Embody characteristics of a group.

‘Support meaningful affiliations’

The design direction ‘support meaningful affiliations’ aims to facilitate the practice of group or community activities. It suggests that by making such practices more accessible, a product can gain the value of belongingness and thus support well-being. The proposed design direction relates to the desire to form social attachments and to feel inclusion, which is linked to a fundamental human need for belongingness (Baumeister & Leary, 1995). This sense of belongingness can be supported in different ways: for example, through group or community activities in which there is a recognition of membership, or through activities associated with belief and spirituality, which do not necessarily imply the physical presence of a group, but still support the sense of feeling part of something bigger than the self (Mehta & Belk, 1991; Widman et al., 2009). A product that provides guidance and simplifies or provides easier access to group or community activities can encourage a person to cultivate such meaningful affiliations and is thus conducive to gaining a symbolic meaning related to those positive relations, provided that the activity the product facilitates and the group it represents are of emotional relevance to the person.

Table 10. Summary of the resulting design directions.

Symbolic meaning	Design direction	Description
Positive relations with others	Support meaningful affiliations	by facilitating the practice of group/community activities
	Embody characteristics of a group	by using unique characteristics of the groups the user belongs to (e.g., culture, profession)
Personal growth	Support active personal development	by providing a platform for active reflection on lessons learned and future expectations
	Embody personal growth	by focusing on adaptability to accommodate physical and/or psychological change
	Support acceptance and growth from past experiences	by providing a tangible representation of the passage of time
	Enhance memories	by offering a positive context or activity to reflect on memories of loved ones
Purpose in life	Encourage positive change	by providing an external trigger that suggests beneficial activities or behaviours
	Provide a sense of control	by allowing the user to manage personally significant goals, or to eliminate obstacles in their fulfilment
	Keep track of progress	by providing visual feedback on progress towards personally significant goals
Environmental mastery	Support multi-sensorial communication	by translating messages into a sensorial experience
	Provide a context for meaningful interaction	by making use of the context or limitations as an advantage
Autonomy	Destigmatise	by enhancing the aesthetic qualities of physically enabling products
	Design for mindfulness	by slowing down processes or disclosing mechanisms behind products to promote mindful living
	Redirect the user's attention	by designing an intervention that requires attention from the user to distract from negative situations
Self-acceptance	Allow shared transformation	by providing tools for user input at an aesthetic and/or functional level
	Allow self-expression	by providing a tangible platform to wear, share or display personally significant ideas

An example of a product that can illustrate this design direction is the EL Sajjadah (Figure 15), designed by Soner Ozenc (Soner Ozenc Product Design Studio). This product supports meaningful affiliations by facilitating the practice of community activities. It is an electroluminescent praying carpet with a built-in compass. The carpet lights up when facing Mecca, and recreates the atmosphere of a mosque through light and printed patterns.



Figure 15. EL Sajjadah by SOPDS. Image reproduced with permission.

Study participants identified the potential of the (inferred) design strategy of this product in the following way: *'It is an enabler for personally significant values or goals. In this case, religion is a value, it's a big value and it's also a goal that you want to obey, so you do things that make you part of that religion'* (DRP03). *'You belong to a group, and the product is allowing you to perform the activity that relates you to a group'* (DPO2).

'Embody characteristics of a group'

The design direction 'embody characteristics of a group' can be manifested by making use of unique features of meaningful groups a person belongs to (e.g., culture, profession). It suggests that by using familiar references that reflect social identity, a product can gain a symbolic meaning to the person and thus support their well-being. Like the previous design direction, it relates to the human need for belongingness. Moreover, it builds on the idea that products have an important role in symbolising group affiliations, and in the construction and communication of social identity (Belk, 1988; Ledgerwood et al., 2007). When considering this design direction, designers can, for example, focus on specific features of a culture's craftsmanship and folklore, on institutional imagery and subculture imagery, or even on personal characteristics (like being left-handed) to generate identification

with a product and increase its value to the consumer. An example of this is the El Botijo (see <http://www.monicathurne.com/?/projects/elBotijo>), designed by Monica Thurne and Mariana Lerma (Wowqstudio Design Collective). This product is a water container made of unglazed ceramics that cools water without refrigeration, even in warm weather. It is a redesign of the traditional Spanish water container, keeping its materials and function. Besides being a functional product, this vessel can be seen as a material repository for traditional artefact production techniques and social practices, and embodies group characteristics of Mediterranean culture. Study participants mentioned the potential of this design direction when referring to El Botijo: *'The material is used to portray a culture. It portrays the art that has been there for ages. The function even is indicative of a culture'* (DRP01). *'It's about taking a cultural reference to make it into something that you can carry, you can have with you as a part of your identity'* (DPO2).

This design direction is linked to the idea that consumer goods can have deep cultural meanings (McCracken, 1986) and that using cultural references in design is a way to preserve the heritage of people and extend it to other contexts (Lin, 2007). Furthermore, having a sense of belonging to one's community has been found in previous research to be a strong predictor of well-being (Leung et al., 2011). A product that symbolises such meaningful affiliations can remind a person of that kinship or membership and encourage feelings of belongingness, thereby supporting their well-being.

4.3.2 Design directions for the symbolic meaning of personal growth

The symbolic meaning of personal growth symbolises the acceptance of past experiences, openness to new challenges, continued development and maturity. Four of the resulting design directions aim to trigger this symbolic meaning:

1. Support active personal development
2. Embody personal growth;
3. Support acceptance and growth from past experiences;
4. Enhance memories.

‘Support active personal development’

The design direction ‘support active personal development’ can be adopted by providing a platform for active reflection on lessons learned and future expectations. Such reflection activities, manifested in the form of diary-keeping, for example, have been shown to relieve stress and anxiety (Burt, 1994) and hold high transitional value (Sosin, 1983). The proposed design direction suggests that products that assist with personal reflection practices can gain an important symbolic meaning to the person, because they provide an intimate overview of their life: these products support the reminiscence of personal achievements, the contemplation of past experiences, and the projection of personal goals, thereby supporting well-being. Reflective practices — including reflecting on negative past events, mediated by tools (e.g., writing exercises), products or technology (interactive systems, social media, etc.) — have been shown to result in increased well-being (Isaacs et al., 2013; Mols et al., 2017).

To illustrate this, an example of a product that supports active personal development by providing a platform for reflection is the OWL: on the wisdom of life, designed by Elger Oberwelz and Yusuke Miyashita (Designs On/IDEO). It is a wall-mounted ‘time capsule’ that contains 80 tubes, representing the years in a person’s life (Figure 16).



Figure 16. OWL – on the wisdom of life by Designs on/IDEO. Image courtesy of IDEO, reproduced with permission.

Each year, the owner writes a reflection on the past year (placing it on the top row, visually representing the ups and downs) and a wish for the coming one (on the bottom row). This product also allows the whole family to participate in reflection on personal development, helping members to share their accomplishments and hopes. In the study, participants identified the potential of this design direction in OWL in the

following way: *'It has a component of self, but that may have nothing to do with having achieved important goals, actually, if you had failed in all your goals, this would still be about self-development'* (DRP03). *'You can specifically see the growth, or read it'* (DPO4). *'It enables the process of reflecting on past and future experiences, it provides a deliberate action to reflect, a mindful reflection action'* (DRP01).

'Embody personal growth'

The design direction 'embody personal growth' can be applied by focusing on adaptability to accommodate physical and psychological change, stimulating intentional behaviour of the user and the will to mature and develop further. When people grow older, their bodies change. When people go through certain life milestones, their ideas about the world and themselves change. Change is an inherent and desirable part of growth and development, because it is by adapting to new realities that people can thrive. Acknowledging and accepting change bolsters maturity, which has been shown to support well-being (Sheldon & Kasser, 2001). Furthermore, research on well-being has shown that reflecting on one's growth is not only a habit of happy individuals, but is also prescribed as a well-being enhancing exercise (Lyubomirsky, 2008; Lyubomirsky & Kurtz, 2008). A product that visualises change and personal growth may assist in such reflective practices. Products that allow a visual overview on personal growth can, by association, become valuable to the person and stimulate further growth, supporting the person's sense of accomplishment.

An example of a product that embodies personal growth by focusing on adaptability to accommodate physical and psychological change is the Weight Recorder (Figure 17) designed by Wu Weiche (Weiche Design Works). It is a weight chart that pregnant women can use to record their changing weight by drawing on a disk that can be preserved. It relates to the symbolic meaning of personal growth because it adapts to changes and records them, creating a tangible representation of physical and emotional experiences and thereby has the potential to gain symbolic meaning and support well-being. Participants in the study have discussed the product's potential to support well-being through this design direction: *'The product shows progress on something personal that is life changing'* (DPO6). *'It has an emotional connotation, but it is about emotional growth, embodying self-growth'* (DRP03). *'It is making it tangible,*

making the self-development of that person tangible, making the transition into something perceptible' (DP02).



Figure 17. The weight recorder by Weiche Design Works. Reproduced with permission.

'Support acceptance and growth from past experiences'

The design direction 'support acceptance and growth from past experiences' can be expressed by providing a physical representation of the passage of time that embodies and offers an overview of past occurrences, events, thoughts, actions, or experiences that have supported a person's development and maturity. To create a representation of time that is relevant for the target group, designers can consider different time scales to suit different people, and create metaphors that reflect those differences. Using metaphors can be a way for designers to create products that people find compelling (Hekkert & Cila, 2015).

This design direction suggests that having a physical reminder of the past year can help a person come to terms with positive and negative events. This object thereby gains a symbolic meaning related to maturity and growth and thus supports well-being. For example, designer Siren Wilhelmsen developed the 365 knitting clock, a 24-hour clock that produces a scarf over the course of a year to show the nature of time in a different manner (see <http://www.sireniselwilhelmsen.com/work.html>). It knits one complete circle of stitches every day and displays the time by the position of the thread. The incomplete scarf hangs from the clock, representing the time that has passed, and the ball of yarn represents the amount of time left in the year. After 365 days, the two-metre scarf is ready to be worn. By metaphorically carrying the previous year with them in the form of a scarf, the person also carries the good and bad experiences that happened in that time. A very positive year

can be worn with pride and confidence, whereas a negative year can be a reminder of perseverance and strength. In the long term, certain special years may be kept and worn to remember important moments. Past research has shown that reflective practices have a positive effect on health, both physical and mental, particularly in respect to depression and anxiety (Frisina et al., 2004). Even when the reflection is on negative events it can have positive results (Wilson & Gilbert, 2008). Participants identified the potential of the design direction through their discussion of the 365 knitting clock: *'It shows the passing of time. The generic clock tells you the time that it is now, this shows the time that has passed'* (DPO4). *'It's a passive kind of reflection'* (DRPO1). *'It takes this symbol, the very common concept of time, as the element. It's about emotional self-growth that applies to everyone'* (DRPO3).

'Enhance memories'

The design direction 'enhance memories' can be concretised by offering a positive context or activity to reflect on memories of loved ones. While also promoting the association with the symbolic meaning of positive relations with others, this design direction is closer to the symbolic meaning of personal growth due to the encouragement of reminiscence and reflection on memories linked to those relationships. Reminiscence — the ability to recollect good things — can be used as a form of therapy. Previous research has reported that reminiscence therapy can improve socialisation, promote a sense of accomplishment and decrease symptoms of depression (e.g., Bohlmeijer, 2007; Chiang et al., 2010). Activities of reminiscence therapy include sharing memories and life stories, recalling family history and positive relationships, and recalling transition moments and milestones. Products can enable immersive experiences that assist people in revisiting the impact of their memories (and enhance them) rather than in recalling objective circumstances of their past (i.e., merely pointing out objective information). This, in turn, can influence personal judgements about one's past and trigger a symbolic meaning linked to personal growth, which can support well-being.

One product that exemplifies this design direction is the Heirloom, by designer Nikki George Ferguson (see <http://design-milk.com/the-heirloom-by-nikki-george-ferguson>). The Heirloom enhances memories by offering an activity to remember and reflect on memories of loved ones. It is a device that allows a person to display a sentimental object of their own, and to record thoughts and stories about it so

that it can be passed down to the next generation. While admiring the object, the receiver/listener can turn the Heirloom dial to hear the voice of the loved one telling their story or a memory related to the object. This serves to encourage family members and loved ones to consider not only the way they saw and knew the owner and the object, but also to imagine how these memories will last beyond their own lifetime. Study participants discussed the potential of the product regarding the design direction in the following way: *'This is something you want to go back on, something to treasure. It gives you an emotional moment with this memory'* (DPO6). *'It creates a personal bridge between the past and the future through a personal object'* (DPO4). *'The product is giving you this level of deepness. It's not like looking at a photo, it's closer to the idea of video. It's about the level of feeling you can have from a product'* (DRP05).

4.3.3 Design directions for the symbolic meaning of purpose in life

The symbolic meaning of purpose in life symbolises personally significant goals and aspirations, and a sense of directedness. Three of the resulting design directions aim to trigger this symbolic meaning:

1. Encourage positive change;
2. Provide a sense of control;
3. Keep track of progress.

'Encourage positive change'

The design direction 'encourage positive change' can be put in practice by providing an external trigger that encourages beneficial activities or behaviours. A product that gives agency to a person to determine his or her personally meaningful goals in a simplified way, and also provides room for the person to determine whether he or she is able and willing to pursue them, is more likely to be effective (Ruitenbergh & Desmet, 2012). This design direction proposes that a product can be a catalyst that encourages a person to take positive action by providing personally meaningful feed-forward. Moreover, by symbolising a desired behavioural change, a product can gain symbolic meaning to a person. Past research has shown that setting specific goals increases motivation and encourages a positive attitude towards the

tasks it involves (Bryan & Locke, 1967). Furthermore, personal beliefs about will-power and one's ability to succeed have been shown to influence one's well-being (Bernecker et al., 2017). Therefore, incorporating a visual component into goal pursuit – which can be made tangible by a product – increases the chance of success, which in turn fosters well-being.

An example of a product that encourages positive change by providing an external trigger is the Blank Wall Clock by designer Martí Guixé (Alessi). The Blank Wall Clock provides a blank surface with white hour and minute hands, and allows the user to assign an idea to each hour by writing it down with a whiteboard marker (Figure 18).



Figure 18. Blank Wall Clock by Martí Guixé/Alessi. Photo: imagekontainer, reproduced with permission.

The uniqueness of the ideas people write down can elicit a very personal and powerful effect. When these align with personally meaningful wishes, dreams, or goals, the product becomes a source of inspiration and motivation for the person using it, potentially gaining the symbolic meaning of directedness and purpose, and thus supporting well-being. Participants in the study identified the potential of the product and its inferred design direction as follows: *'It's about designing for mindfulness though giving control. It is a subtle everyday reminder'* (DRP03). *'It really involves the user in his own motivation routine'* (DPO2). *'It reminds the user via cues of everyday objects. Giving cues to yourself in a ubiquitous way'* (DRP01). *'You are defining time, over and over again'* (DPO6).

'Provide a sense of control'

The design direction 'provide a sense of control' can be put in practice by enabling people to manage personally significant goals or eliminate obstacles to their

fulfilment. There is recognisable challenges people face when managing willpower: there must be a balance between the cognitive 'cool' system of thinking and the emotional and instinctive 'hot' system of doing. However, this balance is affected, and often undermined, by stress and the individual's ability to self-regulate (Metcalf & Mischel, 1999). Research has shown that forming a pre-commitment improves chances of success in goal achievement, but that on their own (e.g., with self-imposed deadlines) people do not achieve optimal results (Ariely & Wertenbroch, 2002). In light of that, products can act as tangible commitment devices by supporting willpower, promoting good habits and lessening dilemmas. The value of delayed gratification has been recognised by previous studies (Ryff, 1989; Doerr & Baumeister, 2010), but it is not without its challenges; products that can facilitate it (Pohlmeyer & Desmet, 2017) can thereby potentially gain a symbolic meaning related to control, directedness and purpose, which in turn can support well-being.

An example of a product that provides a sense of control by facilitating the elimination of obstacles in the pursuit of personally significant goals is the Kitchen Safe, designed by David Krippendorf and Ryan Tseng (kSafe) (Figure 19). The Kitchen Safe is a time-lock container that cannot be opened until the timer reaches zero. It allows people to have control over several situations, such as limiting unhealthy snacks, saving money by preventing mindless spending, unplugging from mobile devices or videogames, and cutting back on smoking. Study participants discussed the potential of this design direction through this product: *'This is about designing something to teach people the value of patience and self-control'* (DPO4). *'In the long term it helps build intrinsic motivation'* (DRP01). *'The strategy is to create a barrier. It creates symbolic meaning by motivating the person to stick to an important goal, it is done by eliminating whatever stands in the way of that goal. Eliminating the obstacles by creating a barrier. The designer can question: what are the obstacles, and how can I help eliminate them'* (DRP03).



Figure 19. Kitchen Safe by kSafe. Reproduced with permission.

'Keep track of progress'

The design direction 'keep track of progress' can be made concrete by providing visual feedback on progress towards personally significant goals. By feedback we mean an external response signalling progress towards a certain goal, with output, for example, at certain milestones or upon the completion of the goal. If a person aims to be more virtuous, such as by being more environmentally conscious, small steps can provide a sense of progress. Products that provide feedback on such steps can, by association, gain a symbolic meaning of directedness and purpose and thus support well-being. Depending on a person's goals and aspirations, the measurement of progress can vary in difficulty; nevertheless, past research has pointed out that having a sense of purpose is essential to keep people motivated (e.g., Amabile & Kramer, 2011). The way people interpret feedback is also a crucial aspect to consider when designing. It is plausible to consider that people unconsciously undermine their progress towards a goal by giving themselves permission to relax after reaching a certain milestone, because they estimate having done outstanding work and fail to predict the actual amount of work still required. Feedback, therefore, is not just informative, but also has emotional consequences. This is relevant when designing for well-being, because when the information triggers positive emotions (for example, when the feedback is only perceived as positive) it can be a powerful motivating factor.

An example of a product that helps people keep track of progress on personally significant goals by providing measurable feedback is 999bottles by Artefact (see <https://www.artefactgroup.com/work/999bottles>). It is a reusable durable metal bottle with three numbered dials that count the number of plastic bottles that are 'saved'. It works with a mobile application that informs the person about the specific

impact of different stages (e.g., ten bottles are the equivalent to the cost of the 999bottles, etc.). Together, the 999bottles and the application are designed to help people visualise the positive impact of their choices on the environment. Study participants pointed out the promising features of the 999bottles in regards to the design direction: *'It encourages people to be more sustainable in a quantified way. It keeps track of behaviour'* (DPO4). *'It makes the motivation tangible, that you can count it, or grasp it'* (DPO2). *'It's about giving subtle rewards. What happens with personally meaningful goals is that they are not so visible to you, you can easily push them back. So you need something that brings them more to the foreground, and this bottle does that'* (DRPO3).

4.3.4 Design directions for the symbolic meaning of environmental mastery

The symbolic meaning of environmental mastery symbolises the ability to manage or create a suitable environment to accommodate personal needs and values. Two design directions resulted that aim to trigger this symbolic meaning:

1. Support multi-sensorial communication;
2. Provide a context for meaningful interaction.

'Support multi-sensorial communication'

The design direction 'support multi-sensorial communication' can be put in practice by translating messages into a sensorial experience. Communication is an essential aspect of the creation of a suitable context for human flourishing. Face-to-face communication involves multiple modalities: verbal (words), para-verbal (tone) and non-verbal language, like touch, smell, and micro-expressions. From a design standpoint, this direction is interesting because a multi-sensorial approach can enrich the experiences people have with products (Schifferstein & Desmet, 2008; Schifferstein, 2011) and designers can manipulate all aspects of a product to influence the way it is experienced (Ludden & Schifferstein, 2009). From a user standpoint, research on the subject has indicated that product-mediated contact can effectively transmit affect, and is more powerful when it considers elements of human physicality such as touch and intentionality (Smith & MacLean, 2007; Lenay, 2010). Design interventions that consider these aspects can strengthen relationships and promote closeness (e.g., Visser et al., 2011).

This design direction suggests that by translating messages into sensorial experiences, a product can potentially gain symbolic meaning to a person by becoming a proxy of the intended receiver. People can more clearly convey emotions, more strongly react, and cultivate proximity even in a scenario of physical separation, than when using means of communication that rely on a simpler type of messaging. An illustrative example of a product that supports multi-sensorial communication by translating a message into a sensorial experience is the Elfoid P1 by Hiroshi Ishiguro Laboratory (Advanced Telecommunications Research Institute International) (Figure 20).



Figure 20. Elfoid™ by Hiroshi Ishiguro Laboratories, Advanced Telecommunications Research Institute International/ATR. Reproduced with permission.

This hybrid cell phone-robot concept is a simplified human figure that transmits voice and motion to convey human 'presence'. Supporting multi-sensorial ways of communicating represents an opportunity to enrich the message and the experience of receiving it by rendering it closer to a direct interaction and incorporating audio and/or kinaesthetic elements as a metaphor for intimate human behaviours. During the study, participants identified the potential of the design direction by referring to this product in the following way: *'It's a platform for communication, it's an exchange of certain behaviours'* (DRP03). *'It's an imitation of reality, mimicking motion'* (DRP01). *'It's a way to communicate presence and physicality. It translates a physical action into something else'* (DPO4).

'Provide a context for meaningful interaction'

The design direction 'provide a context for meaningful interaction' can be exercised by making use of the context or limitations as an advantage. This design direction is

closely linked to the essence of environmental mastery, which is the ability to find, adapt or create a suitable context to thrive in Ryff (1989). Design is traditionally characterised as a discipline of solving problems, concerned particularly with bringing the user or product from an insufficient state towards a problem-free 'neutral' stage. While this is relevant in many contexts, such as in healthcare, we believe that going beyond this can have a great impact on the users and their context. Converse to a problem-driven approach, a possibility-driven design approach aims for an impact in the positive spectrum of experience (Desmet & Hassenzahl, 2012; Jimenez et al., 2014). Designing a context by looking at its limitations not as problems to be solved, but rather as opportunities to be explored can generate new and innovative interventions. Meaningful interactions can occur between different persons, between people and products, and between people and their environment, for instance. Designers can help create this value by enabling people to reframe the perceived limitations in their environment. A design intervention that helps people make the best of the context, and turns limitations into potential advantages, can potentially gain symbolic meaning and thus support well-being.

To illustrate this, imagine a child with cancer, who is confined to a hospital environment. The child's strength and disposition vary according to the stage of treatment, and in certain moments playing is not only desirable, but necessary for adequate physical and psychosocial development (Frost et al., 2012). However, play can be a challenge in this setting. An example of a product that makes use of physical limitations in the context of hospitalised children to provide meaningful interactions is KonneKt (Figure 21) by designer Job Jansweijer (studio Elk). KonneKt is kit of shapes that can be attached to a window using suction cups (for individual play) or magnets (for group play). It enables children to play games with their peers, using the very windows that physically divide and isolate them — usually seen as a limitation — as a playground.



Figure 21. KonneKt by Job Jansweijer. Reproduced with permission.

The given example is, of course, relevant for the specific context for which it was designed; however, designers can consider a similar strategy for different contexts. Participants in the study recognised the opportunities in this design direction by commenting on KonneKt's interesting elements: *'These children have the motive for sharing and playing, and this product actually helps them under these challenging circumstances to do that, to actualize that value'* (DRP03). *'This product is enabling interaction between two users that cannot interact directly'* (DPO2).

4.3.5 Design directions for the symbolic meaning of autonomy

The symbolic meaning of autonomy signifies a sense of independence and self-reliance in both thought and action, and the ability to resist external pressures. Three of the resulting design directions aim to trigger this symbolic meaning:

1. Destigmatise;
2. Design for mindfulness;
3. Redirect the user's attention.

'Destigmatise'

The design direction 'destigmatise' can be put to use by enhancing aesthetic qualities of physically enabling products. Past research exploring the destigmatisation of assistive products through design (Vaes, 2014) has identified different levels of intervention: product-focused interventions (e.g., reshape a product meaning through advances in technology), people-focused interventions (e.g., endow the

product user with extra abilities), and culture-focused interventions (e.g., campaigns or interventions that educate the public or change their views). We propose, in complement, that enhancing the aesthetic qualities of assistive products, not only through technology, but also through the normalisation of their features, can generate a strong meaning of empowerment to the person using them. Overcoming a recognisable aesthetic of physically enabling products, i.e., predominantly white using metallic and plastic materials, and presenting them as general consumer goods can reduce their stigmatising effects (Correia de Barros et al., 2011) and even produce positive emotions (Desmet & Dijkhuis, 2003). The symbolic connotation of the product to a person's sense of autonomy with an added feeling of 'normality' can generate value that contributes to their well-being.

An example of a collection of products that aims to destigmatise by enhancing the aesthetic qualities of physically enabling products is the No Country for Old Men/Together Canes (Figure 22) by designers Francesca Lanzavecchia and Hunn Wai (Lanzavecchia + Wai).



Figure 22. No Country for Old Men/Together Canes by Lanzavecchia + Wai. Reproduced with permission.

This collection of canes is described as 'walking aids for living, not just mobility', which suggests that in addition to providing physical support, the products were designed to accommodate modern living, such as using mobile devices. Study participants recognised the potential of the design direction by discussing this product in the following way: *'This is really about making an object-based stigma into a beautiful intervention'* (DPO2). *'It empowers you to feel like you are in control'* (DRP01).

‘Design for mindfulness’

The design direction ‘design for mindfulness’ can be applied by slowing down processes or disclosing mechanisms behind products to promote mindful living. Fuad-Luke (2010) introduced a ‘slow design’ approach to improve and extend person-product relationships, through which the author proposed to explore greater awareness and sensibility regarding design, production, and consumption. In complement to this idea, the design direction proposes that, at a product level, designers can explore the mechanisms and processes that enable products to function, and expose or modify them to allow people’s agency and intentionality to play a role in product use. An example of a product that was designed for mindful use by disclosing its mechanism is the Standard Lamp, a part of the Standard Collection by designers Calen Knauf and Conrad Brown (Knauf and Brown) (Figure 23).



Figure 23. The Standard Lamp by Knauf and Brown. Reproduced with permission.

The lamp does not have an ‘on-off’ switch, so the person using it has to choose between two kinds of fixtures and place it in a copper tower to complete an electric circuit. In this product, the person’s agency and autonomy are evidenced because the processes that make the lamp function are not automatic, and the person has to intentionally perform them. The result is that the person builds a thoughtful relationship with the product, actively making decisions that usually would not be necessary, which fosters mindful and attuned living. This relates to autonomy because it contributes to a sense of self-reliance in the user by enabling them to understand the process and intervene in any part of it.

Previous research has recognised the slowing down or disclosing of processes behind products as a way to ritualise product use, which results in added value and

an improved experience (Fuad-Luke, 2010). In turn, this approach contributes to delaying gratification, which is a valuable aspect of well-being (Ryff, 1989; Doerr & Baumeister, 2010). Participants from the study identified the potential of this design strategy through the discussion of the Standard Lamp's features and effects: *'It's about designing something to help people reflect on everyday given things, objects, actions; to challenge people on actions that they would otherwise perform without thinking, by increasing effort'* (DPO4). *'It's about challenging assumptions, how you think of your mindset, your attitude, so it triggers something'* (DRP03).

'Redirect the user's attention'

The design direction 'redirect the user's attention' can be put into practice by designing an intervention that requires attention from the person, thereby distracting from negative situations. Instead of solving a problem, this type of design strategy focuses on an opportunity that has great potential to improve people's lives, such as by fulfilling a need for relatedness (Desmet & Hassenzahl, 2012). This 'caretaking' role the person takes on with the product can temporarily decrease the attention they might be bestowing on negative situations, and promote feelings of competence and control, and thus potentially provide the product with a symbolic meaning related to autonomy. An (extreme) anecdote to illustrate this is a child with cancer, afflicted by a debilitating health problem and limited in most normal child-like activities. A design intervention that actively asks for the child's attention can potentially distract from the illness and restore a sense of autonomy by supporting the ability to be the caretaker as opposed to the one being taken care of.

An example of a product that does this is Liv, developed by a team of design students (Floris Plink, Hylke Visser, Josette Kuipéri, Leonard Moonen, Lotte Salomé, Saskia Mosterman, and Seungmin Lee) mentored by Marco Rozendaal, Aadjan van der Helm, and Chris Kievid (minor course Interactive Environments, Faculty of Industrial Design Engineering, TU Delft). Liv is an interactive creature that requires movement and social attention (Figure 24). Specifically, it emits sound and colour signals that indicate that it wants to be played with or wants social contact with other Livs. Liv aims to encourage more active and social behaviour from hospitalised children, which is expected to improve their emotional well-being.



Figure 24. Liv by TU Delft/Interactive Environments. Reproduced with permission.

By providing entertainment and stimulation, robots and other interactive devices can effectively improve the objective and well-being of healthcare users and decrease isolation (Robinson et al., 2013). Study participants discussed this product example and identified the potential of the inferred design direction: *‘It’s about relatedness. It’s like a Tamagotchi. It’s about the need to care for others and to be cared for’* (DPO2). *‘The object asks for attention. By demanding attention, you get distracted. It reminds the user in visual cues. It provides pretext for interaction’* (DRP01).

4.3.6 Design directions for the symbolic meaning of self-acceptance

The symbolic meaning of self-acceptance signifies the acceptance of positive and negative aspects of oneself, self-compassion and a positive self-image. Two of the resulting design directions aim to trigger this symbolic meaning:

1. Allow shared transformation;
2. Allow self-expression.

‘Allow shared transformation’

The design direction ‘allow shared transformation’ can be put in practice by providing tools for people’s input at an aesthetic and/or functional level. This design direction suggests that a product that invites people to invest time and effort in it can gain symbolic meaning. The transformation of the object can lead, to some extent, to the transformation of the person as well: someone who invests time and effort to modify something is also affected by it, such as by releasing their

creativity. In addition, an object that is transformed by a person retains marks of intentionality as a signature. Accepting the result of such transformation can help people have a positive view on the self ('I made this and it is beautiful/unique'). One way this design direction could be implemented is by facilitating temporary or permanent transformations of an intentionally incomplete product. Previous research supports the idea that unfinished products invite exploration, resulting in enhanced product attachment (Borjesson, 2009; Mugge et al., 2009). A longer and more meaningful relationship with a product can, in turn, offer clearer signals of self-image. Of the 16 proposed design directions, this is the one that most literally activates people to immerse their own narratives in a product and its features.

An example of a product that allows shared transformation by giving room for people's input at an aesthetic and functional level is the Meaning of Time by designer Bomi Kim (Figure 25).



Figure 25. The Meaning of Time by Bomi Kim. Reproduced with permission.

It is a clock mechanism without hands, which invites a person to insert a tangible element to complete the object, involving him/her in the aesthetic and functional outcome of the object. Participants in the study acknowledged the possibilities of this design strategy by discussing the product example in the following way: *'The user has significant influence on how the object ends up looking or behaving. The product wouldn't function without input. It's Do-It-Yourself' (DRP03). 'Unfinished product enables or supports your own creation. It enables expression. It has the goal of motivating a user to be more creative' (DRP01).*

‘Allow self-expression’

The design direction ‘allow self-expression’ can be put in use by providing a tangible platform to wear, share or display personally significant ideas. Products have been recognised as important vessels of construction and communication of personal identity (e.g., Belk, 1988; Ledgerwood et al., 2007; Wicklund & Gollwitzer, 1981), facilitating the creation of coherent self-narratives (Ahuvia, 2005). A product that can display and communicate changing ideas is able to adapt to the evolution of the self and remain relevant. Furthermore, the dynamic communication of those ideas, for example in a wearable and/or sharable platform, has the potential to strengthen the product’s relevance as a means for self-expression. A product that facilitates the expression of personally significant ideas can potentially gain a meaning related to self-acceptance, thereby contributing to well-being. Self-expression is an important aspect of individuality, because its result can be perceived as an extension of the self. When a person expresses himself or herself, the result of that expression teaches them about his or her abilities, which contributes to self-knowledge and can help with the acceptance of strengths and shortcomings. Furthermore, products can have a strong influence on our own sense of who we are (Ahuvia, 2005).

An example of a product that allows self-expression through a wearable and shareable platform is tshirtOS by CuteCircuit. This product is a programmable t-shirt that, among other features, can play songs and display social media information and both moving and static pictures (see <http://cutecircuit.com/tshirts>). It is controlled by a mobile application, and includes hardware such as a built-in camera, a microphone and speakers. Participants in the study discussed the potential of the inferred design strategy of tshirtOS in the following way: *‘It’s a wearable platform to express yourself’* (DRP01). *‘It’s a product for self-expression that can work as an icebreaker or conversation starter’* (DPO4).

4.4 General discussion

Previous research has postulated that attributing symbolic value to products is a way to support subjective well-being (Pohlmeyer, 2012). This type of value does not come from ownership, but from what products enable and represent to people (Pohlmeyer & Desmet, 2017): for example, the significance of a product can relate to shared values (Watson et al., 2002) and the contribution to something bigger

than the self (Donnelly et al., 2016; Escobar-Tello, 2016), to meaningful life events (Goodman et al., 2016), and to happy experiences (Yang et al., 2017) and thus the product contributes to well-being. In our research, we have taken on the challenge of developing design directions that aim to inspire designs that are likely candidates for symbolic meaning attribution.

Products can gain symbolic meaning and become symbolic representations if people associate them with specific experiences, memories or ideas. An initial exploration of that potential has identified well-being related symbolic meanings in products (reported in chapter 3 of this thesis). Nevertheless, an operationalisation of that knowledge can make it more useful as a direct source of inspiration in design processes, because symbolic meaning can be somewhat abstract and designers can benefit from having clear and specific directions for how to achieve this in practice. In this chapter we reported a study that explored and analysed existing products, and, based on the perspectives of designers and design researchers, inferred meaning-driven design directions. We focus on the potential universality of design for well-being, trying to produce general principles that provide a systematic way to work, and from there address individual concerns of specific users and contexts. The study resulted in 16 design directions that aim to trigger six symbolic meanings. Two design directions support positive relations with others; four of the design directions support personal growth; three design directions encourage purpose in life; two design directions encourage environmental mastery; three design directions support autonomy; and finally, two design directions encourage to self-acceptance (for an overview and details see Table 10).

4.4.1 Reflection on the findings

The current chapter contributes to positive design with an initial exploration of what design directions can support designers in attempts to design for six well-being related symbolic meanings. Symbolic meaning is constructed by unique personal narratives. As such, a common denominator in the presented design directions is the agency of the owner in the construction of meaning. Because meaning is attributed by the individual, it emerges in the person-product interactions and may differ between people. As a consequence, a product's symbolic meaning may be unexpected or unintended by the designer. We therefore consider our study results to be directions to design *with* symbolic meaning (for symbolic meaning

attribution), rather than designing *for* symbolic meaning, i.e., designing prescriptively for a specific symbolic meaning. In doing so, we recognise the person's agency in the construction of the product's meaning. This co-construction of meaning (between the designer and the user) can be exemplified with a product that is intentionally designed to be incomplete, with the aim of having the owner finish it, therefore allowing a personal narrative to be inscribed and the corresponding meaning to be created. Rather than designing meaning, the designer develops products that are likely candidates for symbolic meaning attribution by asking for the person's attention, care, functional and aesthetic input. Eventually, the person's narratives are the key elements that bring these design interventions to life, build their symbolic meanings, and make them support well-being. While it has not been tested, products that invite their owners to ascribe meaning to them seek to overcome or minimise the difficulties of design with symbolic meaning, and its person- and context-dependency. Even though each proposed design direction emerges from one symbolic meaning and is presented in that category, it is possible to recognise that several directions fit multiple symbolic meanings.

4.4.2 Limitations and opportunities for future research

In the current study, we inferred what design strategies were employed by the designers of the selected product examples, referring back to a framework of symbolic meaning. Future research can interview these designers about their actual intentions, which might disclose other or additional possibilities (see also the work of Da Silva et al., 2015).

Our aim is that the products developed with the design directions can help people become more aspirational, anticipate experiences and then experience them, and recall and share them with others. In such a way, the design direction can support subjective well-being, which could then be assessed. The assumptions that guided the interpretation of results about the effect of the design directions on end-users are based on the informed opinions and predictions of design experts, supported by existing literature. To complement and strengthen our results, future research can consider observing these effects in real situations. On a more general level, future research on positive design could focus on tools for assessing the effect of the designed interventions on people's well-being.

In this study, we used durable consumer goods, such as household items, as a reference to construct the design directions. Future research can explore other types of products or design domains, such as spaces or buildings. Other applications, such as intangible goods or services, may also benefit from the design for well-being directions, as these can provide pathways for designers to develop better experiences for different users, for example in online environments, in mobile applications and in a retail context.

In our study, we enabled the participants to familiarise themselves with the 50 product designs three days before the study by sending them cards with the designs. This procedure allowed us to use a large pool of stimuli, that is, more designs than we could have included if we would have confronted the participants with the designs at the start of the session. This procedure may have influenced the results; participants may have had other or additional ideas and responses in a first encounter with the designs. Future research can consider such first impressions. In addition, due to practical reasons, we had to rely on pictures of the products, which is a limited representation of the designs. Ideally, future studies will include real products rather than, or in addition to, stimuli cards with pictures and descriptions. The instruction-based strategy that was used in the study to produce design directions might also have had consequences such as fixation on certain solutions or being too leading. Follow-up studies can be conducted to minimise this effect.

We have yet to test how usable the design directions are in a real-life design context. Presenting design directions to design professionals is valuable both in practice (for novice and expert designers, see Daalhuizen & Badke-Schaub, 2011) and in education (Lim et al., 2011). Design directions can make complex processes easier, such as switching between design solutions (Daalhuizen & Badke-Schaub, 2011), and sensitise designers about a certain topic or theory. Further research can be conducted to apply our findings and extend the existing knowledge about the role of design in well-being.

In the next chapter, we will look at ways to effectively communicate the results of this research to designers. A quick exercise in a design class with about 30 novice designers indicated that the design directions were clear and easy to use; however, it is necessary to understand how designers perceive and use, or envision using, the design directions to determine how these need to be presented.

CHAPTER 5: Development of a toolkit for designers

5.1 Introduction

In chapter 3 we identified six well-being related symbolic meanings in products, based on Ryff's (1989) determinants of psychological well-being (positive relations with others, personal growth, purpose in life, environmental mastery, autonomy, and self-acceptance). While these six types of well-being related symbolic meanings can be interesting to analyse existing products, they are too abstract to be applied as a source of inspiration in design processes. As a result, in chapter 4 we formulated sixteen design directions (see Table 10), distributed over the six symbolic meanings. These design directions are aimed at supporting the ideation phase of the design process.

Despite these sixteen design directions being more concrete, it remains unknown how they can best help designers. We anticipate that merely providing the design directions in the form of a list is not the most optimal and inspirational way to communicate them or use them. Whether designers successfully use design directions strongly depends on how such information is provided. Past research on

This chapter was previously published as: Casais, M., Mugge, R., & Desmet, P.M.A. (2016). Using symbolic meaning as a means to design for happiness: The development of a card set for designers. In P. Lloyd & E. Bohemia (Eds.). *Proceedings of DRS2016: Design + Research + Society - Future-Focused Thinking*, Vol. 4 (pp. 1553-1571). London: Design Research Society.

representing and displaying information for designers (Sleeswijk Visser, 2009) reported that providing inspiration is one of the key aspects to trigger designers in their design process. A balanced amount of information should be provided to allow for a quick scan and intuitive selection of the data; also taking into account that designers might appreciate the opportunity to deepen a topic. Furthermore, giving room and freedom to the designer has been indicated as essential, letting designers restructure the information and prioritize it according to their needs and context. Based on these insights, we believe that in order for designers to successfully use the sixteen design directions, these should be offered in a format that provides optimal support for the design process.

This chapter presents the development of a 'Design with Symbolic Meaning' tool: the SIM toolkit, which includes a card set and a website. The SIM card set aims to clearly communicate the six symbolic meaning categories and the sixteen design directions. The SIM website works as a companion, with product examples, real-life stories, and relevant literature to support the ideation of new designs. With the SIM toolkit, we aim to contribute to the dissemination of Positive Design, and to facilitate the development of design interventions that shape people's lives in more positive and meaningful ways.

Considering that design education and practice have different concerns (Daalhuizen, 2014), and therefore are likely to have different ways of using the developed card set, we explored the SIM toolkit in discussion sessions with design educators, design students, and design professionals respectively, to collect interesting and diverse recommendations, to improve it.

5.2 Development of a card set

Representing and displaying information for designers can be done in different ways. When considering a 'Design with Symbolic Meaning' tool for designers, the printed tangible format was initially chosen because it aligned with our view of the demands of design practice: allowing free interpretation on possible use and navigation, which gives the designer freedom. A printed format allows an easy overview of the information, as well as the flexibility for evaluation, comparison, and pairing of different elements of the displayed information. Some additional advantages of using a card set can be pointed out based on prior research (e.g., Lucero &

Arrasvuori, 2010; Bekker & Antle, 2011; Friedman & Hendry, 2012; Yoon, Desmet, & Pohlmeier, 2013). Namely, the same card set can be used in both design practice and research, as well as for communication and inspiration, both individually and in group settings. Furthermore, a card set can be a way to present different components of the same topic, such as eliciting conditions, personal anecdotes, physical or behavioural manifestations, analogous themes, application examples, etc.; allowing it to be used to understand a complex topic in a varied way. Through an iterative process, several versions of the card set were developed and tested, keeping in mind the limitations of the format.

5.2.1 Criteria for the card set

The initial SIM card set (Figure 26) was composed of sixteen design direction cards, each containing an explanation of the respective symbolic meaning. Product examples were used to illustrate each design direction, which had been previously selected (see Chapter 4 of this thesis, sections 4.2.1 and 4.2.2).

The card set was tested in a pilot study with six design students, which resulted in some initial recommendations. From there, we redesigned the card set with input from the research team. Various iterations were made to design a more effective card set.

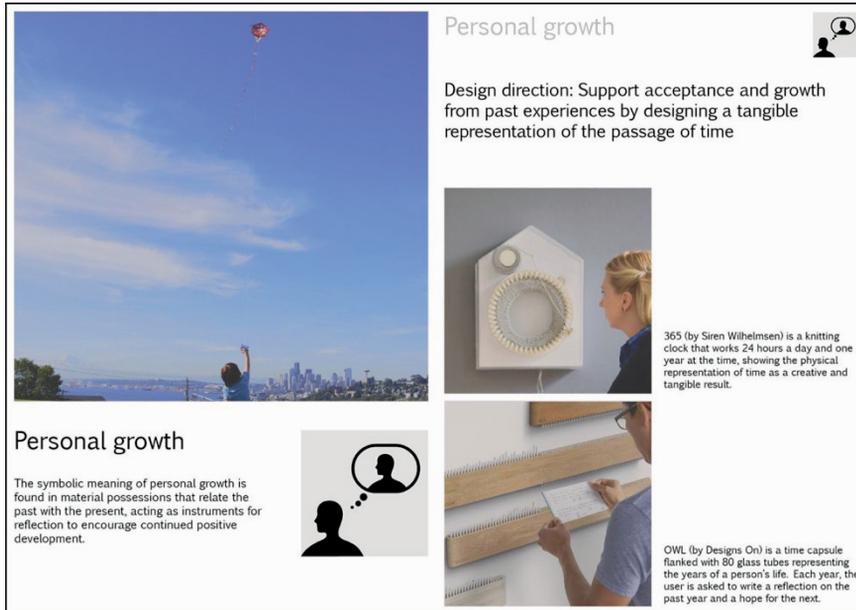


Figure 26. The first version of the SIM card set was composed of 16 cards. Each one-sided card (real size = 10,5x15 cm) described a symbolic meaning illustrated by an inspirational image, and contained a related design direction illustrated by two product examples.

During the iterative process some considerations were added to the card set requirements. Specifically, it should allow designers to manage and structure the information. Furthermore, the organization of the information should be facilitated by the use of icons or colours to cluster elements from the same group. A clarification of clusters should be provided in a manual. Furthermore, images of context, interactions or design solutions were thought to help with random idea generation. In addition, it is important to have an introduction to the use of the SIM card set for designers, suggesting ways to apply it. Based on these recommendations, the card set was optimized (Figure 27 and 28). For the improved version, an introductory card summarizing the research that informs the card set and describing the six symbolic meanings was added. Furthermore, one distinctive product example was used for each design direction. Eliciting questions aimed to encourage users to further reflect on the design direction were also added. In this improved version of the SIM card set, the design direction cards were colour coded according to the six symbolic meanings, in order to facilitate an easy structuring of the information.



Figure 27. Introduction card added to the improved version, with a description of the card set and of the six symbolic meanings.

Support acceptance and growth from past experiences.

Designing a tangible representation of the passage of time



(Personal growth)

Think about...

...what scale of time is relevant for your target?

...what tangible form can be relevant to express personal growth in time?

Personal growth.

Symbolizes transitions, acceptance of past experiences and continuous growth

The 365 Knitting Clock by Siren Wilhelmsen works for one year producing a wearable "past" scarf that can be carried out in the future.

Figure 28. Example of a design direction card (real size = 10,5 x 15 cm), with a product example, and two or three eliciting questions.

5.3 Exploring the SIM card set in design education and practice

Following the development of the SIM card set, an exploration of its use, format and content was conducted (study 3) taking into account the different perspectives from design education and practice. Exploring the card set among different design-related perspectives enabled us to gain insight into varied possibilities of use and ways to arrange the content, in order to optimize it. In this section, we report recommendations provided by three group sessions with design educators, design students, and designers. The sessions aimed to understand how different possible users of the card set could potentially apply it, and what challenges and limitations can be identified in the use of the card set.

5.3.1 Method (study 3)

Study 3 aimed to gather detailed and informed opinions about the SIM card set, its use, and ways to improve it. For this purpose, we conducted three group sessions with nine expert informants (Table 11), three in each group. In the session of group 1, two design educators participated, both with extensive experience in teaching at an industrial design engineering faculty, from two different departments. In the session of group 2, four final year master students participated, from two different design master programs. In the session with group 3, three design professionals participated, coming from different design practices; a small start-up company, a medium-sized engineering company, and a user research practice. In the sessions, participants were presented with the SIM card set (Appendix 6) and asked to explore it; discussing legibility, applicability, and relevance of the design directions in multiple scenarios.

In addition to the SIM card set, participants were given an A4 sheet with a list of the design directions, and an A3 sheet with all the cards, for a quick overview. Each session took about one hour, and was recorded with an audio device.

Table 11. Participant profiles of study 3.

Participants	Role	Experience	Expertise
Design educator 1 (DE1)	Associate Professor of Consumer Behaviour	10 years	Strategic product design research methodology, consumer behaviour, statistical analysis
Design educator 2 (DE2)	Assistant Professor of Industrial Design	13 years	Exploring interactions, design thinking and doing tools, meaning in everyday system use, health (ageing), mobility and ICT in urban environments
Design student 1 (DS1)	Master of Strategic Product Design	2nd year student	Involving users in development of smart grid systems
Design student 2 (DS2)	Master of Design for Interaction	2nd year student	Energy saving and domestic comfort
Design student 3 (DS3)	Master of Design for Interaction	2nd year student	Engaging children with Cystic Fibrosis to exercise
Design student 4 (DS4)	Master of Science Communication in collaboration with Master of Design for Interaction	2nd year student	Dialogue on opportunities and impact of new technologies
Design professional 1 (DP1)	Industrial designer	6 years	Industrial design, IoT, embedded systems, UX and business development (small company)
Design professional 2 (DP2)	Senior design engineer	7 years	Consumer goods for outdoor (previous position in large company); small scale sustainable energy products and auxiliaries (small company)
Design professional 3 (DP3)	Senior user researcher in customer experience	6 years	Market research; customer experience (medium sized company)

Participants were introduced to the SIM card set and made aware of the importance of their role (as design educators, design students, and design professionals) to be able to comment based on this specific point of view, skill set, and experience. Next, participants were asked to observe, handle, and read the cards. A group interview followed. Firstly, participants were asked to predict possible uses for the card set, based on the questions *'How do you envision applying the card set?', 'In what type of projects, stages, and scenarios would you use it?', 'What would be reasons to use it or not*

use it?'. For this set of questions, participants were asked to consider the specific nature of their work—different types of design practices, teaching in different design disciplines, following different design programmes. Secondly, participants were asked to focus on content, based on the questions '*Do you understand the card set?*', '*What is not clear?*', '*Is the card set inspiring (why/why not)?*'. Thirdly, participants were asked about the format of the card set, based on the question '*What do you think of the card set format?*'. Lastly, participants were asked about their ideas for overall improvements, with the questions '*What is missing?*', '*How can it be improved?*'.

5.3.2 Results

The audio recordings were analysed and coded by the main researcher (in the categories of 'opportunities,' 'limitations,' and 'improvements'). This section reports the main opportunities, challenges and suggestions identified in the discussion of the card set for designers.

Opportunities

The first point of discussion during the sessions was focused on understanding how different potential users of the card set envision applying it. Across the groups, five opportunities were mentioned:

(1) Potential value to any design project

Designing with symbolic meaning was considered a valuable approach, adding a layer of interest projects that involve people. Even in function- or problem-driven projects, the human component can be supported with this approach: '*I do think as a designer you are obliged to integrate as much of these aspects as possible. There are some basic needs that the product needs to provide, and then complementary to that, it can benefit the emotion, the feeling of happiness*' (DP2 = Design Professional 2, see Table 11).

(2) Tool for communication

Overall, the card set was described as having potential to aid the communication with different stakeholders, and in generating a common design vision: '*This can help to brainstorm as a team, to know that you are talking about the same thing. It's*

creating a common language amongst a team that has very different ideas' (DS2); 'This might also help when discussing with a client, to get a better hold on what they want to achieve with the project' (DP1).

(3) Source of inspiration for defining design goals

Focusing on more specific opportunities identified in the sessions, the design teachers stated that the card set represents a potential source of inspiration and a reference for students: *'Many of these can really help students to think in terms of what they want their products to achieve' (DE1)*. In that way, the card set can exemplify how far they need to go in their designs, helping students to define design goals and interaction qualities: *'These could all be typical goals that students could have' (DE2)*.

(4) Means to categorize and validate design concepts

For the design students in particular, the main opportunities the card set presented were related to the categorization and validation of design concepts: *'In the end it can be used to categorize and validate an idea' (DS1)*.

(5) Introduction to a complex topic

Furthermore, the card set was considered a convenient way to understand a complex and potentially overwhelming topic: *'If you are not really familiar with the topic and you dive into the literature it's like... and if you have a card set, it summarizes the most important things, so it's going to help' (DS3)*.

Limitations

(1) Use of complex language

The second point of discussion in the sessions concerned the challenges and difficulties of using the SIM card set. The challenges that were identified mostly overlapped in the three discussion sessions. In particular, the language was considered complex and resorting to jargon. Especially when using the SIM card set with different stakeholders, it is important to consider the use of a simple language that communicates clearly the topic and method: *'With consumers it would be difficult to use because they could have a hard time understanding' (DP3)*.

(2) Stronger link to well-being

Another challenge that was identified concerned the reduced emphasis on well-being. While the focus on symbolic meaning (related to well-being) was considered a valuable approach, the link to the well-being effect, specifically, was mentioned as needing to be made more evident: *'I know these are all strategies for reaching happiness, but shouldn't happiness also be here?'* (DS1).

(3) Use of more diverse examples

In addition, a limitation was identified concerning the use of only product examples in the cards, which leaves out other potentially inspiring and informative examples like brands, services, etc.: *'I find a limitation in the examples because they are all objects. I would like to have less obvious examples, like interactions'* (DE2).

(4) Addition of instructions and structure

Both the design teachers and the design students pointed out that a lack of instructions could potentially hinder the use of the card set, due to inexperience in using design tools: *'I would use them as in inspiration source, but I have no clue how to continue'* (DS3). This was also mentioned in the session with the design professionals: *'It needs structure to use with someone who is not a designer, so that it doesn't go off track'* (DP1). Another mentioned challenge referred to the categorization by symbolic meaning, communicated by the use of colour clusters. The pre-determined categorization by colour was regarded as expendable given that multiple design directions can be grouped in other diverse and context appropriate ways, without compromising the essence of the card set.

Improvements

(1) Showing more varied examples

The last discussion point concerned additional suggestions to the card set that were made based on the acknowledged opportunities and challenges. Firstly, participants suggested the use of more varied examples to convey the rich possibilities of design to intervene in real-life contexts. This could include specific interactions, for example, *'redesigning a hand-shake'* (DE2), intangible digital products, etc.

(2) Complementary data-base with examples and information

Relating to this idea, the participants suggested the use of a digital database in addition to the cards, to add variety of examples and information: *‘If you want to add something, some extra information or look for other examples, a website would be perfect for that, or an app’* (DS2). This would allow the designers to go deeper into selected themes, not only with more and diversified examples, but also with access to literature. In addition, it could potentially be open for contributions, thus preventing it from becoming obsolete: *‘I think it’s okay to tell the students “you get access to all this but we expect you to contribute with three products”*’ (DE1).

(3) Addition of instructions and structure

Another suggestion that was given especially by the design teachers and design students regarded a clear logic on how to prioritize and choose the cards to use, giving (more) emphasis on an introduction card or manual. An introductory element could also help contextualize the card set in a larger research agenda, point out directions for its use and navigation, and provide structure. In all groups, the suggestion to separate the different elements of the card set was made, to provide more flexibility in the use of the card set. Namely, the participants suggested the separation of the design directions, the design examples, and the eliciting questions, to allow the card set to be used in different stages of the design process and for different purposes: *‘The symbolic meaning combined with the design directions is really positioning – it’s a big influence. Maybe it should be a more open format that you can combine. If you presented like this, it feels like this is the right answer and that is the wrong answer’* (DP1).

5.4 The SIM toolkit

Design education and design practice have different concerns, which resulted in different recommendations. In order to build a card set that is comprehensive and holistic, but still effective in providing inspiration, a careful selection of the recommendations was made. In order to select the most fitting recommendations to implement, we considered the proposals from the three sessions that could assist

the quality of the resulting card set, without making it overwhelming. Keeping that in mind, the selected recommendations were as follows:

1. Include an introduction to the topic of well-being in a separate card. This aims to convey more clearly the link to well-being and the potential impact of the design directions;
2. Simplify the language used in the card set, especially in the design directions and their respective evocative questions. This aims to improve the clarity of the card set without compromising the essence of the text;
3. Separate the different elements of the card set; namely, the design directions, the symbolic meanings and the design examples. By doing this, we can improve the card set's flexibility and allow it to be used in diverse circumstances without compromising its core objective;
4. Rethink the colour clustering of the design directions based on symbolic meanings. The symbolic meaning cards can be used to propose certain design directions, while allowing freedom to cluster the design directions based on other themes, like the user's environment and needs;
5. Include suggestions of use and navigation. Especially for the novice designer or design student, this addition can facilitate the generation of ideas in a more directed way;
6. Add a digital companion to the printed card set, in the form of a database of examples and theory. This complementary source allows the designer to dive deeper into each theme, and be inspired by diverse examples.

Following these recommendations, we developed a more comprehensive and flexible card set (Figure 29).

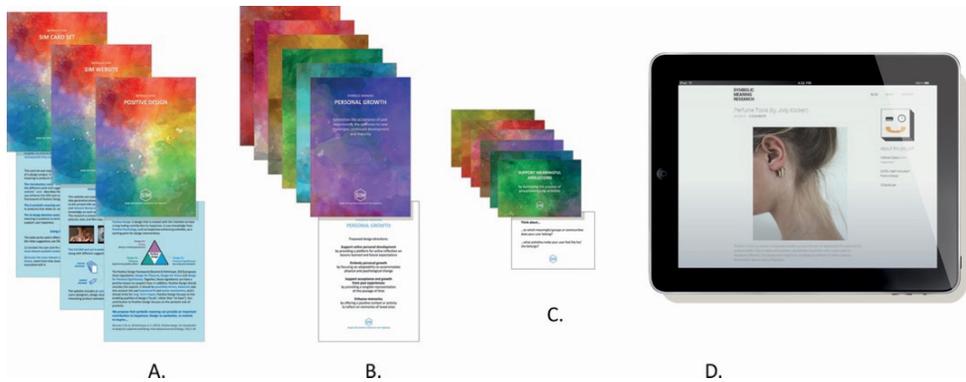


Figure 29. Overview of the resulting SIM card set: (A) the three introduction cards, (B) six symbolic meaning cards and (C) sixteen design direction cards, and (D) the SIM website.

The optimized SIM card set is composed of: (A) three introductions cards; focusing on the research of which the card set is part of, explaining the contents of the website companion, and describing the contents of the card set; (B) six symbolic meaning cards with a description of each symbolic meaning on the front side, and a list of relevant design directions on the back side; (C) sixteen design direction cards with the design direction on the front side, and a few questions about the user on the back side; (D) a website containing diverse design examples and relevant literature (see Appendix 7).

5.4.1 Introduction cards

The three introductions cards provide an entry point to the SIM toolkit (Figure 30). The first introduction card entitled 'Positive Design' provides a summary of the positive design framework (Desmet & Pohlmeier, 2013) and links it to the research on design with symbolic meaning. The second introduction card entitled 'The SIM card set' provides a small introduction about the research and summarizes the content of the card set, suggesting ways to use it. It indicates that the card set is meant for the idea generation phase of design projects and suggests two ways of selecting design directions: by 1) selecting the most relevant symbolic meaning and considering the suggested directions, and 2) by clustering the most relevant design directions according to the designer's own theme, selecting from that cluster, and discovering the symbolic meaning associated with it. The third introduction card,

named 'The SIM website', describes the features of the companion platform that extends and illustrates the card set.

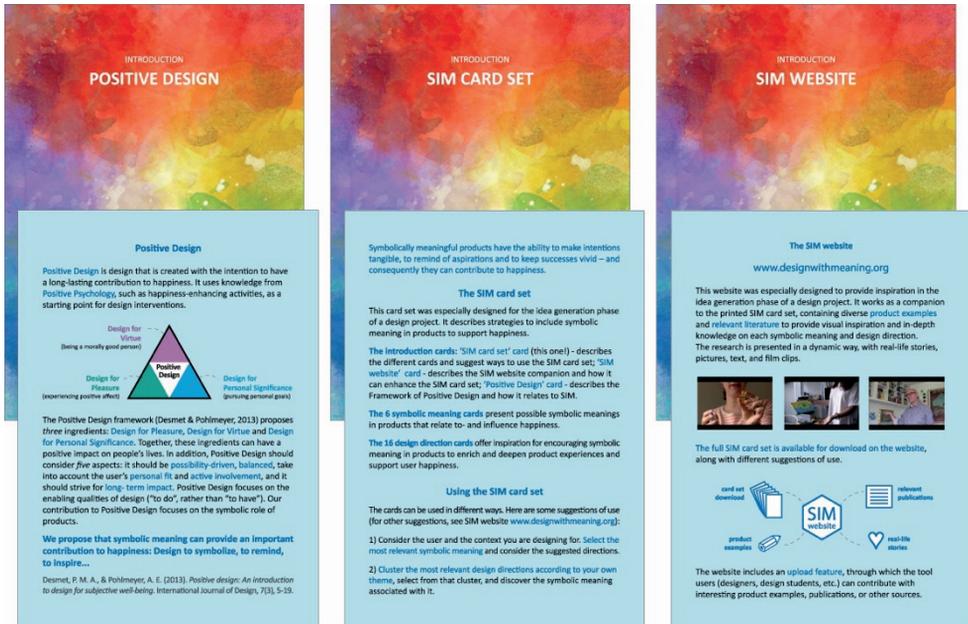


Figure 30. Overview of the introduction cards of the SIM card set (real size = 10,5 x 7,5 cm).

5.4.2 Symbolic meaning cards

In addition to the three introductory cards, the optimized version of the card set includes six symbolic meaning cards. Each symbolic meaning is communicated with a distinct colour. Namely: 'purpose in life' is blue, 'personal growth' is purple, 'self-acceptance' is pink, 'autonomy' is red, 'environmental mastery' is yellow, and 'positive relations with others' is green. The cards contain a description of each symbolic meaning on the front side, and a list of suggested design directions on the back side (Figure 31).



Figure 31. The symbolic meaning cards of the SIM card set (real size = 10,5 x 7,5 cm).



Figure 32. Example of design direction cards (real size = 7,5 x 5,3 cm).



5.4.3 Design direction cards

The design direction cards each describe a design direction on the front side and contain questions about the user on the back side, to allow the design to go deeper into the topic. Although the design direction cards are not strictly grouped according to the respective symbolic meanings, we opted to use the corresponding colour in a predominant way to provide some degree of structure (Figure 32).

5.4.4 The SIM website

The SIM website contains diverse design examples and relevant literature (Figure 33) (see <http://www.designwithmeaning.org>).

In addition, it contains the SIM card set to download, together with an introductory document that states:

‘Using design to improve the lives of people towards a positive flourishing state is the main premise of Positive Design. Our contribution to this growing field focuses on making use of the symbolic meaning that design can have to bolster human happiness. The SIM toolkit for designers (composed of a card set and a website) aims to inspire design that is open for symbolic meaning attribution and supports well-being.

Figure 33. Overview of the SIM website.

SIM toolkit: Design with symbolic meaning

This document summarizes the SIM toolkit for designers, composed of a card set and a website. The SIM card set aims to communicate six well-being related symbolic meanings (Casais, Mugge & Desmet, 2016) and 16 design directions (Casais, Mugge & Desmet, 2015), to inspire design that is open for symbolic meaning attribution and supports subjective well-being. The card set also describes the SIM website companion that contains additional resources.

The SIM card set:

The SIM card set is composed of three introduction cards, six symbolic meaning cards and 16 design direction cards. The three introduction cards provide an entry point to the SIM toolkit. The first introduction card entitled 'Positive Design' provides a summary of the Positive Design framework (Desmet & Pohlmeier, 2013) and links it to the research on design with symbolic meaning. The second introduction card entitled 'The SIM card set' provides a small introduction about the research and summarizes the content of the card set, suggesting ways to use it. Specifically, it indicates that the card set is meant for the idea generation phase of design projects and suggests two ways of selecting design directions: by 1) selecting the most relevant symbolic meaning and considering the suggested directions, and 2) by clustering the most relevant design directions according to the designer's own theme, selecting from that cluster, and discovering the symbolic meaning associated with it. The third introduction card, named 'The SIM website', describes the features of the companion platform that extends and illustrates the card set.

In addition to the three introductory cards, the SIM card set includes six symbolic meaning cards. Each symbolic meaning is communicated with a distinct colour. Namely: 'Purpose in life' is blue, 'personal growth' is purple, 'self-acceptance' is pink, 'autonomy' is red, 'environmental mastery' is yellow, and 'positive relations with others' is green. The cards contain a description of each symbolic meaning on the front side, and a list of suggested design directions on the back side.

The design direction cards describe a design direction on the front side and contain questions about the user on the back side, to allow the design to go deeper into the topic. Although the design direction cards are not strictly grouped according to the respective symbolic meanings, we opted to use the corresponding colour in a predominant way to provide some degree of structure.

The digital database—the SIM website—contains diverse design examples and relevant literature (<http://www.designwithmeaning.org>). It explains each symbolic meaning and each design direction with depth, referring to relevant research and theory that underpins and clarifies them. The SIM website is managed by the main researcher with support from the research team, to ensure that it is up to date and relevant. Furthermore, the website serves as a dissemination platform for the research, allowing users to download the card set, which is provided as open access.

Text adapted from: Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Using symbolic meaning as a means to design for happiness: The development of a card set for designers. DRS2016: Future-Focused Thinking, Brighton, 27-30 June 2016.

TERMS OF USE: The SIM card set is licensed under a Creative Commons Attribution-Non Commercial-No Derivs 3.0 Unported License. This license allows others to use this card set non-commercially, as long as they credit the authors and license their new creations under the identical terms.

ISBN/EAN: 978-94-6186-638-7

In all communication materials, please refer to: Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Using symbolic meaning as a means to design for happiness: The development of a card set for designers. DRS2016: Future-Focused Thinking, Brighton, 27-30 June 2016.

For more information visit: <http://www.designwithmeaning.org> ; (Delft Institute of Positive Design) <http://www.diopd.org>

*We are very interested in knowing more about your experiences using the SIM toolkit!
Share them with us: info@designwithmeaning.org*

References:

Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Stuff doesn't make us happy. Or does it? The role of symbolic meanings of objects in subjective well-being. Working paper, Delft University of Technology.

*Casais, M., Mugge, R. & Desmet, P.M.A. (2015). Extending product life by introducing symbolic meaning: An exploration of design strategies to support subjective well-being. In T. Cooper, N. Braithwaite, M. Moreno & G. Salvia (Eds.), *Product Lifetimes and the**

Environment (PLATE) Conference Proceedings. Nottingham Trent University: CADBE, 44–51.

Desmet, P.M.A. & Pohlmeier, A.E. (2013). Positive design: An introduction to design for subjective well-being. International Journal of Design, 7(3), 5–19.

The website structure is as follows:

- An introduction to well-being related symbolic meaning;
- Links to each symbolic meaning and the 16 design directions, with more information;
- Real-life stories of symbolically meaningful objects, with an option for visitors to upload their own;
- Design examples of products that are open for symbolic meaning attribution, also with the option for visitors to upload their own examples;
- Sections with information about the team, publications, contact and official affiliations.

To address the limitations of the printed card set (see section 5.2 of this chapter), the website provides a solution for issues of updateability and dynamic interaction, as well as the potential oversimplification of information. Specifically, the website was designed with an upload feature, through which users can contribute with new product examples, literature, or other interesting sources. The SIM website is managed by us, to ensure that it is up to date and relevant. Furthermore, the website serves as a dissemination platform for the research, allowing users to download the card set, which is provided as open source. A link to the SIM website will be provided in affiliated websites, such as the Delft Institute of Positive Design (<http://www.diopd.org>). Furthermore, a bookmarker was also created which contains the SIM website link, to disseminate the SIM toolkit on research and design events.

5.5 Conclusion

The main goal of this research was to produce a tangible design tool that can assist and inspire the development of design for well-being interventions. Through an iterative process, an inspirational resource for designers was developed in the form of a card set and a website (the SIM toolkit). The exploration of the card set within different perspectives of design helped to identify opportunities and challenges, enriching the resulting SIM card set and making it more complete and flexible. The limitations we found in the discussion of the card set are related to the depth with which participants explored the contents of the tool. On the one hand, participants did not apply the card set in their context, which might have brought up additional opportunities or concerns. On the other hand, the envisioning exercise might have reduced some constraints imposed by the participants' context, thereby allowing more ideas to emerge. Furthermore, certain limitations in the research set up can be observed. Namely, all education informants were from the same design faculty. Although we aimed at bringing together different departments and expertise, more variety in this group could bring other perspectives and distinct ways of teaching or studying design. Furthermore, the small size of the groups may also be considered a limitation. Finally, the lack of a more specific strategy to ensure that the SIM toolkit remains relevant and enticing to use can be seen as a limitation. An addition to the current dissemination strategy could involve for example, the integration of the SIM toolkit in Design education to prepare future designers.

The applications we foresee for the SIM toolkit (the SIM card set and the SIM website) are diverse. We believe that the SIM toolkit is potentially relevant for a diverse array of design projects, from consumer durables to services, connected products, etc. It may help to improve the quality of human-product interactions at different scales and provide a human element of personal significance in problem-driven projects. For example, it can be valuable to implement the card set in problem-driven projects that target especially vulnerable users, such as people requiring healthcare assistance, imprisoned, elderly, BoP (Base of the Pyramid), etc.

Following the development and optimization of the SIM toolkit, we now aim to investigate the effects of using it in varied projects, which we report in the next chapter.

CHAPTER 6: Assessing and refining the SIM toolkit

6.1 Introduction

The main research question in this thesis is: *what is well-being related symbolic meaning, and how can we apply it to design?* In this chapter, we address Research Goal 3 (see page 3): *to apply the knowledge in practice and gain feedback on its impact for the design process, to improve it.*

To address this aim, we developed a toolkit (i.e., a collection of design tools): we define design tools as instruments that assist in the design process and reinforce the skills of designers. The SIM toolkit aims to assist in the design process by inspiring and informing designers about well-being related symbolic meaning. Its primary purpose is inspiration and knowledge transfer, that is, it aims to inform and inspire designers in the ideation phase of the design process, and decrease the effort and time it takes for them to understand the complex topic of well-being related symbolic meaning and take strategic decisions about it. It contains design directions to support them in reaching well-being aims through the introduction of symbolic meaning in their design. In addition, it includes questions to understand the concepts and their link to the user/context. The SIM toolkit contains links to relevant information about the topic of well-being, real-life stories of material possessions with symbolic meaning, and the 16 meaning-based design directions (cf. chapter 4).

We developed the SIM toolkit through an iterative process, in which we asked design teachers, students, and practitioners from different types of design practices to envision using it. In this process, we collected insights on possible limitations and uses, and introduced a greater flexibility to accommodate different users and contexts. This translated into the segmentation of the toolkit into different parts, and opened up possibilities for its use. For example: to use the toolkit (or parts of it) to communicate about well-being related symbolic meaning, to use the design direction cards to create a design vision, or to use the questions to understand the end user better without necessarily focusing on a symbolic meaning. In sum, the different perspectives that were taken into account in its development give the toolkit the quality of being flexible and open in its use and navigation.

For the evaluation of the SIM toolkit,* we used a qualitative approach, specifically through workshops and interviews, focusing on the impact it has on the design process from the perspective of the designer(s) using it. With this study, we aimed to collect feedback from toolkit users about whether and how the toolkit works in the context of real-life design projects, focusing on its use and impact therein. Specifically, we were interested in understanding how the toolkit is applied, what advantages and limitations can be identified, and how designers view its influence on the ideation phase. Because we had specific considerations in developing the SIM toolkit — aiming for it to be easy to use, flexible, informative, and inspiring — the focus of our evaluation was on how its users (i.e., designers) perceive whether it works (or not) in those terms. The different design perspectives that contributed to the construction of the toolkit are interesting and valuable in its evaluation: design education, design research, and design practice represent different needs and understandings. Because no specific context was defined *a*

* There are several ways to evaluate tools and methods in design (cf. chapter 6 of Blessing & Chakrabarti, 2009), both qualitative and quantitative. For example, an evaluation can focus on the quality of the design outcomes, which can be assessed by expert ratings (Cheng, Mugge, & Schoormans, 2014). Alternatively, an evaluation can focus on more easily measurable criteria like efficiency, which can be operationalized by the time a designer takes to perform a certain task. In addition, the ability to communicate ideas in a team, to clients, or other stakeholders can also be the main point of evaluation (Tromp, 2013). The evaluation of a tool or method is thus dependent on the respective aim, the intended user(s), and the context of use.

priori when developing the toolkit , it makes sense to include the three mentioned groups in its evaluation.

6.2 Method (study 4 & 5)

In order to evaluate the SIM toolkit from these perspectives, we set up study 4 and study 5 (Figure 34). Study 4 was divided into 4A and 4B (two workshops with design students) and study 4C (a workshop with design researchers). Study 5 was setup as a collection of industry cases. In the following section, we describe the methodology of each data collection instance. For study 4, we chose a workshop format because it allows participants to go through different stages of the design process within a controlled time frame (see Fokkinga, 2015). For study 5, we collected design cases because designers and design teams deal with real clients in a non-manipulated time frame.

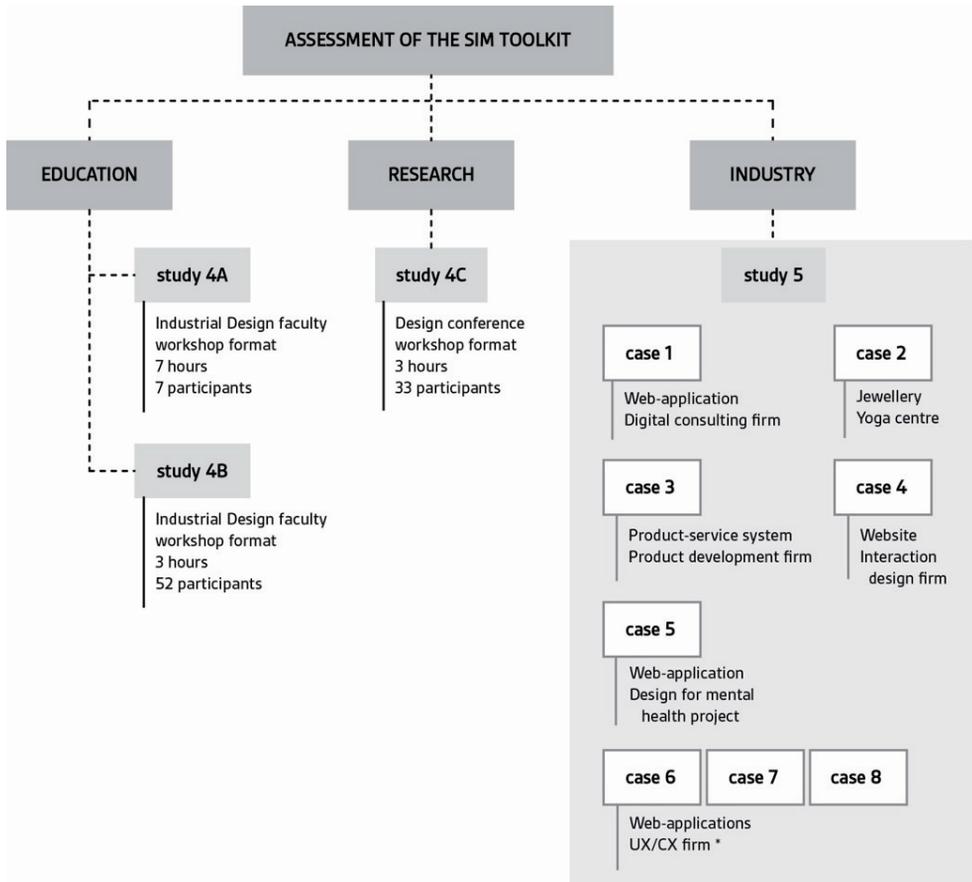


Figure 34. Overview of evaluation studies according to the operating field of design. (* UX = user experience; CX = customer experience.)

6.2.1 Study 4 method

Study 4 comprised of several workshops (Figure 35), which were prepared with a similar setup varying only in the design brief and the time available for the design exercise. The sessions were setup in three parts: sensitization, design exercise, and discussion.

Sensitization exercise

To introduce the session, the facilitator gave a brief presentation about the research (i.e., design with symbolic meaning in the context of positive design) and introduced the SIM toolkit. This took approximately 10 minutes. A sensitization exercise followed,

in which participants were asked to choose a symbolic meaning and to link it to a cherished object they owned, and then share its story. This helped prepare participants and make the terms used during the workshop familiar and relatable, especially the six symbolic meanings. This exercise took approximately 20 minutes.



Figure 35. Workshops with design students (study 4B) and researchers (study 4C).

Design exercise

Next, a design exercise took place. For this, participants were divided in teams (for details on the teams, see below: 'Participants'). Participants received one SIM card set per team and were asked to use the SIM website. The design brief for study 4A and 4B was the same. Two product categories were presented with two different user groups to create a design brief (Table 12). Participants were asked to: *'Redesign the product so that it provides a contribution to the well-being of your user.'* Some variations of these briefs have been previously introduced in design for well-being elective courses (master level), with rich and interesting results. In workshop A, participants were given 5 hours to complete the assignment. In workshop B, participants were given 1:30 hours.

Table 12. Two design briefs, each with a specific product type and user group, used in study 4A and 4B.

Product category	User group
Lamp/light	Single mother
Activity monitor/fitness tracker	Grandfather

For the design brief of study 4C several types of products (clock/chair/lamp) were available and distributed randomly through the teams. The design brief stated:

'Redesign the product for a 30/40-year-old design researcher who goes to conferences, to make it more predisposed for symbolic meaning attribution.' The target group was defined to match the participants themselves, and therefore make the exercise more relatable and easy. For this exercise, participants received a SIM card set (one card set per team) and were asked to use the SIM website. The exercise in workshop C took approximately one hour. The design exercise was followed by a short one-minute pitch presentation for each group and a plenary question round.

Discussion exercise

As a third part of the workshops, participants were asked to consider the use and impact of the SIM toolkit by discussing this with cue cards in groups (recorder using audio devices; one per team), taking approximately 20 minutes. The questions that were used to structure the discussion focused on the advantages and disadvantages of using the toolkit, and on problems and opportunities in its use and impact:

- Is the SIM card set used before (and stimulates the use of) the SIM website, as a complementary source of visual and textual information?
- What did you use the SIM toolkit for (with what aim)? For example, to communicate within the team, to create a design vision, etc.
- Was the content of the SIM toolkit clear (the symbolic meanings, the design directions, the questions, the website)? Is there anything unclear that can be improved?
- What advantages and disadvantages of the SIM toolkit can you point out?
- Is the SIM toolkit flexible and therefore predisposed to various uses? What aspects promote this flexibility?
- How did you use the SIM toolkit? Specifically, in which moments?
- Did you find the SIM toolkit practical and easy to understand? What aspects of it make it so?
- How was the toolkit applicable in your design project? How did your design project benefit from using it?
- Was the toolkit inspiring (the symbolic meanings, the design directions, the questions, the website)? What aspects of it make it inspiring?
- What did you learn from using the SIM toolkit?
- Can you envision other projects or contexts you could use the SIM toolkit?

- How did the SIM toolkit influence the outcome of the design project? Did you use a specific design direction(s) or specific symbolic meaning(s)?
- Would you use the SIM toolkit again, and would you recommend it? Why or why not?

The session ended with a debrief by the facilitator, wrapping up the workshops, summarizing some of the outcomes of the design exercise and of the discussion, and informing participants on other research done in the field of positive design. This took approximately 5 minutes.

Participants

Study 4A and study 4B correspond to two workshops with design students. The workshops were conducted in two industrial design faculties, in the Netherlands and in Belgium, respectively. The first workshop, study 4A (Table 13), was a full-day event (seven hours including a one-hour lunch break) with seven participants (4 Dutch, 2 Chinese, 1 Turkish). The second workshop, study 4B (Table 14) was a half-day event (three hours, including small breaks) with fifty-two participants (48 Belgian, 3 Dutch, 1 German).

Participants for these workshops were recruited through faculty networks and through specific social media channels (student and alumni groups). The requisite for the participation was having at least three years of experience with designing (i.e., being at least in the first year of a design master programme).

Table 13. Groups of participants from study 4A.

Group 1	4 participants (3 female, 1 male)
Group 2	3 participants (3 female)

Table 14. Groups of participants from study 4B.

Group 1	5 participants (2 female, 3 male)
Group 2	5 participants (2 female, 3 male)
Group 3	5 participants (5 male)
Group 4	5 participants (2 female, 3 male)
Group 5	6 participants (2 female, 4 male)
Group 6	6 participants (2 female, 4 male)
Group 7	6 participants (5 female, 1 male)
Group 8	4 participants (2 female, 2 male)
Group 9	5 participants (2 female, 3 male)

Study 4C was set up as a special session of a design conference. It was a 3 hour workshop, with 33 design researchers (22 women and 11 men). Participants were randomly assigned to 8 teams of 4 to 5 members (see Table 15).

Table 15. Groups of participants from study 4C.

Group 1	4 participants (3 female, 1 male)
Group 2	5 participants (5 female)
Group 3	5 participants (3 female, 2 male)
Group 4	4 participants (3 female, 1 male)
Group 5	4 participants (2 female, 2 male)
Group 6	4 participants (2 female, 2 male)
Group 7	4 participants (3 female, 1 male)
Group 8	4 participants (1 female, 3 male)

6.2.2 Study 5 method

Study 5 was set up as a collection of design cases. SIM card sets were distributed to design companies, and following approximately a 2-month period, semi-structured

interviews (or, when this was not possible, questionnaires were sent out) about the use and impact of the SIM toolkit were carried out, according to the availability of the designers. We used very similarly questions to the ones used in the workshops, however, focusing more on the different briefs and unique ways of using. The set of questions had the overall aim of identifying problems and opportunities and to understand the advantages and disadvantages of the toolkit. The questions were as follows:

- Please describe the profile (educational background, years of experience, and field of expertise) of the designers that were involved in the project.
- Were there other stakeholders directly involved? If so, what was their role?
- What did you use the SIM toolkit for (with what aim)? For example, to communicate within the team, or with other stakeholders (e.g., developers, marketers), to create a design vision, etc.
- How often in the project did you refer back to the SIM toolkit? In which stage(s)?
- Please describe how you used the SIM toolkit.
- Was the content of the SIM toolkit clear (the symbolic meanings, the design directions, the questions, the website)? Is there anything unclear that can be improved?
- Did you use other sources of inspiration when using the SIM card set?
- Where you stimulated to use the SIM website as a complementary source of visual and textual information?
- Did you find the SIM toolkit flexible and therefore predisposed to various uses? What aspects promote this flexibility?
- Did you find the SIM toolkit easy to understand?
- Was the SIM toolkit inspiring (the symbolic meanings, the design directions, the questions, the website)? What aspects of it make it inspiring?
- Was the SIM toolkit applicable in your design project? Would you consider it applicable for your type of design practice in general?
- How did the SIM toolkit influence the outcome of the design project? Did you use a specific design direction(s) or specific symbolic meaning(s)?
- Please reflect on the impact of using the SIM toolkit.
- Did using the SIM toolkit help you integrate symbolic meaning in your design?

- Do you believe you have a better understanding of designing for subjective well-being from using the SIM toolkit?
- What did you learn from using the SIM toolkit?
- Can you envision other projects or contexts you could use the SIM toolkit? Please list a few.
- Would you use the SIM toolkit again, and would you recommend it? Why or why not?
- What advantages and disadvantages of the SIM toolkit can you point out?
- When possible, please provide a short description of the design that resulted from using the toolkit, including some visuals to illustrate it.

Participants

For study 5, different design studios/companies were recruited. The requisite for the participating was that a design project was already defined (self-initiated or with a client) and accepting of using the toolkit. Six companies showed interest in participating, which resulted in a total of 8 design cases (Table 16).

Table 16. Participants from industry cases. (* specific details were not always disclosed; ** UX = user experience; CX = customer experience.)

	Client	Participant details (gender, experience, field of expertise)*		
Case 1	Digital consulting firm	Female	Novice designer	Strategic Product Design
Case 2	Yoga centre	Female	Novice designer	Industrial design
Case 3	Product development firm	Female	Expert designer	Industrial design
Case 4	Interaction design firm	Female	Expert designer	Interaction design
Case 5	Design for mental health project	Team (2 female, 1 male)	Novice designers	Graphic design
Case 6	UX/CX** consultancy	Team	Novice designers	UX design**
Case 7	UX/CX consultancy	Team (2 male, 1 female)	Novice designers	UX design
Case 8	UX/CX consultancy	Team	Novice designers	UX design

6.3 Data analysis

The analysis of the data collected in study 4 (4A, 4B, and 4C) and study 5 was done in parallel, because the questions given to evaluate the use and impact of the toolkit were very similar. The analysis was conducted by the main researcher. A five-step approach was followed for this analysis:

- In step 1, we transcribed the recorded discussions.
- In step 2, we selected sentences and created statement cards, physically placing these in category sheets (similar to the 'cutting-and-sorting' method described by Lincoln and Guba, 1985):
 - Statement cards had the following categories: 'use,' 'content,' and 'impact'
 - And the following sub-categories: 'advantages,' 'disadvantages,' 'problems,' and 'opportunities' (Figure 36).
- In step 3, we summarized results.
- In step 4 ,we extracted insights, asking the questions 'what does it mean?' and 'why did they say that?'
- In step 5, we mapped the insights on a scheme representing the toolkit, reflected on the findings, and generated a recommendation list for further improvement of the toolkit.

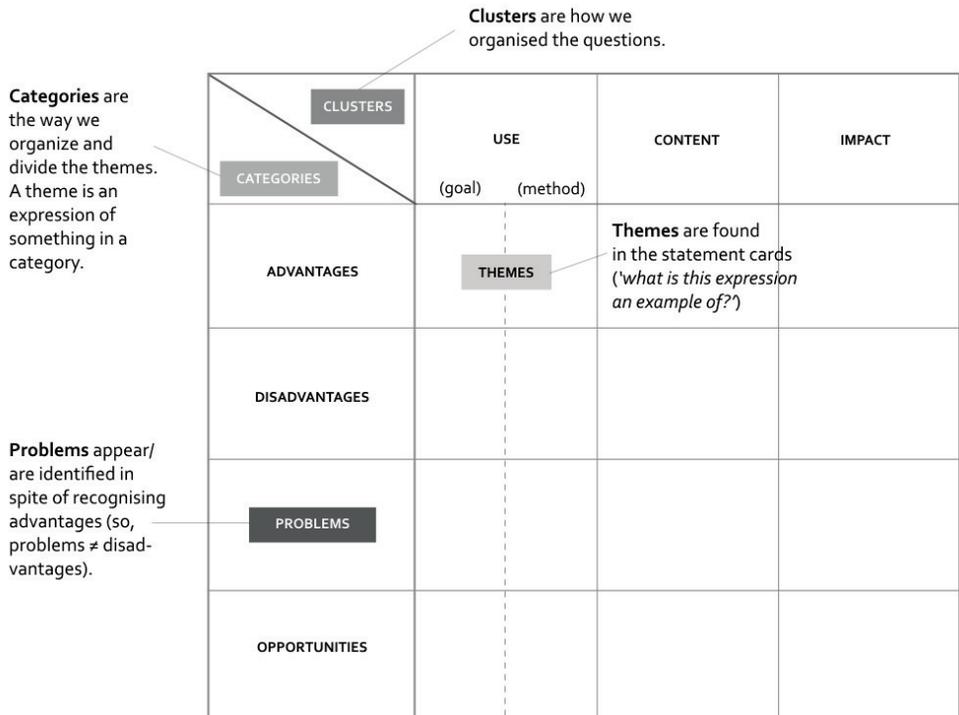


Figure 36. Matrix used in the analysis of study 4 and 5.

6.4 Results

Study 4 and study 5 resulted in two types of outcomes: design interventions and a discussion about the use and impact of the SIM toolkit. The design interventions are specific and situated, and are interesting in order to see what can be done from a point of view of design. Results show both tangible and digital products (see Table 17), whose symbolic meaning is either in the activities they enable and represent, or anchored in an irreplaceable product, as is further discussed in section 6.6. (Not all resulting design interventions were possible to report.) However, the second type of outcome is more relevant to understand how the SIM toolkit works.

Table 17. Results of study 5. (* specific details were not always disclosed, ** UX = user experience; CX = customer experience.)

	Client	Product*
Case 1	Digital consulting firm	Web-application to support context management of a smart building
Case 2	Yoga centre	Jewellery to create awareness and mindfulness
Case 3	Product development firm	Support service to accompany a HIV self-test
Case 4	Interaction design firm	Website
Case 5	Design for mental health project	Web-application to decrease the stigma on mental health
Case 6	UX/CX** consultancy	Web-application
Case 7	UX/CX consultancy	Web-application for a bank
Case 8	UX/CX consultancy	Web-application

In this section we summarize the main findings based on the use and the impact of the SIM toolkit in the design process. We divided each subsection in four paragraphs: advantages, disadvantages, problems, and opportunities.

6.4.1 Results about use

Objectives of use (what did you use the toolkit for?)

Advantages: One goal for using the SIM toolkit that was identified across all interviewed groups was the creation of a design vision. In addition, students and researchers shared goals of using the SIM toolkit in connection to learning, understanding, and developing design thinking skills. Namely, these groups mentioned that the toolkit could be useful to stimulate creative thinking and to break down complex concepts (like 'well-being'), providing directions to implement them. Both students and industry designers shared objectives of use of the toolkit that were result-oriented. Namely, the goals of having quick ideas and inspiration in the

ideation and conceptualization phases, and the goal of using the toolkit to reflect on results, as a means of confirmation and validation.

Disadvantages: The three groups agreed that introducing the toolkit in certain scenarios would be difficult. Specifically, students mentioned the challenge to use the toolkit in more technical projects; researchers mentioned the difficulty of introducing it in design contexts (projects, companies, or teams) that do not focus on well-being; and industry designers mentioned the resistance of introducing the toolkit in a company that already has a format that works (e.g., for discussion, idea generation). Furthermore, other disadvantages regarding the use of the toolkit shared by students and industry designers focused on the complexity of the toolkit and the time necessary to understand and apply it.

Problems or limitations: Researchers mentioned that in real design contexts with harder discussions and more difficult agreements — different than the workshop format in which they discussed the toolkit —, it might not have worked so well. Industry designers expressed doubts about the toolkit's utility in the conceptualization phase, mentioning that it is more suitable for the ideation phase. This group pointed out that the toolkit still required more depth to be of optimal use.

Opportunities: When discussing the potential opportunities of use of the toolkit, all interviewed groups agreed that the toolkit could be used to train a certain type of thinking, also for non-designers. Its 'open' non-specific nature makes the toolkit valuable for a wide range of contexts such as service design (as mentioned by the students), education (as mentioned by the researchers), or policy development (as mentioned by the industry designers). The latter added that the toolkit could be used in radical innovation. Both students and industry designers pointed out the potential for the toolkit to be used as a means of evaluation or validation of ideas and concepts. The group of industry designers indicated that the toolkit could be useful as a means of communication with other parties and stakeholders, for example, to convince a client or reach an agreement about a design vision for a project.

Method and format (how did you use the toolkit?)

Advantages: Most considerations about use (in the sense of method of use, not of goals) of the SIM toolkit referred to its format, that is, the card set and website format. The card set format, in particular, was acknowledged for allowing a dynamic group interaction and being inspiring due to its tangible nature. The website was mentioned as being a more suitable alternative for individual use, and providing a theoretical framework. Students pointed out that the toolkit prompted other creative thinking methods, such as brainstorming and mind mapping. In addition, industry designers indicated that the questions in the cards provided a good help in the design process, and the card set provided an alternative point of view on the collected data. This group also mentioned that the colour provided structure for the use — ‘*if discovered,*’ implying that it needs to be made more clear —, and the guidelines in the card set were considered helpful.

Disadvantages: All interviewed groups pointed out a disadvantage related to the lack of method or clear structure, which alternatively could facilitate the use of *ad hoc* methods. Specifically, students mentioned that the lack of a prescribed method of use created hesitation (e.g., in the selection of cards), because in a group people have diverse motivations, expectations, and ways of working. Furthermore, researchers and industry designers indicated that overlooking certain elements of the toolkit (like certain cards, or the website) can occur when no method or structure is provided. The current structure presentation through colour is not clear enough and it is necessary to have a view of the entire system of cards. Researchers speculated that the toolkit's value would be limited after repeated use.

Problems or limitations: Problems regarding the method of use of the toolkit were found to do with the lack of cues about selection of cards, grouping by colour, links between cards, and purpose/function of the different components (e.g., proposed design directions, website). This generated some disagreements about how to use the toolkit. Another consequence was that it would require time to understand and apply.

Opportunities: The opportunities regarding the method of use of the toolkit were considered as recommendations. Adding a step to the use, to assist in the selection of the cards based on the objectives of use was a relevant recommendation,

because the issue of difficulty with the selection had also been mentioned. The gamification of the SIM toolkit, or a form of feedback on the progress, relations and users was also suggested and could potentially improve the use without being necessarily normative.

6.4.2 Results about content

Advantages: The questions on the back side of the design direction cards of the SIM card set were considered valuable, helping participants to construct narratives, to explore users and contexts deeply, and to structure intuitive ideas. Furthermore, the colour grouping was considered helpful to structure the card set. The website was also considered a valuable complement that provides context and answers possible doubts.

Disadvantages: A disadvantage regarding the content of the SIM toolkit relates to the time it currently takes to make sense and apply. The lack of cues or indications about the functions of the website, where to find examples, or about the system of cards (groupings and links between cards) resulted in comments about lack of clarity and difficulty in reaching consensus, and a consequent disregard for the website.

Problems or limitations: Several content-related problems that were identified refer to a need for better clarification (of links between the cards and purpose of the website), distinction (between symbolic meanings), and justification (of the choice of the 6 symbolic meanings specifically). Some design directions were considered either unsuitable for certain contexts or disregarded due to a lack of vision. More extreme examples could indicate a wider range of application possibilities.

Opportunities: The opportunities indicated in the discussion regarding the content of the SIM toolkit refer to the addition of other symbolic meanings of sub-categories of the six currently used, in order to render them more comprehensive and immediately relatable.

6.4.3 Results about impact

How did the SIM toolkit help you integrate symbolic meaning in your design process? What impact did this have in your resulting design?

Advantages: In terms of impact, the toolkit was referred to as a means to go more easily to the core of the design brief, supporting abstract thinking and the embodiment of meaning in the project. Furthermore, it was referred to as functioning in a 'teacher' role, asking questions, and helping to generate deep considerations about the context and user of the project. Lastly, participants mentioned that it supported the construction of narratives, giving structure to intuitive ideas about meaning.

Disadvantages: The disadvantage mentioned regarding the impact of the toolkit was about how the dynamics of use were considered limited due to the beforementioned content and method issues, which influences the SIM toolkit's impact. However, overall the toolkit was considered helpful in the design process, to enrich developing designs.

Overall, the SIM toolkit was considered as having an impact in the understanding and application of concepts from psychology which otherwise would have been difficult to understand and make actionable, particularly in the ideation phase of the design process. To a lesser extent, the SIM toolkit was considered to have potential impact in the communication of these concepts.

6.4.4 Recommendations for improvement

Following the assessment of the SIM toolkit, it was possible to list recommendations to improve it. Taking the optimization of the time used to understand and apply the toolkit as one of the main issues mentioned, we can consider several strategies:

- To have a colour or number structure that is clear and visible.
- To provide a systemic overview which shows the links between the parts of the toolkit;
 - Namely, between the large cards and the smaller cards, the cards and the website, the questions and the product examples in the website, etc.

- To clarify the language overall, to simplify the questions, and to produce more questions, in order for designers to be able to explore deeper their users and contexts.

The issues linked to the lack of step-by-step method to use the toolkit (i.e., how to use it and when) inspired the formulation of further improvement strategies:

- To clarify the possibilities of use in the design process; namely, ideation (what the toolkit was designed for), and communication, and propose specific methods for these aims.
- To propose a step before the selection of cards as an icebreaker, with the aim of creating some familiarity with the terms (linked to the issue of understanding the toolkit).

6.5 Improving the SIM toolkit

To clarify the SIM toolkit, a colophon card that specifies the publication title, the team, and the licencing for use of the SIM toolkit was added. In addition, we added a guideline sheet that provides a system overview of the links between cards and website. Finally, we added the following elements, according to the recommendations mentioned above:

- Suggest icebreaker before using the card set:
 - To implement this recommendation, we added an icebreaker exercise to the new guideline sheet, similar to what was used in the workshops reported in this chapter: *‘Choose a symbolic meaning and to link it to a cherished object you own, write down a few lines about the product’s story.’*
- Adding a strong colour structure:
 - To implement this recommendation, we strengthened the colour corresponding to each symbolic meaning card and to the respective design direction cards.
- Provide a systemic overview that shows existing links:

- In the newly added guideline sheet we provide an overview of all the cards and the respective connections with the use of arrows and text boxes.
- Simplify the language:
 - In all the cards we changed the text to a more accessible and simple language.
- Propose methods/suggestions for using (in ideation, conceptualization, communication, etc):
 - We added a step-by-step guide to the guideline sheet, including different goals of use.

The colophon card is shown in Figure 37.

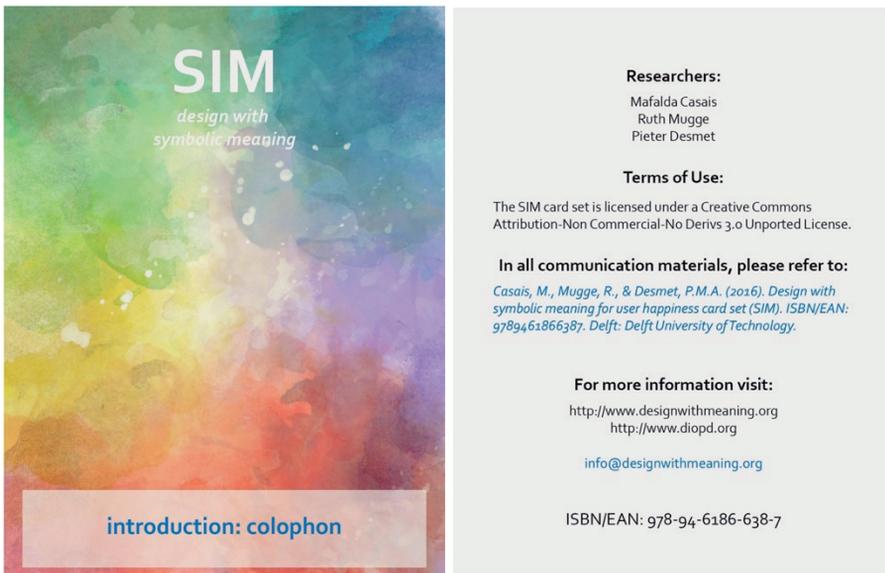


Figure 37. Colophon card (front and back).

The guideline sheet (in A3 printed format, included in the card set box) has, on one side, an explanation of what the SIM toolkit is:

Happiness is a universally desirable human goal. Possessions with certain symbolic meanings can provide a contribution to it because they anticipate, prolong, remind, and help savour experiences, memories, achievements, and aspirations. Capturing this richness in a design process is a challenge, since meaning is very person and context-dependent. So, to provide inspiration for designers to create products that are open for symbolic meaning attribution, we developed the SIM toolkit: It is composed of the SIM card set, which communicates 6 happiness-related symbolic meanings and 16 design directions; and the SIM website, which works as a visual companion, with stories of cherished possessions and product examples, as well as scientific sources for more information.

The SIM toolkit results from a PhD research project in Positive Design, developed under the DIOPD (Delft Institute of Positive Design), at the TU Delft (the Netherlands).

In addition, that same side has several steps on how the SIM toolkit can be used, as follows:

1. Understand well-being: Choose two symbolic meaning cards and read them carefully. Compare how they differ or overlap, and write this down on two lists. Continue until you have read and compared the cards. Find more information on the SIM website about each symbolic meaning.
2. Get personal: Choose a symbolic meaning and link it to a cherished object you own, write down a few lines about the product's story. Do this with all symbolic meanings so that you have a vivid illustration of how these can be found in products. After this exercise, find other product examples on the SIM website.
3. Choose a goal: Depending on what your goal is, the SIM toolkit can be used in different ways. Goals can be: idea generation, conceptualization, evaluation, validation, communication, radical innovation, or another application outside the field of design:
 - Option 1 (idea generation): Consider the user and the context you are designing for. Select the most relevant symbolic meaning and consider the suggested directions.
 - Option 2 (idea generation): Cluster the most relevant design directions according to your own theme or design brief, select from that cluster, and discover the symbolic meaning associated with it.

- Option 3 (idea generation/evaluation of ideas): Think about your design brief or your design solution and write down words you associate with it that are related to well-being. Compare the word list with the 6 symbolic meanings, choose the closest match and discover more about it on the SIM website; rate the ideas accordingly.
- Option 4 (conceptualization/redesign): Choose an existing design or product typology. Select a symbolic meaning and try to (re)design it following one of the suggested design directions. Repeat this process for the other design directions suggested for this symbolic meaning. This can help you develop several different perspectives on the (re)design.

On the other side, it contains an overview of the links between the different cards and the website (Figures 38 and 39).

SIM toolkit guideline sheet

what is the SIM toolkit?



Happiness is a universally desirable human goal. Possessions with certain symbolic meanings can provide a contribution to it because they anticipate, prolong, remind, and help savour experiences, memories, achievements, and aspirations. Capturing this richness in a design process is a challenge, since meaning is very person and context-de-

pendent. So, to provide inspiration for designers to create products that are open for symbolic meaning attribution, we developed the SIM toolkit: it is composed of the SIM card set, which communicates 6 happiness-related symbolic meanings and 16 design directions, and the SIM website, which works as a visual companion, with stories of

cherished possessions and product examples, as well as scientific sources for more information.

The SIM toolkit results from a PhD research project in Positive Design, developed under the DIOPD (Delft Institute of Positive Design), at the TU Delft (the Netherlands).

how can it be used?



1. Understand well-being:

Choose two symbolic meaning cards at time and read them carefully. Compare how they differ or overlap, and write this down on two lists. Continue until you have read and compared all cards. Find more information on the SIM website about each symbolic meaning.

2. Get personal:

Choose a symbolic meaning and to link it to a cherished object you own, write down a few lines about the product's story. Do this with all symbolic meanings so that you have a vivid illustration of how these can be found in products. After this exercise, find other real product examples on the SIM website.

3. Choose a goal:

Depending on what your goal is, the SIM toolkit can be used in different ways. Goals can be idea generation, conceptualization, evaluation, validation, communication, radical innovation, or another application outside the field of design.

Option 1. (idea generation):

Consider the user and the context you are designing for. Select the most relevant symbolic meaning and consider the suggested directions.

Option 2. (idea generation):

Cluster the most relevant design directions according to your own theme or design brief, select from that cluster, and discover the symbolic meaning associated with it.

Option 3. (idea generations/evaluation of ideas):

Think about your design brief or your design solution and write down words you associate with it that are related to well-being. Compare the word list with the 6 symbolic meanings, choose the ones that are related and write down more about them on the SIM website, rate the ideas accordingly.

Option 4. (conceptualization/redesign):

Choose an existing design or product typology. Select a symbolic meaning and try to (re)design it following one of the suggested design directions. Repeat this process for the other design directions, suggest a new symbolic meaning. This can help you develop several different perspectives on the (re)design.

Figure 38. SIM toolkit's guideline sheet (front side).

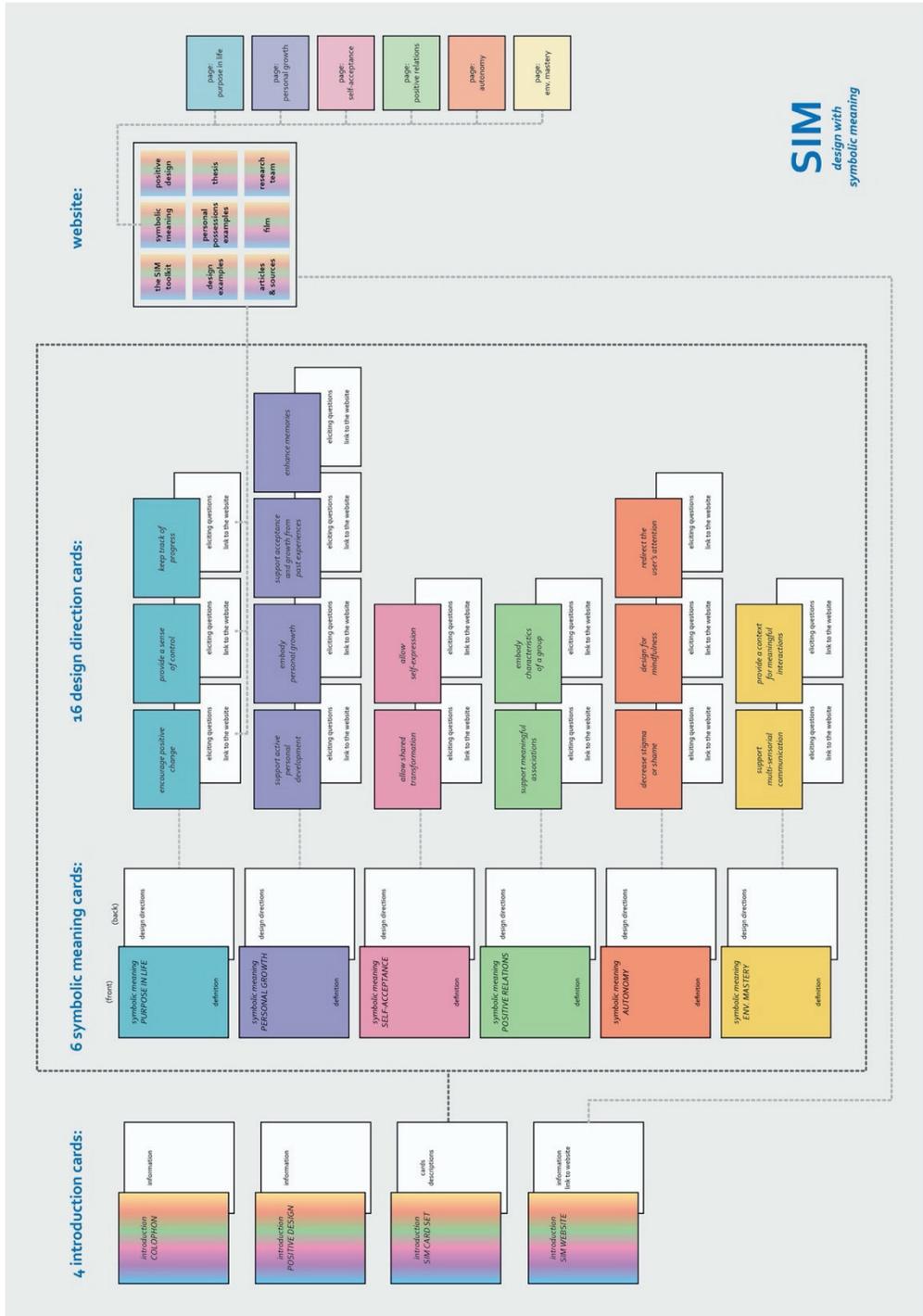


Figure 39. SIM toolkit's guideline sheet (front side).

We altered the cards' text to a more accessible language, avoiding jargon (Table 18).

Table 18. Rewritten design directions and descriptions.

Colour	Symbolic meaning	Explanation
Blue	Purpose in life	Symbolizes personally significant goals and aspirations, and a sense of direction
Purple	Personal growth	Symbolizes the acceptance of past experiences, the openness to new challenges; continued development and maturity
Pink	Self-acceptance	Symbolizes the acceptance of positive and negative aspects of the self; self-compassion and a positive self-image
Green	Positive relations with others	Symbolizes quality relationships and groups that contribute to a sense of belonging
Red	Autonomy	Symbolizes a sense of independence and self-confidence in thoughts and in actions; resisting external pressures
Yellow	Environmental mastery	Symbolizes the ability to manage or create a suitable environment for personal needs and values

Table 18. (continuation)

Design direction	Description
Encourage positive change	Provide a trigger that suggests positive activities or behaviours (for example, something to write on, or something embedded in everyday objects)
Provide a sense of control	Allow the user to manage his/her goals, or to eliminate the obstacles in their fulfilment (for example, something that locks away temptations, or keeps them out of sight)
Keep track of progress	Give visual feedback of progress towards goals (for example, something that gives an overview, or that predicts progress)
Support active personal development	Provide a platform for reflection that focuses on passed lessons and future expectations (for example, something to write, to think, to tell, to record)
Embody personal growth	Focus on adaptability; something that adjusts and shows physical or psychological change (for example, something that grows with the user or shows milestones)
Support acceptance and growth from past experiences	Provide a unique physical representation of the passage of time (for example, something wearable, or something interactive)
Enhance memories	Create a positive context or activity to reflect on memories of loved ones (for example, using their own possessions, or their voice or handwriting)
Allow shared transformation	Give tools to the user so that he/she can add to the aesthetic and/or function of the product (for example, make the product purposefully incomplete, or create layers that can be changed)
Allow self-expression	Provide a physical platform to show personally significant ideas (for example, something wearable)
Support meaningful associations	Facilitate the practice of group / community activities (for example, from group sports, to family activities, romantic get-aways, to spiritual activities)
Embody characteristics of a group	Make use of unique characteristics of groups the user belongs to (for example, culture, profession)
Decrease stigma or shame	Enrich the aesthetic qualities of assistive products (for example, make them normalized, or unique, or personal, or interactive)
Design for mindfulness	Slow down processes or show mechanisms behind products (for example, replace automatic actions with some more effort)
Redirect the user's attention	Design something that needs attention from the user to distract from negative situations (for example, something that needs to be taken care of, or played with)
Support multi-sensorial communication	Transform messages into a sensorial experience (for example, with sound, light, smell, texture)
Provide a context for meaningful interaction	Use of the context or limitations as an advantage (for example, use isolating walls as a unique way to communicate, or use everyday objects to create deeper connections)

The improved text in the SIM card set card is shown in Figure 40:



Figure 40. SIM card set card (front and back).

The Positive Design card has a more readable text, as presented in Figure 41.

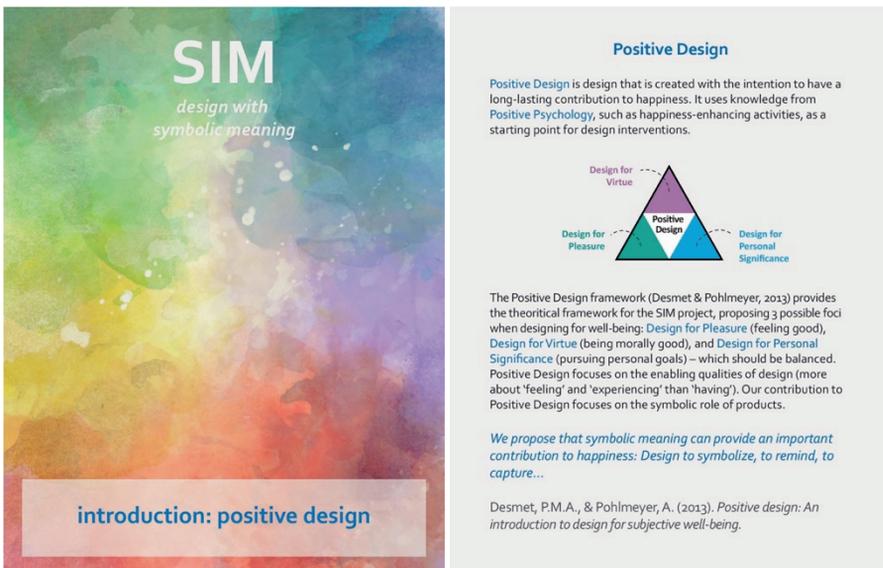


Figure 41. Positive design card.

The symbolic meaning cards maintained the text on the front side about each symbolic meaning, and on the back, the corresponding design directions (Figure 42).



Figure 42. Example of a symbolic meaning card.

The design direction cards were improved with the strengthening of the different colours (the same as the corresponding symbolic meaning), to clearly link to the symbolic meaning cards (Figure 45).



Figure 45. Example of a design direction card.

The design directions and their descriptions were re-written in simpler language, as discussed above. In addition, the questions contained on the backside of the design direction cards were changed to have a more accessible language (Table 19).

Table 19. Questions accompanying each design direction.

Symbolic meaning	Design direction	Questions ('Think about...')
Purpose in life	Encourage positive change	...which activities or behaviours can be positive for your user, and give him/her purpose?
	Provide a sense of control	...what goals does your user have? which of those goals give him/her purpose? ...what are possible obstacles in their fulfilment?
	Keep track of progress	...what goals does your user have? which of those goals give him/her purpose? ...how can he/she measure progress towards the fulfilment of those goals?
Personal growth	Support active personal development	...how does your user reflect on life and on his/her personal growth? ...how can he/she reflect deeper?
	Embody personal growth	...in what meaningful ways can your user change or develop (physically and psychologically)? ...what processes, actions or activities are related to it?
	Support acceptance and growth from past experiences	...what scale of time is most relevant for your user? ...how does your user see/understand time?
	Enhance memories	...who are your user's loved ones? ...what positive memories does your user have of loved ones (places, moments, life milestones, etc.)? how can those memories be shared?
Self-acceptance	Allow shared transformation	...what skills and competences is your user proud of? ...what would be a fun challenge for your user?
	Allow self-expression	...what positive aspects of your user's identity can be enhanced? how can these be enhanced? ...what ideas or principles does your user find important to support his/her identity? how can these be shared?
Positive relations with others	Support meaningful associations	...to which meaningful groups or communities does your user belong? ...what activities make your user feel like he/she belongs?
	Embody characteristics of a group	...to which meaningful groups or communities does your user belong? ...what are the (unique) characteristics of those groups?
Autonomy	Decrease stigma or shame	...what products make your user's life easier and more autonomous? ...which (physical) characteristics of those products make your user feel ashamed?
	Design for mindfulness	...how can your user have more control over his/her context (think of small everyday things)? ...what are examples of automatic everyday actions?
	Redirect the user's attention	...to what negative situations is your user exposed to? how do these limit your user's autonomy? ...what makes your user feel engaged?
Environmental mastery	Support multi-sensorial communication	...how does your user usually communicate? ...how does your user communicate proximity? ...what senses does he/she enjoy most?
	Provide a context for meaningful interaction	...what limitations does your user's context present? ...and what opportunities can you find? how can he/she make use of those opportunities?

A sentence about the link to the website (to the page about the respective symbolic meaning) was added after the provoking questions (and also to the symbolic meaning cards), for example: *'see the website for more information and examples: www.designwithmeaning.org/portfolio/purpose-in-life.*'

The box containing the card set was upgraded to include a sticker with information about the SIM toolkit (Figure 46), with the partnering/funding institutions and the following text:



Figure 46. Information on the card set box.

The introduction card about the SIM website was not altered. The SIM website — <http://designwithmeaning.org/> — was updated, according to the strengthened colour scheme and texts (Figure 47).



DESIGN WITH SYMBOLIC MEANING FOR USER HAPPINESS

Welcome to the SIM website: Design with symbolic meaning for user happiness. This website is part of the SIM toolkit for designers, and it works a companion to the SIM card set: it aims to inspire design for happiness, focusing on personal symbolic meaning. In this website you will find different sources of inspiration, like real-life stories of meaningful products, inspiring designs, relevant literature, and specific design directions.

[DOWNLOAD CARD SET](#) [GET INSPIRED](#)

THE VALUE OF SYMBOLIC MEANING



Products with (happiness-related) symbolic meaning are able to encourage, motivate, anticipate and enable positive life experiences. Such products can also prolong and help savour those important experiences. Following the experiences, meaningful products remind us of them, allow their re-consumption, facilitate reminiscence and sharing.

THE RESEARCH

Happiness is a universally desirable human goal. Possessions with certain symbolic meanings can provide a contribution to happiness, because they anticipate, prolong, remind, and help savour experiences, memories, achievements, and aspirations.

Capturing this richness in a design process is a challenge, since meaning is very person and context-dependent. So, to provide inspiration for designers to create products that are open for symbolic meaning attribution, we developed the SIM toolkit: It is composed of the SIM card set, which communicates 6 happiness-related symbolic meanings and 16 design directions; and the SIM website, which works as a visual companion, with stories of cherished possessions and product examples.

The SIM toolkit results from a PhD research project in **Positive Design**, developed under the **DIOPOD (Delft Institute of Positive Design)**, at the TU Delft (the Netherlands)

THE 6 SYMBOLIC MEANINGS

We distinguish six happiness-related symbolic meanings in material possessions (based on Ryff's model of psychological well-being, 1999), which have the ability to support happiness: Positive relations with others, personal growth, purpose in life, environmental mastery, autonomy, and self-acceptance. Products with (happiness-related) symbolic meaning represent different aspects of what makes life worthwhile (such as memories, achievements or aspirations). Specifically, these are able to encourage, motivate, anticipate and enable positive life experiences. In addition, they can also prolong and help savour those important experiences. Afterwards, meaningful products remind us of those experiences, allow their re-consumption, and facilitate reminiscence and sharing.



16 DESIGN DIRECTIONS

REAL STORIES

In our research we collected many personal stories of symbolically meaningful objects. In this collection of images, some reveal reasons that led to their personal significance.



"I was snorkelling with friends in the Philippines and suddenly turtles came into view. We were sitting on the reef and saw the turtles come by then we swam after them."

SHARE YOURS

GET INSPIRED: DESIGN EXAMPLES

In our research we collected many design examples of products that are open for symbolic meaning attribution.

Kintsugi Repair Kit (By Droog Design)



Kintsugi is an old Japanese art of fixing pottery with gold. With the New Kintsugi repair kit (by Humaged) the user can give broken plates and cups a second life with its scars and marks emphasized with a gold look. Images and text (adapted): http://www.droog.com/news/2012/03/friends-droog-webshop/rod_friends_humaged_new_kintsugi_repair_kit_01/ Link

UPLOAD YOURS

THE TEAM




Marilda Casals
Researcher

Marilda Casals is a PhD candidate developing her research project in the research group 'Depth Institute of Positive Design', at the Faculty of Industrial Design Engineering of TU Delft (Delft University of Technology).

Photo: "Copyright Studievereniging I.E"





Ruth Hugga
Associate Professor

Ruth Hugga is an Associate Professor of Consumer Research at the department Product Innovation Management of the Faculty of Industrial Design Engineering of TU Delft (Delft University of Technology).

Photo: "Copyright TU Delft"





Pieter M.A. Desmet
Full Professor

Pieter M.A. Desmet is full professor of Design for Experience at the Department of Industrial Design of the Faculty of Industrial Design Engineering of TU Delft (Delft University of Technology).

Photo: "Copyright TU Delft"



Contact us at info@designwithmeaning.org

Figure 47. Overview of the SIM website (pages 149-151).

6.6 Design examples

In all explorations of the SIM toolkit — the workshops with design students, researchers, and cases done by designers in companies — some design ideas and solutions were proposed. In this section we show some of these ideas to illustrate how diverse the application of the concept of well-being related symbolic meaning can be, and discuss them within the scope of our research.

Following the Light (Figure 48) – ‘A lighting solution that enables single mothers to get objective insight into their mental state in order to get mindful about it and tackle potential solutions or really be aware of [a] positive mood. [It works] by measuring the emotional state through voice analysis during the child’s bedtime story and afterwards visually displaying the emotional state of the mother.’ This design was developed by Group 1, from study 4A, using the symbolic meaning cards for inspiration in the ideation phase. The group mentioned having different starting points, from different cards; however, the main one being self-acceptance. According to the designers, this was because the mother (the user) does not take time for herself. As such, getting insight about her mood that is objectively measured, and thus believable, makes her think it is justified to take time for herself. This in turn relates and symbolizes the acceptance of her own deserving. Furthermore, autonomy was also a starting point, particularly the design direction linked to mindful awareness, which connects to the learning how to deal with one’s own mood according to their own standards.

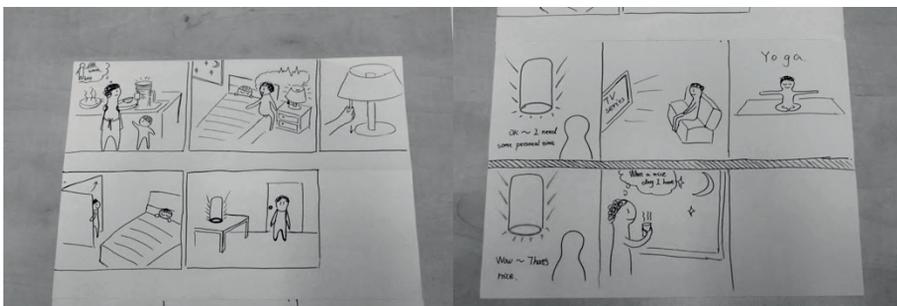


Figure 48. ‘Following the light,’ design by Simone van den Elzen, Ward van Hoeven, Hazal Ertürkan, and Yiping Kung.

Self-Sufficient Pocket Watch (Figure 49) – ‘A precious pocket watch that stimulates [a grandfather] to walk further, and makes every step more meaningful.’ Besides keeping time with an analogue display, the pocket watch has a digital display that allows for goal setting (fitness), progress tracking (walking), and has a compass. When the grandfather is faced with the decision of taking a shortcut or walking further, the watch inside the pocket indicates the longer walk through strong vibration or other haptic cues. For motivation, the digital display shows images of the generations of his family and his grandchildren. This design was developed by Group 2, from study 4A, using the symbolic meaning of personal growth and autonomy as the main sources of inspiration in the ideation phase. The solution has to do with the continued growth even in old age, and to a sense of autonomy and self-reliance symbolized by the activity and the object.

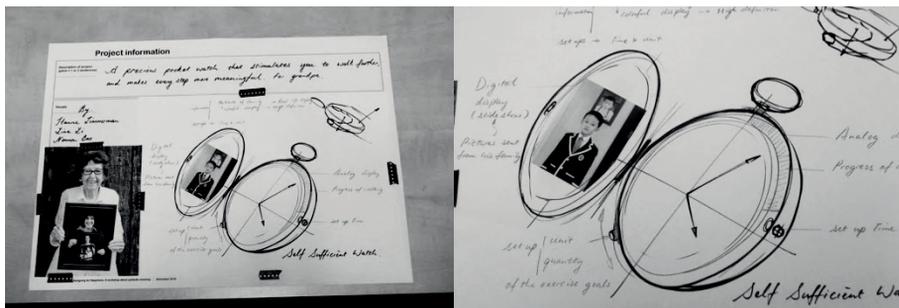


Figure 49. ‘Self-sufficient watch’, design by Hanna Zimmerman, Lina Li, and Nounou Bao.

Disco Lamp (Figure 50) – ‘This lighting device helps you fulfil your daily tasks by playing your favourite music [for you to] dance during the task and rewards you afterwards’ by projecting self-chosen goals (fun activities). It has a disco mode and a sleep mode. This design was developed by Group 9, from study 4B, and while the group did not discuss overtly which cards they were inspired by, it is possible to imagine that the product and what it allows people to do relates to autonomy (fulfilling tasks, being self-reliant) and purpose in life (reminding of personal goals).

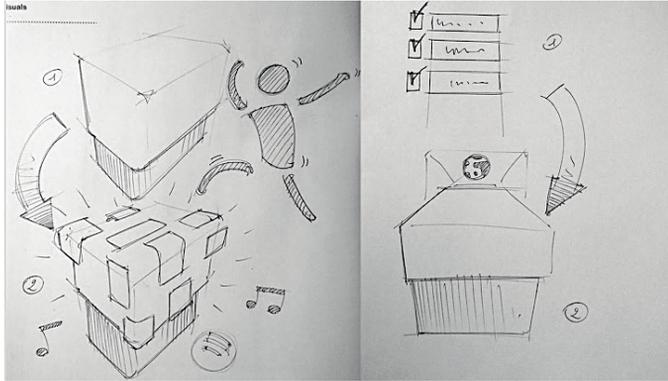


Figure 50. ‘Disco Lamp’, design by Charissa Gijsemans, Benjamin Mechant, Robin De Beelde, Laure Herweyers, and Matthias Dillen.

Con Mi Esencia [with my essence] (Figure 52) – *‘A piece of jewellery with a mechanism that allows people to count the number of times they required to regain control and balance during their day. Every time a person loses control on their day, he/she can represent that moment by moving a ball. At the end of the day the person can have a final count that allows her/him to reflect on what happened during the day.’* This design was developed by Case 2, of study 5, and it is strongly connected with a meaning of purpose in life, especially the design directions of providing a sense of control and keeping track of progress. The designer mentioned *‘the success of the piece lies in two aspects. The first is that every time people have to move one of the balls, they make a process of reflection in which they understand that it is not a bad situation but it is a chance to take back control, and even more to prevent future movements in the piece as a result of difficult situations. The second aspect lies in that the user can end the day with a reflection of what happened and also to know the areas in which he must work on in order to keep losing control. Thus it creates an activity of consciousness.’*



Figure 52. ‘Con Mi Esencia’, design by María Alejandra García Ferro. (Image from: <http://portfolios.uniandes.edu.co/gallery/46112259/Con-Mi-Esencia>)

These examples were produced within the scope of study 4 and 5, and they support the idea that symbolic meaning is not *necessarily* primarily about the product itself and its irreplaceability, but what it stands for, or what it allows people to do and consequently represents, as mentioned in chapter 2 of this thesis. In these examples, we find symbolically meaningful designs in which meaning is primarily related to the activities it supports and represents, and those in which symbolic meaning comes mainly from a physical product (and its representations).

In the first example, 'Following the Light,' the activity was designed to be the main part of the product's symbolic meaning. However, both the product and its function support self-awareness and self-care and represent it. Without the cues of the product, the activity would not be supported; therefore, the product and its cues support well-being practices, and can come to represent these moments of self-acceptance. Past research has found that the way a product is designed influences its ability to support well-being (Desmet & Sääksjärvi, 2016). This is because behavioural intervention technologies (BIT) can make the reminder of tasks exciting and help people commit to fulfilling them, especially in the context of self-help. Furthermore, nudging certain positive behaviours can support health and well-being (Thaler & Sunstein, 2009) and the design of a product can be central in this (Desmet & Pohlmeier, 2013).

Similarly, in the example 'Disco Lamp' the potential meaning attributed to the product is primarily linked to the activities and experiences it enables and represents. The way it is designed and the interactions it supports contribute to the fulfilment of positive behaviours. The representation of the experiences that have occurred, of the possibility of having new experiences, and the way those experiences bring positive emotions or a sense of accomplishment, purpose, etc., are what makes these products potentially meaningful.

In the example 'Self Sufficient Pocket Watch,' the symbolic meaning lies primarily in the product. Nevertheless, its meaning occurs in combination with the interactions it supports. Specifically, it is the motivation provided by the photographs (visual cues), the direct stimulation to walk (haptics), and the symbolism of time (product) that make the product symbolically meaningful.

Similarly, in the example 'Con Mi Esencia' meaning comes primarily from the product, because it provides a literal representation of the reflection activity. Is

about the interaction of reflecting with the product and how this is literally represented by the product. Its meanings may vary day to day, week to week, or in different life stages of the owner. The moments of reflection, that is, the action that the product proposes to support is closely linked to the product's form and supports its symbolic meaning.

6.7 Discussion

A main concern for a designer working with well-being and symbolic meaning is understanding what those concepts mean for the person or context s/he is designing for. In addition, focusing on a part of well-being might be an important consideration. Designers may choose to focus on interaction, product aesthetics, or a product's role or objective, or a combination of these. An analysis of the particular context and/or person is, therefore, necessary. When having direct and unrestricted access to the end-user is possible, designers may have a better understanding of the issues mentioned above. However, this is not always possible, and even when it is having a structured approach to such complex subjects is desirable. As discussed in chapter 5 of this thesis, presenting design directions in an engaging and adaptable way, such as through a physical card set that allows the hierarchization and reorganization of information, is advantageous for the designer.

In this chapter, we focused on fulfilling Research Goal 3 of our project: *to apply the knowledge in practice and gain feedback on its impact for the design process, to improve it.* To address this goal, we took the SIM toolkit to support the ideation phase of the design process (reported in chapter 5), and applied it in workshops and industry cases to assess its impact. We conducted the assessment of the SIM toolkit by giving it to designers, design students and design practitioners to use within controlled environments (workshops) and with real clients (in companies), and collected data through round table discussions and semi-structured interviews. The main conclusions we gathered are that the SIM toolkit does what it was developed for — that is, it inspires and informs about well-being related symbolic meaning — and is appropriate to create a design vision, to generate design ideas based on well-being related symbolic meaning, and to communicate within a team or with stakeholders about these concepts. We also concluded from the assessment that

improvements were necessary to refine the SIM toolkit, and therefore proceeded to introduce a set of recommendations, which resulted in an improved version.

6.7.1 Limitations

The study was not without limitations. Firstly, the workshop format, as mentioned by the participants themselves, offered a constrained context to work with, which might not correspond to real-life interactions between team members, stakeholders, and the designer and the project s/he is working on. The advantages of using this format are the possibility of simulating some of these interactions in a controlled timeframe, but that is simultaneously what makes it a limited format (in terms of time, brief, partners, etc.). Similarly, the industry cases had limitations because they were not observed directly — having been assessed through interviews/questionnaire, which limited the identification of interesting or important moments in the design process that may have escaped the designers themselves by observation. Lastly, the study did not contemplate the completion of all designs, rendering it difficult to consider how these could work in real-life circumstances, and resulting in a small collection of examples to discuss in section 6.6 of this chapter.

From the assessment we were able to identify several insights that inform the further development of the toolkit in terms of method of use, format, and content. Regarding the impact, however, the gathered insights were limited due to the fact that it was a one-time use, and consequently difficult to judge for designers; and due to the absence of an evaluation from the user experience perspective, as the resulting designs were not finalized and tested by the time this exercise was complete. Nevertheless, results indicate that the SIM toolkit sustains its purpose of inspiration and knowledge transfer with success. In addition, the functions of communication, education, and guidance (related to knowledge transfer) were found to be a valuable 'selling point' of the SIM toolkit.

6.7.2 Implications

The analysis of resulting designs, while limited, was an interesting source of insight on the toolkit's usefulness, and it showed different ways in which well-being related symbolic meaning can be introduced in design: from focusing on product-based meaning, to interactions or services, or experiences resulting from their use. Ultimately, focusing on the representation of past/current/future experiences and the way those experiences bring well-being (like a sense of accomplishment or purpose) is what makes this approach relevant and unique. That is the contribution that the SIM toolkit and this research have for the literature and practice of design for well-being. Developing the SIM toolkit has brought abstract concepts like psychological well-being into the actionable domain, providing specific ways in which well-defined symbolic meanings (related to well-being) could be introduced in the design process.

In a discussion with students* about possibilities of using the SIM toolkit (within and outside the design field), many different directions were suggested to apply the information it conveys. An example of this is in everyday use objects and spaces to make the information accessible and impactful to people (for example, newspaper or radio, in disposable coffee cups, in train platforms), to inform them of what symbolic meaning is. Another example would be to bring the toolkit to therapy, to mental health or caregiving institutions, and to counselling of relationships. Another application that was proposed was to use it in policy development, or in the context of government decision-making, team-building and civil servant work, including law enforcement. While these are interesting considerations, they fall very far from the original purpose of the toolkit, and are not directly supported by its content. Extending the use of the SIM toolkit for design education, namely design for well-being, makes sense. Similarly, using it to communicate within a design team or with stakeholders, within the context of a design project, also makes sense and is supported by the toolkit's content. Therefore, designing with (being inspired by it,

* The applications within and outside of the design field emerged from a creative session carried out by students from a course on creative facilitation (master level, from an industrial design engineering faculty of a technical university), using the SIM toolkit as a case for discussion. This discussion was not reported in this thesis.

using it directly as input for the ideation phase, etc.), communicating, or teaching with it are activities that we can endorse with this toolkit.

Following the reporting of the assessment of the toolkit in practice, the description of the improvements that were done to it, and the presentation of some design examples, in the next chapter we discuss the implications of this thesis and of what we learned for the field of design, for the study of product-mediated well-being, and for product-person relationships. We also specify contributions of our work to society, as well as limitations and avenues for further research.

Part III

Discussion

Chapter 7: Implications of this thesis

CHAPTER 7. Implications of this thesis

7.1 Introduction

This thesis focused on the positive design strategy of designing with symbolic meaning to support well-being. We addressed it by investigating products with symbolic meanings linked to well-being determinants, and by formulating design directions, which were presented as a toolkit. In this section we look back at the research goals that originated the various studies that make up this thesis, and their respective research goals, in order to understand how these were answered and the potential implications of their results.

In the following subsections we revisit the main research question, the research goals, as well as the insights and respective implications of each chapter, and we discuss them along with other possible ramifications.

7.2 Discussion of the research goals

The main research question in this thesis was: *What is well-being related symbolic meaning, and how can we apply it to design?* In order to answer this research question, we formulated the following research goals:

1. *to understand the phenomenon of well-being related symbolic meaning in products;*
2. *to develop design directions using well-being related symbolic meaning;*
3. *to apply the knowledge in practice and gain feedback on its impact for the design process to improve it.*

7.2.1 Research goal 1: Understanding the phenomenon of well-being related symbolic meaning in products

To understand the phenomenon of well-being related symbolic meaning in products, we began by identifying well-being determinants in the literature that we could search for in existing meaningful products. We chose to investigate products people kept in their homes, as this environment offers a unique and intimate portrait of people's lives, their choices, their paths, and their foci. Consumer durables were chosen because these are tangible, long-lasting, possible to be repurposed, and possible to give or inherit — therefore, presenting a clearer picture of how to design new things.

We opted to use Ryff's (1989) model of psychological well-being as a guide for the collection of product stories and their analysis, because we expected that it is this type of well-being that is most affected by the kinds of things products can be symbols of. In other words, remarkable events, life goals, past achievements, special or important memories, relevant people, values or ideals are things that can be symbolized by products people own, and those things affect people's psychological well-being, potentially strengthening one's self-image, place in society, professional or social roles, sense of belongingness and direction, etc.

Ryff's (1989) six determinants of psychological well-being, and by searching them in significant material possessions we were able to determine that these could be used as well-being related symbolic meanings in the design of new products: (1) the symbolic meaning of purpose in life, (2) the symbolic meaning of personal growth, (3) the symbolic meaning of self-acceptance, (4) the symbolic meaning of positive relations with others, (5) the symbolic meaning of autonomy, and (6) the symbolic meaning of environmental mastery.

We found that well-being related symbolic meaning exists in products because of what these represent for people, or because of what these enable them to do (and consequently represent) — such as, memories, people, ideals, achievements, aspirations, rituals, activities —, which, as a result of that representation, support or signify their well-being. At the outset of the project, we assumed that symbolic meaning was primarily anchored in static representations, and therefore to include symbolic meaning in design meant that it would focus on capturing, reminiscing, or anticipating those static representations. What we found, however, is that rather than a static phenomenon, symbolic meaning also comes from what a product allows a person to do, so the activities it facilitates (to be able to engage in an activity, rather than only representing a specific activity that occurred). This means that, to include this element of symbolic meaning in new designs — or the 'openness' for symbolic meaning attribution — can focus on activities and experiences, rendering it closer to experience design. Previous research had pointed out that the symbolic meaning of products is constructed and solidified through repeated contact, exchange, and transactions (Csikszentmihalyi & Rochberg-Halton, 1981; Richins, 1994). It was our assumption that this referred to the contact with products increasing or solidifying their meaning, which in turn was anchored in static representations. However, as we discuss here, this characteristic of product symbolic meaning extends to what people envision doing, have done, or aim to do, and because of that ability to support an activity or experience, a product can also have symbolic meaning.

Products with strong symbolic meaning affect psychological well-being, which in turn results in subjective well-being (happiness). With this exploration, we found support for the idea that design with symbolic meaning can be a positive design strategy with strong potential to support well-being.

7.2.2 Research goal 2: developing design directions using well-being related symbolic meaning

To develop design directions using well-being related symbolic meaning, we began by searching for examples of products designed to support well-being (purposefully or not). We selected existing product examples that we found as having a link or resulting in one or more of the six well-being related symbolic meanings. This

selection was based on the expected result in use and interaction with people. The products were categorized based on the six symbolic meanings and analysed by focusing on the possible strategies that create such effects. This enabled us to construct design directions by envisioning certain effects from tangible products with certain qualities and characteristics.

The particular solutions we collected (e.g., blank wall clocks for people to create their own time measures) were abstracted into broad design directions (e.g., to keep track of progress by giving visual feedback of progress towards goals) that could be used to design something entirely different with a similar potential impact. As a result, this process helped devise specific ways to apply an abstract concept — well-being related symbolic meaning — in practice. This, in turn, helped breaking down an abstract yet potentially interesting approach (to design with well-being related symbolic meaning) into something that is actionable and that considers several options within each symbolic meaning. The provoking questions for each design direction were added as an extra layer of focus, to further assist in streamlining the concept of well-being related symbolic meaning in practice.

The design directions we developed from this exploration were:

- For the symbolic meaning of purpose in life:
 - *To encourage positive change*, by provide a trigger that suggests positive activities or behaviours (e.g., something to write on or embedded in everyday objects);
 - *To provide a sense of control*, by allowing the user to manage his/her goals, or eliminate the obstacles in their fulfilment (e.g., something that locks away temptations or keeps them out of sight);
 - *To keep track of progress*, by giving visual feedback of progress towards goals (e.g., something that gives an overview or predicts progress).
- For the symbolic meaning of personal growth:
 - *To support active personal development*, by provide a platform for reflection that focuses on passed lessons and future expectations (e.g., something to write, think, tell, record);

- *To embody personal growth*, by focusing on adaptability; or adjustability that shows physical or psychological change (e.g., something that grows with the user or shows milestones);
- *To support acceptance and growth from past experiences*, by providing a unique physical representation of the passage of time (e.g., something wearable or interactive);
- *To enhance memories*, by creating a positive context or activity to reflect on memories of loved ones (e.g., using their own possessions, voice, or handwriting).
- For the symbolic meaning of self-acceptance:
 - *To allow shared transformation*, by giving tools to the user so that he/she can add to the aesthetic and/or function of the product (e.g., make the product purposefully incomplete or create layers that can be changed);
 - *To allow self-expression*, by providing a physical platform to show personally significant ideas (e.g., something wearable).
- For the symbolic meaning of positive relations with others:
 - *To support meaningful associations*, by facilitating the practice of group/community activities (e.g., group sports, family activities, romantic get-aways, spiritual activities);
 - *To embody characteristics of a group*, by making use of unique characteristics of groups the user belongs to (e.g., example, culture, profession).
- For the symbolic meaning of autonomy:
 - *To decrease stigma or shame*, by enriching the aesthetic qualities of assistive products (e.g., make them normalized, unique, personal, or interactive);
 - *To design for mindfulness*, by slowing down processes or show mechanisms behind products (e.g., replace automatic actions with some more effort);
 - *To redirect the user's attention*, by designing something that needs attention from the user to distract from negative situations (e.g., something that needs to be taken care of or played with).
- For the symbolic meaning of environmental mastery:

- *To support multi-sensorial communication*, by transforming messages into a sensorial experience (e.g., with sound, light, smell, texture);
- *To provide a context for meaningful interaction*, by using the context or limitations as an advantage (e.g., use isolating walls as a unique way to communicate, or everyday objects to create deeper connections).

These design directions were developed and selected to be manageable (i.e., not an overwhelming quantity, but enough to have diversity), understandable (i.e., clear, not overly complex), generative (i.e., to trigger ideas rather than point out the obvious ‘*make it meaningful*’), specific (i.e., different directions provide different meaning embodiment strategies), and relevant and adequate (i.e., not providing solutions but to generate discussions).

7.2.3 Research goal 3: applying the knowledge in practice and gaining feedback on its impact for the design process to improve

To apply the knowledge in practice and gain feedback on its impact on the design process, we first developed a communication vehicle that could effectively provide designers with information and inspiration to introduce well-being related symbolic meaning in the design process. Upon several iterations that included perspectives from design education, research, and practice, we presented the SIM toolkit, composed of a card set and a website. The SIM toolkit is a collection of the following tools:

- The SIM guideline, a printed system overview sheet with the links between cards and website.
- The SIM card set, a card set with different card types, communicated with distinct colours and letters:
 - Three introductions cards (explaining the research, the card set, and the website);
 - Six symbolic meaning cards (describing each symbolic meaning on the front, and listing relevant design directions on the back);

- Sixteen design direction cards (containing a design direction on the front and related questions about the user on the back).
- The SIM website that includes:
 - An introduction to well-being related symbolic meaning;
 - Links to the different symbolic meanings and design directions;
 - Real stories of symbolically meaningful objects;
 - Design examples of products that are open for symbolic meaning attribution;
 - Information about the research team and publications.

We devised the SIM toolkit to incorporate the developed design directions in a usable format that is manageable, compact, and practical, in that it allows for comparison, evaluation, and combination of directions, as well as an overview of possible routes to take. In addition, the design directions were selected for being broad enough to inspire diverse ideas, but defined enough to help designers come up with unique solutions. They direct designers' focus towards (re)thinking product and interaction qualities by embodying, or facilitating the embodiment of personal narratives linked to well-being related symbolic meanings.

Secondly, we applied the toolkit in practice with students, researchers, and practitioners of design. Following these application moments, we concluded that the toolkit works by providing both information and inspiration, but that there was room for improvement; for example, its language, the colour system, the overview of the system, or the ways of using. This refinement was addressed with the inclusion of new cards, simplified language, and a guideline sheet.

Regarding its impact on the design process, on the one hand, we learned that providing the SIM toolkit without a specific method can be advantageous because it prompts creative thinking and allows users to explore the concepts in it in an unrestricted way, possibly resulting in interesting and novel understandings, connections, or applications. This modality (without method) can cause a feeling of being overwhelmed. On the other hand, offering suggestions for when/how to apply it (e.g. ideation, evaluation) makes it more effective in achieving what it was initially intended for. In this modality (with method) it can also result in better predictability. Therefore, we opted to include a guideline sheet which helps with this aspect by providing suggestions of use.

7.3 Implications of this thesis

This thesis' contributions are threefold: it has implications for *research* — for the field of positive design and the scholarly debate on product-mediated well-being —; it has implications for *design practice* — for designers, for the role of design, and for design education —; and it has implications for *society* — for well-being, for policy development, and for sustainable living.

7.3.1 Implications for research

Contributions to positive design

This thesis contributes to the development of the disciplinary field of positive design. It explored the strategy of designing with symbolic meaning as a way to support people's well-being.

Pohlmeyer (2012) proposed a 'Design Well-Being Matrix,' in which she described different ways that design can contribute to people's well-being:

- Design can be a direct source of well-being: for example, a beautiful product that is aesthetically pleasing;
- Design can enable well-being directly: for example, by being a part of an engaging activity;
- Design can indirectly support well-being: for example, by providing cues for actions or thoughts; and
- Design can be a symbol of well-being: for example, by symbolizing an important event.

Some of these possibilities to design for well-being have been well explored, like design for activities (e.g., Desmet & Sääksjärvi, 2016), or design for experiences (e.g., Pohlmeyer, 2014). Design with symbolic meaning, however, lacked exploration. Our research contributes to the field of positive design by having investigated and refined the concept of well-being related symbolic meaning (see chapter 3).

Design with symbolic meaning is an approach that focuses on understanding and trying to encourage one or more well-being related symbolic meanings in products, so that people can experience well-being when using or interacting with them. Activities and experiences can also be a part of this approach, but what essentially distinguished these is their focus. First, the starting point — aiming to provoke a particular emotion or to allow a particular experience, versus a broader aim of encouraging well-being through the product's symbolic meanings — and second, the outcome — to have experienced something positive within a timeframe, versus having reminders in products of past, present and future events, people, or values that are personally significant and therefore encourage long-lasting well-being.

This thesis demonstrated the concept's applicability in design and offered a new toolkit with design directions to make it usable. The toolkit developed in this thesis also contributes to the collection of resources — methods, tools, techniques — that the field of positive design is building, strengthening its research and practice profile within the discipline of design.

Contributions to the debate: a nuance to the 'experience recommendation'

Numerous studies have sustained the idea that the consumption of material goods, both basic and luxury, does not have a sustainable positive effect on well-being (Bruni & Stanca, 2006; Patterson & Biswas-Diener, 2012). While buying and using products can momentarily increase a feeling of well-being, this effect is often short-lived due to hedonic adaptation and the introduction of new products that promise to be better (Raghunathan & Irwin, 2001; Bruni & Stanca, 2006; Chancellor & Lyubomirsky, 2011): people adapt to most of their purchases after which they will take them for granted (Bruni & Stanca, 2006; Wang, Novemsky, & Dhar, 2009). Consequently, for people who enjoy the fulfilment of basic life conditions, it rarely pays off to seek well-being in material consumption (Patterson & Biswas-Diener, 2012).

Accordingly, the scholarly literature on well-being has posited that experiences and experiential goods (conceptualized as 'instrumental materialism' by Csikszentmihalyi & Rochberg-Halton, 1981) — those material goods that have a clear experiential component, i.e., that enable experiences — contribute in a stronger way to people's well-being than material goods (van Boven & Gilovich, 2003; Nicolao, Irwin, & Goodman, 2009; Carter & Gilovich, 2010; 2012).

The term *experience recommendation* was coined by Nicolao, Irwin and Goodman (2009), referring to the theory of van Boven and Gilovich (2003) which proposes that people derive more happiness from positive experiential acquisitions than from positive material acquisitions. Research on this topic has shown that the anticipation of positive experiential acquisitions is higher than that of positive material acquisitions (Kumar, Killingsworth, & Gilovich, 2014); adaptation happens slower with positive experiential acquisitions than with positive material acquisitions (Nicolao, Irwin, & Goodman, 2009); and positive experiences are regarded as better investments in retrospect and are prone to triggering less comparisons than positive material acquisition (Carter & Gilovich, 2010).

However, when mentioning material goods, this distinction leaves out those that have relevant symbolic meaning to their owners, and thus potentially also contribute to their well-being. Products with symbolic meaning may be resistant to psychological obsolescence: this has been found in previous research about products that symbolise rare and meaningful life events (Goodman, Malkoc, & Stephenson, 2016), and adding a material component to the experience has a better effect on long-term well-being (Sääksjärvi, Hellén, & Desmet, 2016). In addition, material goods whose value is linked to sentimental value (Fletcher, 2009) have been reported to slow down hedonic adaptation (Yang & Galak, 2015). It has been proposed that symbolic meaning may delay or prevent hedonic adaptation, and this thesis has provided concrete design directions to design with symbolic meaning.

Reflection on potential contributions to other design fields: design for sustainability

In our literature review on the concept of symbolic meaning (see chapter 2), we found several ways in which it can contribute to design for sustainability: for example, designing with a focus on memories or self-expression can generate product attachment and postpone product replacement (Mugge, Schoormans, & Schifferstein, 2005; Geen, Porter, & Bingham, 2017). Several design toolkits directed at design for sustainability include meaning-related elements, such as identity, narratives, or relationships as part of the strategy to make products last longer and postpone their replacement (e.g., the Emotional Durability Design Nine, see: Haines-Gadd et al., 2018). This is desirable from the point of view of the environment because repeated discarding and replacing leads to more waste and

depletion of natural resources, and overconsumption can have detrimental effects on well-being. Products that are more likely to be maintained, serviced, taken care of, repurposed, or fixed are, therefore, more environmentally-friendly.

Our approach of designing with well-being related symbolic meaning, while not specifically geared towards that goal, can potentially contribute to the field of sustainable design by adding specific design directions to increase and support it, producing designs that are potentially more relevant for people, that provide personally meaningful interactions or representations, and that are more prone for attachment, more likely to be kept and maintained, and more likely to be shared, passed down, repurposed or discarded correctly.

7.3.2 Implications for design

Contributions to design practice

Companies actively seek to understand how people prefer certain qualities or interactions over others, how to engage and captivate new and old end-users, how to cultivate an interesting image, how to create novel and meaningful experiences, and how to create value in often saturated markets. Past research has focused on understanding people (as consumers and end-users) in their material environments; on how to effectively communicate brand or product values with an audience; how to design new products, services, and retail environments that engage people into recognizing, choosing, buying, and remain loyal to brands and products, etc. Our research focused on the moment of the product's life that precedes production, retail, consumption, use, and discarding (or repurposing): the design process. This research contributes to design practice by deconstructing a complex and somewhat vague concept, made up of several concepts within, and presents it in a simple, clear, and actionable format to designers.

Our results indicate that it is possible to include well-being related symbolic meaning in the design process and this can be applied in the development of new products to support the development of better, longer-lasting, and more meaningful interactions with consumer durables for companies. It can also be useful in the redesign of existing products, and for communicating a design vision among team members and stakeholders. In problematic or difficult contexts — in

which an opportunity-driven approach can provide value even without solving utilitarian problems —, this approach might also make a positive contribution. The potential outcomes of such applications can be to generate an added layer of value to the end-user in problem-driven design briefs by providing personal meaning in contexts that traditionally focus on suppressing or minimizing problems towards neutral states (healthcare, for example). In addition, the process of linking theory from fields outside design (e.g., psychology), and make it applicable in design practice can contribute to narrowing down the gap that exists between theory and practice and between knowledge domains.

Contributions to the role of design: design with symbolic meaning is opportunity-driven design

The overarching question that pushed the current research was whether it is possible to develop a systematic approach to design for symbolic meaning. We find that it is more reasonable to consider that the designer can facilitate meaning attribution, rather than create it, because meaning emerges in the human-product interactions. Users will differ in their perspectives and contexts and will thus attribute their own version of meaning. This means that there can be contrasting effect to our intention when developing this research and creating the SIM toolkit, as explained further in the limitations section of this chapter.

Our research places the designer in a particular role of opportunity creator, in addition to the traditional role of problem solver. In this capacity, the designer must look to the context s/he is designing for and look for possibilities that can enrich people's lives and support their well-being. This means that design with well-being related symbolic meaning falls in the category of opportunity-driven design, which can be impactful and relevant without necessarily solving problems (see Desmet & Hassenzahl, 2012).

Imagine a Syrian migrant that just arrived on the coast of some European country after a very difficult journey. He left his war-torn country behind, he left his dignity behind, and lost his money to smugglers. When he arrives, he finds a resistant government and a group of volunteers that aim to assist him. This is a difficult context with clear problems. Such is the scenario of *Project Life Jacket* — a volunteer-led initiative by NGO 'the Voice of Thousands.' The project takes

floatation life vests worn by refugees and illustrates *on them*, depicting the person's life before the war. The meaning of term 'life vest' thus becomes twofold, extending from the saving of one's life, to the *life* they lived before. The illustrated vest does not solve a utilitarian problem, after it has fulfilled its task of keeping the person safe from drowning. However, this emotional process of telling a story and having an artist draw it on the vest, adds a new layer of meaning that can provide hope, restore some dignity, and turns the product into a symbol of what that person once had and may aim for in their new life. This example illustrates that opportunities to design with symbolic meaning may be found even in a context that is dominated by problems.

Videography as a research output

Videography is an alternative format of academic publication, referring to the process of capturing moving images on electronic media. Besides a toolkit, one of the main outcomes of this thesis is a film presented at a consumer research conference film track. Possibly this is the most relevant outcome of the thesis because of its novel format and because of the reach it can have beyond academia.

The video format is able to record expressions and bodily presence as well as the context in which actions take place (Belk & Kozinets, 2005; Smith, Fisher, & Cole, 2007) in a multi-sensorial way, creating powerful encounters that force the viewer to think in new ways (Hietanen, Rokka, & Schouten, 2014). Some practical arguments to use video in academic research are linked to the fact that production is increasingly cheaper, quicker, and easier.

Images reflect reality rather than offering theoretical abstraction (Belk & Kozinets, 2005), therefore videography provides a potentially more holistic account of behaviour (Rokka & Hietanen, 2018). In addition, it is emotional and thus possibly more resonant than other formats (Spanjaard & Freeman, 2007; de Valck, Rokka, & Hietanen, 2009).

Academic videography refers not only to the entire methodology of the production of an expression via moving image, but also the finished product of the videographic work. This format is becoming increasingly common in consumer research academic platforms (e.g., the Association for Consumer Research has a

film track since 2002; the journals *Consumption Markets & Culture* has video special issue).

Whereas several doctoral thesis of similar nature (discussing, for example, design and emotion, or well-being) have come up with card sets as output, the same cannot be said about videography. Its value, therefore, extends to the way it proposes new ways of disseminating research within academia, which is particularly relevant for human-related topics.

Reflecting on potential contributions to design education

While this was not the focus of our work, we realise that this thesis may have potential contributions to the field of education. The SIM toolkit summarizes complex knowledge from psychology and design, in a simple and usable format. It can inform and inspire designers and design students to apply the concept of well-being related symbolic meaning, which they may find abstract and difficult to understand intuitively, with a set of actionable design directions, with user-related questions, and inspirational product examples.

This type of representation of information can have implications in design education, for example, in facilitating the accessibility of complex knowledge. Designers tend to think visually (e.g., Wastiels et al., 2013), thus, having a more visual and tactile approach (based on colours and non-linear text, in a hand-held format) for conveying information and theory in class can improve understanding and retention of knowledge. In addition, creating mental images supports learning (Paivio, 1990; Kounios & Holcomb, 1994), so using tools with non-linear text, pictorials, or a combination of visual and textual cues can enhance the design learning experience. Research output (papers, books) from fields outside of design is often necessary to introduce in design education to explain certain concepts. However, these are often dense and use unfamiliar jargon, becoming challenging to understand for the design student (Rogers, 2004). Design research outputs link other fields of knowledge to design, showing explicitly their relevance for design practice, and offer a better and clearer source of information for design students. However, the physical format — of tools, games, canvases, etc. — is closest to the level of understanding of design students (Casais, 2020). That is because synthesis makes knowledge more actionable, and presenting summarized information can be a good strategy to make use of

guidelines and frameworks developed in the context of research, which have potential but are often not used because they are difficult to apply in practice (Hornecker, 2010; Deng, Antle & Neustaedter, 2014). Furthermore, the physical format makes people interact differently (Neves, 2019). Design tools, therefore, can improve the understanding of complex topics in class, complementing traditional didactic instruments (books, articles, videos, etc.), particularly because they break down information into simpler terms, use non-linear text, use visual information (colours, images, pictorials), and are hand held (sectioning the information in a way that can be reorganized).

7.3.3 Implications for society

Contributions beyond design: well-being, policy development, and sustainable living

Designed products are now a staple of modern living, but this abundance has not necessarily translated into an increase in well-being (Chancellor & Lyubomirsky, 2011). Design that is relevant for individuals, that has meaning and relates to the important aspects of people's lives (their achievements, aspirations, personal values, etc.), is design that can support well-being (Desmet & Pohlmeier, 2013). The processes and outcomes of this thesis can contribute to society at large in three ways: (1) contributing to the understanding of human well-being and its relation to the material environment; (2) informing policy development for groups, communities, or cities, by highlighting the importance of symbolic meaning in products, interactions, and other interventions; and (3) informing sustainable ways of living, anchored in the relevance of the surrounding material environment that acts as a collection of cues for what is important to develop, to remember, or to aim for.

Considerations of symbolic meaning in the design of urban equipment can be an interesting way to contribute to society and sustainable living in public places. These considerations can be, for example, finding ways to reuse or repurpose existing objects or materials that had a previous life, informing users about this or making it explicit in their identity. Circular economy practices, such as reusing the city's own trash to create new public equipment has been successfully implemented in the city of Almere, in the Netherlands (company InGarden, see: van Dijken, 2019). Another example of such practices is the use of plastic trash to make construction

bricks for schools in the city of Abidjan, in the Ivory Coast (company Conceptos Plásticos, see: Hanley, 2020).

Introducing symbolic meaning in products or their materials can potentially influence their perceived authenticity (Ewing, Allen, & Ewing, 2012) or recognized identity (Trudel, Argo, & Meng, 2016), thus resulting in better care by users and in an increased awareness about sustainable practices, and also influence them in the moment of purchase, particularly when expressed through marketing channels or the product's image (e.g., Ericksen, 1996; Fournier, 1991; Sääksjärvi & Hellén, 2013).

7.4 Final considerations

7.4.1 Limitations of the proposed approach

One of the questions that was addressed in this thesis was whether symbolic product meaning can have a positive well-being impact. We found that symbolic product meaning can support six determinants of psychological well-being. Hence, focusing on one or more of these determinants when designing with symbolic meaning, can be used as an approach to design for well-being. Nevertheless, while our findings suggest that products can contribute to well-being due to their symbolic meaning, we believe that this will not be true for all symbolic meaning.

The consumption of products with symbolic meaning might also serve a compensatory function: when people are unable to identify their needs or do not have resources to fulfil them, then they are more prone to engage in compensatory consumption (Friese, 2000). In addition, when people perceive others as unreliable, they can end up replacing them by objects (Keefer et al., 2012). In such cases, the symbolic products can become a representation of what was missed or of unrealistic ideals, and eventually promote negative feelings as a result. Strong symbolic meaning in products can also lead to negative behaviours such as hoarding, when it becomes difficult to discard possessions to the point of distress (Frost & Steketee, 2010); or it can lead to the fear of losing the cherished possessions which in turn can lead to hoarding (Frost & Gross, 1993).

Nevertheless, symbolically meaningful products that result from special experiences, moments, associations with significant people, etc., which are infused with personally

relevant narratives, can promote well-being. Even negative or painful experiences can result in narratives with lessons that evoke positive emotions, or a sense of constructiveness: one of the collected product stories from study 1 (reported in chapter 3 of this thesis) described a set of military name tags that symbolized war and the negative experiences associated with it, but also self-acceptance and a sense of continued development.

Past research (Desmet & Sääksjärvi, 2016) indicated that form has an impact on the effectiveness of well-being focused interventions. We mention *products* but do not specifically distinguish between tangible products and digital products (such as mobile applications) in this thesis. And while, on the one hand, there is research linking irreplaceable products and product attachment to symbolic meanings (e.g. Schifferstein & Zwartkruis-Pelgrim, 2008), there is also, on the other hand, research linking intangible things like brands or generic product typologies to symbolic meanings (Fournier, 1991). Research on habits and habit building – which can be supported by digital products like mobile applications – has suggested that habit formation is akin to certain attitudes in life (Verplanken & Aarts, 1999). This leaves room for further research on the link between digital products' ability to support such attitudes and their symbolic meanings.

In testing the proposed approach we were limited by the selected methodology, because the workshop format was restricted by time, partners, and design briefs, and both the workshops and the industry cases were a one-time use. Furthermore, we lacked specific testing for alternative uses – besides inspiration at the stage of ideation – such as the evaluation of solutions, communication within teams or with stakeholders about symbolic meaning, or the creation of a design vision for projects. Lastly, we did not differentiate between meanings in terms of their effects on design. These limitations exist due to several decision that were taken during this research project to have the best results possible, and can be addressed with further research following this thesis.

A further limitation of this work is the lack of an independent second (or third) coder. This limitation was minimized through meetings with the research team about the codes to use. While we used one coder in all studies (the main researcher, the author of this thesis), the research team was closely involved supervising the data entry and organization (also using the original data such as category names of

participants), resulting in rephrasing and optimisation of the coding, thereby providing greater support for the reliability of the created codes.

7.4.2 Avenues for future research

Following the discussion above, a future avenue for research on the topic of well-being related symbolic meaning could be to focus on identifying optimal contexts or types of design intervention that would benefit most from this approach. Accordingly, investigating types of interventions or product categories that are less suitable for this approach could also be interesting.

Due to the explorative nature of this research, there is room for further research on the subject. For instance, future research can focus on determining whether certain types of symbolic meaning in products are more important for encouraging well-being than others. While we did not direct our research efforts to address this question, we can offer some considerations about the different nature of the symbolic meanings we worked with in this thesis. Some symbolic meanings seem to be more prone, or at least easier, to design for; in turn, perhaps this results in a more effective well-being effect. For example, when collecting stories about the meaning of positive relations with others, almost invariably we found a symbol linked to people (past-down jewellery, something wearable, a gift from someone special), which makes this symbolic meaning a rather 'tangible' one to work with. Regarding the symbolic meaning of personal growth, we found several stories about reflection, and products like diaries. In terms of well-being this seems to indicate that supporting these kind of activities will generate well-being, but maybe the symbolic effect is more subtle. The meaning of purpose in life is very much linked to motivation, so we found several activity-related products and time-related products. This could mean that the symbolic effect of a product based on this meaning is relatively easy to achieve and to support well-being. The meaning of self-acceptance is also an interesting example: we found many stories of products with this symbolic meaning relating to self-expression (clothes, jewellery), as well as products that showcase a person's creativity or skills. This means that the symbolic element is strong and relatively easier to incorporate in a new design, which in turn can support its well-being effect.

When investigating existing products with personal symbolic meaning (study 1), we focused on products that the participants recognized as being relevant at the time of the interviews; future research can consider variations in meaning and importance over the lifespan of these possessions.

We anchored our work for this research mainly in the field of psychology, consumer research and design research. An interesting path to continue research on well-being related symbolic meaning could focus on other fields, such as sociology — and, in particular, on social interactionism —, to generate other insights for design. Other theoretical models (from psychology or other fields) could be equally generative in providing directions to design with, as a way to support the well-being of individuals and groups.

An important principle of conducting research is to have focus. As a result of that, it is often not possible, within a single research project, to pursue all consequences of the results. In our research, we aimed to support the process of designing for well-being, but did not focus on the results of that process in the perspective of end-users. While the resulting symbolic meanings and respective design directions have theoretical backing and have shown to influence the design process, particularly the ideation phase, future research should focus on assessing the actual effect of designs (interventions, products) that use this approach concentrating on the well-being of the people using them.

In addition, future research could focus on exploring design tools as a way to facilitate design education (as proposed above in 7.3.2), and as a means to narrow the gap that exists between design research (with a prevalence for theory) and design practice. Design tools are means to improve or enhance the capabilities of designers (Lutters et al., 2014), and often they are easy to use (hand-held cards, canvases with summarized fields to fill in, computer software, etc.). In class, future studies can focus on the introduction of knowledge from other fields (sociology, psychology, etc.) to assess whether tools can be more effective than more dense or jargon-full books and scholarly articles; and experiment using design tools in games, in student teams, or in simulated projects.

References

- Adler, L. (2008). *Our treasured belongings: Ties that bind*. Publication of the School of Human Environmental Sciences, Family & Consumer Sciences Extension, ID HHF-LRA.170. Retrieved from <http://fcs-hes.ca.uky.edu/sites/fcs-hes.ca.uky.edu/files/hhf-lra-170.pdf>
- Ahuvia, A.C. (1993). I love it. Towards a unifying theory of love across diverse love objects (Doctoral dissertation). Evanstone, IL: Northwestern University.
- Ahuvia, A.C. (2005). Beyond the Extended Self: Loved objects and consumers' identity narratives. *Journal of Consumer Research*, 32(1), 171-184.
- Amabile, T.M. & Kramer, S.J. (2001). The power of small wins. *Harvard Business Review*, 89(5), 4-12.
- Ariely, D. & Wertenbroch, K. (2002). Procrastination, deadlines, and performance: Self-control by precommitment. *Psychological Science*, 13(3), 219-224.
- Arnould, E.J., Price, L.L., & Folkman Curasi, C. (1999). Cherished possessions. *Anthropology Newsletter, February 1999*, 17-18.
- Babin, B.J., Darden, W.R., & Griffin, M. (1994). Work and/or fun: Measuring hedonic and utilitarian shopping value. *Journal of Consumer Research*, 20(4), 644-656.
- Balaam, M., Fitzpatrick, G., Good, J., & Luckin, R. (2010). Exploring affective technologies for the classroom with the subtle stone. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1623-1632). New York, NY: ACM.
- Ball, A.D. & Tasaki, L.H. (1992). The role and measurement of attachment in consumer behavior. *Journal of Consumer Psychology*, 1(2), 155-172.
- Baumeister, R.F. (1999). Self-concept, self-esteem, and identity. In V.J. Derlega, B.A. Winstead & W.H. Jones (Eds.), *Personality: Contemporary Theory and Research* (2nd ed.) (pp. 339-375). Chicago, IL: Nelson-Hall Publishers.

- Baumeister, R.F. & Leary, M.R. (1995). The need to belong: Desire for interpersonal attachments as fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529.
- Baumeister, R.F. & Vohs, K.D. (2002). The pursuit of meaningfulness in life. In C.R. Snyder & S.J. Lopez (Eds.), *The Oxford Handbook of Positive Psychology* (pp. 608-618). New York, NY: Oxford University Press.
- Bekker, T. & Antle, A.N. (2011). Developmentally situated design (DSD): Making theoretical knowledge accessible to designers of children's technology. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems CHI '11* (pp. 2531-2540). New York, NY: ACM.
- Belk, R.W. (1976). It's the thought that counts: A signed digraph analysis of gift-giving. *Journal of Consumer Research*, 3(3), 155-162.
- Belk, R.W. (1982). Effects of gift-giving involvement on gift selection strategies. In A. Mitchell (Ed.), *Advances in Consumer Research*, Vol. 9 (pp. 408-412). Ann Arbor, MI: Association for Consumer Research.
- Belk, R.W. (1988). Possessions and the extended self. *Journal of Consumer Research*, 15(2), 139-168.
- Belk, R.W. (1990). The role of possessions in constructing and maintaining a sense of past. In E. Marvin et al. (Eds.), *Advances in Consumer Research*, Vol. 17 (pp. 669-676). Provo, UT: Association for Consumer Research.
- Belk, R.W. & Kozinets, R.V. (2005). Videography in marketing and consumer research. *Qualitative Market Research: An International Journal*, 8(2), 128-141.
- Bell, T. & Spikins, P. (2018). The object of my affection: Attachment security and material culture. *Time and Mind*, 11(1), 23-39.
- Bergsma, A. & Ardelt, M. (2011). Self-reported wisdom and happiness: An empirical investigation. *Journal of Happiness Studies*, 13(3), 481-499.
- Bernecker, K., Herrmann, M., Brandstätter, V. & Job, V. (2017). Implicit theories about willpower predict subjective well-being. *Journal of Personality*, 85(2), 136-150.
- Bers, M. & Urrea C. (2000). Technological prayers: Parents and children exploring robotics and values. In A. Druin & J. Hendler (Eds.), *Robotics for kids: Exploring new technologies for learning* (pp. 193-217). London: Academic Press.
- Biswas-Diener, R., Kashdan, T.B., & King, L.A. (2009). Two traditions of happiness research not two distinct types of happiness. *The Journal of Positive Psychology*, 4(3), 208-211.
- Blessing, L.T.M & Chakrabarti, A. (2009). *DRM, a Design Research Methodology*. Dordrecht: Springer.
- Bloch, P.H. & Richins, M.L. (1983). A theoretical model for the study of product importance perceptions. *Journal of Marketing*, 47(3), 69-81.

- Bohlmeijer, E. (2007). *Reminiscence and depression in later life* (Doctoral dissertation). Amsterdam: Vrije Universiteit.
- Boniwell, I. (2012). *Positive Psychology in a nutshell: The science of happiness*. Berkshire: Open University Press.
- Borjesson, K. (2009). Affective Sustainability. Is this what timelessness really means? In D. Durling et al. (Eds.), *DRS Undisciplined! Proceedings of the Design Research Society Conference 2008* (pp. 1-16). Sheffield: Sheffield Hallam University.
- Brickman, P. & Campbell, D. (1971). Hedonic relativism and planning the good society. In M. Appley (Ed.), *Adaptation-level theory: A symposium*. New York: Academic Press.
- Bruni, L., & Stanca, L. (2006). Income aspirations, television and happiness: Evidence from the World Values Survey. *Kyklos: International Review for Social Sciences*, 59(2), 209-225.
- Bryan, J.F. & Locke, E.A. (1967). Goal setting as a means of increasing motivation. *Applied Psychology*, 51(3), 274-277.
- Bryant, F.B. & Veroff, J. (2007). *Savoring: A new model of positive experience*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Burt, C.D.B. (1994). Prospective and retrospective account-making in diary entries: A model of anxiety reduction and avoidance. *Anxiety, Stress and Coping: An International Journal*, 6(4), 327-340.
- Cadbury T. (2015). Amulets: The material evidence. In R. Hutton (Ed.), *Physical evidence for ritual acts, sorcery and witchcraft in Christian Britain* (pp. 188-208). London: Palgrave Macmillan.
- Carter, T.J. & Gilovich, T. (2010). The relative relativity of experiential and material purchases. *Journal of Personality and Social Psychology*, 98(1), 146-159.
- Carter, T.J. & Gilovich, T. (2012). I am what I do, not what I have: The centrality of experiential purchases to the self-concept. *Journal of Personality and Social Psychology*, 102(6), 1304-1317.
- Casais, M. (2020). Facilitating complex knowledge in design education through design tools. In R. Almendra & J. Ferreira (Eds.). *Research & Education in Design: People & Processes & Products & Philosophy*. Oxford: Taylor & Francis.
- Chancellor, J. & Lyubomirsky, S. (2011). Happiness and thrift: When (spending) less is (hedonically) more. *Journal of Consumer Psychology*, 21(2), 131-138.
- Chapman, J. (2005). *Emotionally durable design: Objects, experiences and empathy*. London: Earthscan.
- Chapman, J. (2009). Design for (emotional) durability. *Design Issues*, 25(4), 29-35.
- Cheng, P., Mugge, R., & Schoormans, J.P.L. (2014). A new strategy to reduce design fixation: Presenting partial photographs to designers. *Design Studies*, 35(4), 374-391.

- Chiang, K-J., Chu, H., Chang, H-J., Chung, M-H., Chen, C-H., Chiou, H-Y., & Chou, K-R. (2010). The effects of reminiscence therapy on psychological well-being, depression, and loneliness among the institutionalized aged. *International Journal of Geriatric Psychiatry*, 25(4), 380-388.
- Clifford, J. (1994). Collecting ourselves. In S.M. Pearce (Ed.), *Interpreting objects and collections* (pp. 258-268). London: Routledge.
- Correia de Barros, A., Duarte, C., & Cruz, J.B. (2011). The influence of context on product judgement: Presenting assistive products as consumer goods. *International Journal of Design*, 5(3), 99-112.
- Csikszentmihalyi, M. & Rochberg-Halton, E. (1981). *The meaning of things: Domestic symbols and the self*. Cambridge: Cambridge University Press.
- Curtis, S., Gesler, W., Fabian, K., Francis, S., & Priebe, S. (2007). Therapeutic landscapes in hospital design: A qualitative assessment by staff and service users of the design of a new mental health inpatient unit. *Environment and Planning C: Government and Policy*, 25(4), 591- 610.
- Da Silva, O., Crilly, N., & Hekkert, P. (2015). How people's appreciation of products is affected by their knowledge of the designers' intentions. *International Journal of Design*, 9(2), 21-33.
- Daalhuizen, J. (2014). *Method usage in design: How methods function as mental tools for designers* (Doctoral dissertation). Delft: Delft University of Technology.
- Daalhuizen, J.J. & Badke-Schaub, P.G. (2011). The use of methods by advanced beginner and expert industrial designers in non-routine situations: A quasi-experiment. *International Journal of Product Development*, 15(1-3), 54-70.
- Darzentas, D., Hazzard, A., Brown, M., Flintham, M., & Benford, S. (2016). Harnessing the digital records of everyday things. In P. Lloyd & E. Bohemia (Eds.), *Proceedings of DRS2016: Design + Research + Society - Future-Focused Thinking*, Vol. 8 (pp. 3033-3058). London: Design Research Society.
- De Francisco Vela, S., Casais, M., & Desmet, P.M.A. (2014). Feeding your piggy bank with intentions: A study on saving behaviour, saving strategies, and happiness. In J. Salamanca et al. (Eds.), *Proceedings of the Colors of Care: The 9th International Conference on Design & Emotion* (pp. 64-69). Bogotá: Ediciones Uniandes.
- De Valck, K., Rokka, J., & Hietanen, J. (2009). Videography in consumer research: Visions for a method on the rise. *Finanza Marketing e Produzione*, 27, 81-101.
- Deci, E.L. & Ryan, R.M. (2008). Hedonia, eudaimonia, and well-being: An introduction. *Journal of Happiness Studies*, 9(1), 1-11.
- Deng, Y., Antle, A.N., & Neustaedter, C. (2014). Tango Cards: A card-based design tool for informing the design of tangible learning games. In: *Proceedings of the 2014 conference*

- on *Designing interactive systems DIS'14: Crafting Design*, (pp. 695-704), Vancouver, June 21-15, 2014. New York, NY: ACM Press.
- Desmet, P.M.A. (2003). Multi-layered model of product emotions. *The Design Journal*, 6(2), 4-11.
- Desmet, P.M.A. (2012). Faces of product pleasure: 25 positive emotions in human-product interactions. *International Journal of Design*, 6(2), 1-29.
- Desmet, P.M.A. & Dijkhuis, E. (2003). A wheelchair can be fun: A case of emotion-driven design. In *Proceedings of the International Conference on Designing Pleasurable Products and Interfaces* (pp. 22-27). New York, NY: ACM.
- Desmet, P.M.A. & Hassenzahl, M. (2012). Towards happiness: Possibility-driven design. In M. Zacarias & J. Valente de Oliveira (Eds.), *Human-Computer Interaction: The Agency Perspective* (pp. 3-27). Berlin: Springer.
- Desmet, P.M.A. & Hekkert, P. (2007). Framework of product experience. *International Journal of Design*, 1(1), 57-66.
- Desmet, P.M.A. & Pohlmeier, A.E. (2013). Positive design: An introduction to design for subjective well-being. *International Journal of Design*, 7(3), 5-19.
- Desmet, P.M.A. & Sääksjärvi, M.C. (2016). Form matters: Design creativity in positive psychological interventions. *Psychology of Well-Being: Theory, Research and Practice*, 6(7), 1-17.
- Desmet, P.M.A. & Schifferstein, H.N.J. (2011). *From floating wheelchairs to mobile car parks: A collection of 35 experience-driven design projects*. The Hague: Eleven Publishers.
- Desmet, P.M.A., Fokkinga, S.F., Ozkaramanli, D., & Yoon, J. (2016). Emotion-driven product design. In H.L. Meiselman (Ed.), *Emotion Measurement* (pp. 405-426), Amsterdam: Elsevier.
- Desmet, P.M.A., Porcelijn, R., & van Dijk, M.B. (2007). Emotional design; Application of a research-based design approach. *Knowledge, Technology & Policy* 20(3), 141-155.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542-575.
- Diener, E., Suh, E.M., Lucas, R.E., & Smith, H.L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 125(2), 276-302.
- Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D-w., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research*, 97(2), 143-156.
- Dittmar, H. (1994). Material possessions as stereotypes: Material images of different socio-economic groups. *Journal of Economic Psychology*, 15(4), 561-585.
- Dittmar, H. (2008). To have is to be? Psychological functions of material possessions. In H. Dittmar (Ed.), *Consumer culture, identity and well-Being: The search for the 'good life' and the 'body perfect'* (pp. 25-48). Hove: Psychology Press.

- Doerr, C.E. & Baumeister, R.F. (2010). Self-regulatory strength and psychological adjustment. In J.E. Maddux & J.P. Tangney (Eds.), *Social Psychological Foundations of Clinical Psychology* (pp. 71-83). New York, NY: The Guildford Press.
- Donnelly, G.E., Lamberton, C., Walker Reczek, R., & Norton, M.I. (2016). Social recycling transforms unwanted goods into happiness. *Journal of the Association for Consumer Research*, 2(1), 48-63.
- Ekerdt, D.J., Sergeant, J.F., Dingel, M., & Bowen, M.E. (2004). Household disbandment in later life. *The Journals of Gerontology Series B Psychological Sciences and Social Sciences*, 59(5), 265-273.
- Elias, J.J. (2015). Truck decoration and religious identity: Material culture and social function in Pakistan. *Material Religion*, 1(1), 48-70.
- Ellis, B. (2002). Why is a lucky rabbit's foot lucky? Body parts as fetishes. *Journal of Folklore Research*, 39(1), 51-84.
- Ellison, C.G. (1991). Religious involvement and subjective well-being. *Journal of Health and Social Behavior*, 32(1), 80-99.
- Emmons, R.A., & McCullough, M.E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology*, 84(2), 377.
- Ericksen, M. (1996). Using self-congruity and ideal congruity to predict purchase intention: A European perspective. *Journal of Euro-Marketing*, 6(1), 41–56.
- Escobar-Tello, C. (2016). A design framework to build sustainable societies: Using happiness as leverage. *The Design Journal*, 19(1), 93-115.
- Ewing, D., Allen, C., & Ewing, R. (2012). Authenticity as meaning validation: An empirical investigation of iconic and indexical cues in a context of 'green' products. *Journal of Consumer Behaviour*, 11, 381–390.
- Feldman, D.B. & Snyder, C.R. (2005). Hope and the meaningful life: Theoretical and empirical associations between goal directed thinking and life meaning. *Journal of Social and Clinical Psychology*, 24(3), 401-421.
- Finch, J. & Mason, J. (2000). *Passing on: Kinship and inheritance in England*. London: Routledge.
- Fletcher, G. (2009). Sentimental value. *The Journal of Value Inquiry*, 43(1), 55-65.
- Fokkinga, S.F. (2015). *Design -|+ Negative emotions for positive experiences* (Doctoral dissertation). Delft: Delft University of Technology.
- Fokkinga, S.F. & Desmet, P.M.A. (2013). Ten ways to design for disgust, sadness, and other enjoyments: A design approach to enrich product experiences with negative emotions. *International Journal of Design*, 7(1), 19-36.

- Folkman Curasi, C., Price, L.L., & Arnould, E.J. (2004). How individuals' cherished possessions become families' inalienable wealth. *Journal of Consumer Research*, 31(3), 609-622.
- Ford, A.B., Haug, M.R, Stange, K.C., Gaines, A.D., Noelker, L.S., & Jones, P.K. (2000). Sustained personal autonomy: A measure of successful aging. *Journal of Aging Health*, 12(4), 470-89.
- Fournier, S. (1991). Meaning-based framework for the study of consumer-object relations. In R.H. Holman & M.R. Solomon (Eds.), *Advances in Consumer Research*, Vol. 18 (pp. 736-742). Provo, UT: Association for Consumer Research.
- Fredrickson, B.L. & Losada, M.F. (2005). Positive affect and the complex dynamics of human flourishing. *The American Psychologist*, 60(7), 678-686.
- French, S. & Joseph, S. (1999). Religiosity and its association with happiness, purpose in life, and self-actualisation. *Mental Health, Religion & Culture*, 2(2), 117-120.
- Friedman, B. & Hendry, D.G. (2012). The Envisioning cards: A toolkit for catalyzing humanistic and technical imaginations. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems CHI '12* (pp. 1145-1148). New York, NY: ACM.
- Friedmann, R. & Lessig, V.P. (1986). A framework of psychological meaning of products. In R.J. Lutz (Ed.), *Advances in Consumer Research*, Vol. 13 (pp. 338-342). Provo, UT: Association for Consumer Research.
- Friese, S. (1997). A consumer good in the ritual process: The wedding dress. *Journal of Ritual Studies*, 11(2), 51-62.
- Friese, S. (2000). *Self-concept and identity in a consumer society: Aspects of symbolic product meaning*. Marburg: Tectum Verlag.
- Frisina, P.G., Borod, J.C., & Lepore, S.J. (2004). A meta-analysis of the effects of written emotional disclosure on the health outcomes of clinical populations. *The Journal of Nervous and Mental Disease*, 192(9), 629-634.
- Frohlich, D. & Murphy, R. (2000). The memory box. *Personal Technologies*, 4(4), 238-240.
- Frost, J.L., Wortham, S.C., & Reifel, S. (2012). *Play and child development*. Boston, MA: Pearson.
- Frost, R.O. & Gross, R.C. (1993). The hoarding of possessions. *Behaviour Research and Therapy*, 31(4), 367-381.
- Frost, R.O. & Stekeetee, G. (2010). *Stuff: Compulsive hoarding and the meaning of things*. Boston, NY: Mariner Books.
- Fuad-Luke, A. (2010). Adjusting our metabolism: Slowness and nourishing rituals of delay in anticipation of a post-consumer age. In T. Cooper (Ed.), *Longer lasting products* (pp. 133-155). Surry: Gower Publishing.

- Geen, C., Porter, S., & Bingham, G. (2017). Product personalisation using personally meaningful data and the creation of new product attributes. *International Journal of Rapid Manufacturing*, 6(2-3), 170-184.
- Gentry, J., Menzel Baker, S., & Kraft, F.B. (1995). The role of possessions in creating, maintaining, and preserving one's identity: Variation over the life course. In F.R. Kardes & M. Sujan (Eds.), *Advances in Consumer Research*, Vol. 22 (pp. 413-418). Provo, UT: Association for Consumer Research.
- Gibson, F. (2004). *The past in the present: Using reminiscence in health and social care*. Baltimore, MD: Health Professions Press.
- Gift. (n.d.) In *Oxford Dictionary*. Retrieved from <https://en.oxforddictionaries.com/definition/gift>
- Gioia, D.A., Corley, K.G., & Hamilton, A.L. (2012). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15-31.
- Glenn, J., & Walker, R. (Eds.). (2012). *Significant objects*. Seattle, WA: Fantagraphics Books.
- Golsteijn, C., van den Hoven, E., Frohlich, D., & Sellen, A. (2012) Towards a more cherishable digital object. In *DIS '12 Proceedings of the Designing Interactive Systems Conference* (pp. 655-664). New York, NY: ACM.
- Goodman, J.K., Malkoc, S.A., & Stephenson, B.L. (2016). Celebrate or commemorate? A material purchase advantage when honoring special life events. *Journal of the Association for Consumer Research*, 1(4). pp. 497-508.
- Grimaldi, S., Fokkinga, S., & Ocnareescu, I. (2013). Narratives in design: A study of the types, applications and functions of narratives in design practice. In *Proceedings of the 6th International Conference on Designing Pleasurable Products and Interfaces, DPPI '13* (pp. 201-210). New York, NY: AMC.
- Grosse-Hering, B., Mason, J., Aliakseyeu, D., Bakker, C., & Desmet, P.M.A. (2013). Slow design for meaningful interactions. In *CHI '13, Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 3431-3440). New York, NY: ACM.
- Habermas, T. & Paha, C. (2002). Souvenirs and other personal objects: Reminders of past events and significant others in the transition to university. In J.D. Webster & B.K. Haight (Eds.), *Critical advances in reminiscence work: From theory to application* (pp. 123-139). New York, NY: Springer.
- Haines-Gadd M, Chapman J, Lloyd P, Mason J, Aliakseyeu D. Emotional Durability Design Nine—A Tool for Product Longevity. *Sustainability*. 2018; 10(6):1948.
- Hanley, S. (January 26th, 2020). Using Plastic Waste To Build Schools In The Ivory Coast, Online: <https://cleantechnica.com/2020/01/26/using-plastic-waste-to-build-schools-in-the-ivory-coast/>. Accessed: 6/3/2020

- Hassenzahl, M. (2013). User Experience and Experience Design. In M. Soegaard & R.F. Dam (Eds.), *The Encyclopedia of Human-Computer Interaction* (2nd Ed.). The Interaction Design Foundation. Retrieved from <https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/user-experience-and-experience-design>
- Hassenzahl, M., Heidecker, S., Eckoldt, K., Diefenbach, S., & Hillmann, U. (2012). All you need is love: Current strategies of mediating intimate relationships through technology. *ACM Transactions on Computer-Human Interaction*, 19(4), 1-19.
- Hecht, A. (2001). Home sweet home: Tangible memories of an uprooted childhood. In D. Miller (Ed.), *Home possessions: Material culture behind closed doors* (pp.123-145). Oxford: Berg.
- Heisley, D.D., Cours, D., & Wallendorf, M. (1997). The social construction of heirlooms. In Heisley, D.D. (1997). Special session summary the intergenerational flow of wealth in the family. In M. Brucks & D.J. MacInnis (Eds.). *Advances in Consumer Research*, Vol. 24 (pp. 242-243). Provo, UT: Association for Consumer Research.
- Hekkert, P. & Cila, N. (2015). Handle with care! Why and how designers make use of product metaphors. *Design Studies*, 40(2015), 196-217.
- Hendrick, S. & Hendrick, C. (2002). Love. In C.R. Snyder & S.J. Lopez (Eds.), *The Oxford Handbook of Positive Psychology* (pp. 472-484). New York, NY: Oxford University Press.
- Hietanen, J., Rokka, J., & Schouten, J.W. (2014). Commentary on Schembri and Boyle (2013): From representation towards expression in videographic consumer research. *Journal of Business Research*, 67(9), 2019-2022.
- Hirschman, E.C. (1986). The creation of product symbolism. In R.J. Lutz (Ed.), *Advances in Consumer Research*, Vol. 13 (pp. 327-331). Provo, UT: Association for Consumer Research.
- Hirschman, E.C. & Holbrook, M.B. (1982). Hedonic consumption: Emerging concepts, methods and propositions. *Journal of Marketing*, 46(3), 92-101.
- Hornecker, E. (2010). Creative idea exploration within the structure of a guiding framework: The Card Brainstorming Game. In: *Proceedings of the fourth international conference on Tangible, embedded, and embodied interaction TEI'10*, (pp. 101-108), Cambridge, MA, January 24-27, 2010. New York: ACM.
- Horváth, I. (2007). Comparison of three methodological approaches of design research. In J.-C. Bocquet (Ed.), *Proceedings of ICED 2007, the 16th International Conference on Engineering Design* (Paper #341, pp.1-11) [CD-Rom]. Paris, France.
- Horváth, I. (2008). Differences between research in design context and design inclusive research in the domain of industrial design engineering. *Journal of Design Research*, 7(1), 61-83.

- Huisman, G., van Hout, M., van Dijk, E.M.A.G., van der Geest, T., & Heylen, D.K.J. (2013). LEMtool - Measuring emotions in visual interfaces. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI 2013* (pp. 351-360). New York, NY: AMC.
- Isaacs, E., Konrad, A., Walendowski, A., Lennig, T., Hollis, V., & Whittaker, S. (2013). Echoes from the past: How technology mediated reflection improves well-being. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI'13* (pp. 1071-1080). New York, NY: ACM.
- Jewitt, C. (2012). *An introduction to using video for research*. NCRM Working Paper, ID 2259. Retrieved from <http://eprints.ncrm.ac.uk/2259/>
- Jimenez, S., Pohlmeier, A.E., Desmet, P.M.A., & Huzen, G. (2014). Learning from the positive: A structured approach to possibility-driven design. In J. Salamanca et al. (Eds.), *Proceedings of the Colors of Care: The 9th International Conference on Design & Emotion* (pp. 607-615). Bogotá, Ediciones Uniandes.
- Jordan, P.W., Bardill, A., Herd, K., & Grimaldi, S. (2017). Design for subjective well-being: Towards a design framework for constructing narrative. *The Design Journal*, 20(1), 4292-4306.
- Jung, H., Bardzell, S., Blevis, E., Pierce, J., & Stolterman, E. (2011). How deep is your love: Deep narratives of ensoulment and heirloom status. *International Journal of Design*, 5(1), 59-71.
- Kafka, G.J. & Kozma, A. (2002). The construct validity of Ryff's Scales of Psychological Well-Being (SPWB) and their relationship to measures of subjective well-being. *Social Indicators Research*, 57(2), 171-190.
- Kahneman, D., Krueger, A.B., Schkade, D.A., Schwarz, N., & Stone, A.A. (2004). A survey method for characterizing daily life experience: The Day Reconstruction Method. *Science*, 306(5702), 1776-1780.
- Kamleitner, B., Thürridl, C., & Martin, B.A.S. (2019). A Cinderella Story: How past identity salience boosts demand for repurposed products. *Journal of Marketing*, 83(6), 76-92.
- Keefer, L.A., Landau, M.J., Rothschild, Z.K., & Sullivan, D. (2012). Attachment to objects as compensation for close others' perceived unreliability. *Journal of Experimental Social Psychology*, 48(4), 912-917.
- Keenan, W.J.F. & Arweck, E. (2006). Introduction: Material varieties of religious expression. In E. Arweck & W.J.F. Keenan (Eds.), *Materializing religion: Expression, performance and ritual* (pp. 1-20). Hampshire: Ashgate.
- Keyes, C.L. (2002). The mental health continuum: from languishing to flourishing in life. *Journal of Health and Social Behavior*, 43(2), 207-222.

- Kirshenblatt-Gimblett, B. (1989). Objects of memory: Material culture as life review. In E. Oring (Ed.), *Folk groups and folklore genres: A reader* (pp. 329-338). Logan: Utah State University Press.
- Klapperich, H., Laschke, M., & Hassenzahl, M. (2018, September). The positive practice canvas: gathering inspiration for wellbeing-driven design. In *Proceedings of the 10th Nordic Conference on Human-Computer Interaction* (pp. 74-81). New York, NY: ACM.
- Komninos, A. (2019, May). The reflective level of emotional design. *Interactive Design Foundation*. Retrieved from <https://www.interaction-design.org/literature/article/the-reflective-level-of-emotional-design>
- Komter, A. (2007). Gifts and social relations. The mechanisms of reciprocity. *International Sociology*, 22(1), 93-107.
- Komter, A. & Vollebergh, W. (1997). Gift giving and the emotional significance of family and friends. *Journal of Marriage and Family*, 59(3), 747-757.
- Kounios, J. & Holcomb, P.J. (1994). Concreteness effects in semantic processing: ERP evidence supporting Dual-Coding Theory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*. 20(4), 804-823.
- Krippendorff, K. & Butter, R. (1984). Product semantics: Exploring the symbolic qualities of form. *Innovation*, 3(2), 4-9.
- Kroger, J. & Adair, V. (2008). Symbolic meaning of valued personal objects in identity transitions of late adulthood. *Identity*, 8(1), 5-24.
- Kumar, A., Killingsworth, M. A., & Gilovich, T. (2014). Waiting for merlot: Anticipatory consumption of experiential and material purchases. *Psychological science*, 25(10), 1924-1931.
- Kwok, C., Grisham, J.R., & Norberg, M.M. (2018). Object attachment: Humanness increases sentimental and instrumental values. *Journal of Behavioral Addictions*, 7(4), 1132-1142.
- Ledgerwood, A., Liviatan, I., & Carnevale, P.J. (2007). Group identity completion and the symbolic value of property. *Psychological Science*, 18(10), 873-878.
- Lenay, C. (2010). 'It's so touching': Emotional value in distal contact. *International Journal of Design*, 4(2), 15-25.
- Leung, A., Kier, C., Fung, T., Fung, L., & Sproule, R. (2011). Searching for happiness: The importance of social capital. *Journal of Happiness Studies*, 12(3), 443-462.
- Lewis, J. R. & Dittmar, H. (2004). Planned purchases and personal amulets: Representations of two material possessions in Japan. In B.N. Setiadi et al. (Eds.), *Ongoing themes in psychology and culture: Proceedings from the 16th International Congress of the International Association for Cross-Cultural Psychology*. Retrieved from: https://scholarworks.gvsu.edu/iaccp_papers/257

- Ligas, M. (2000). People, products, and pursuits: Exploring the relationship between consumer goals and product meanings. *Psychology & Marketing*, 17(11), 983-1003.
- Lilley, D., Lofthouse, V.A., & Bhamra, T.A. (2005). Towards instinctive sustainable product use. In *2nd International Conference in Sustainability, Creating the Culture* (pp. 1-17). Forres: Sustainable Development Research Centre (SDRC).
- Lim, Y., Lee, S., & Kim, D. (2011). Interactivity attributes for expression-oriented interaction design. *International Journal of Design*, 5(3), 113-128.
- Lin, R.T. (2007). Transforming Taiwan aboriginal cultural features into modern product design: A case study of a cross-cultural product design model. *International Journal of Design*, 1(2), 45-53.
- Lincoln, Y.S., & Guba, E.G., (1985). *Naturalistic Inquiry*. Beverly Hills, CA: Sage.
- López-Torres Hidalgo, J., Navarro Bravo, B., Párraga Martínez, I., Pretel, F.A., Latorre Postigo, J.M., & Escobar Rabadán, F. (2010). Psychological well-being, assessment tools and related factors. In I.E., Wells (Ed.), *Psychological well-being. Psychology of emotions, motivations and actions* (pp. 77-113). New York, NY: Nova Science Publishers.
- Love, L.L. & Sheldon, P.S. (1998). Souvenirs: Messengers of meaning. In J.W. Alba & J.W. Hutchinson (Eds.), *Advances in Consumer Research*, Vol. 25 (pp. 170-175). Provo, UT: Association for Consumer Research.
- Lucero, A. & Arrasvuori, J. (2010). PLEX Cards: A source of inspiration when designing for playfulness. *Proceedings 3rd International Conference on Fun and Games - Fun and Games '10* (pp. 28-37). New York, NY: ACM.
- Ludden, G.D., van Rompay, T.J., Kelders, S.M., & van Gemert-Pijnen, J.E. (2015). How to increase reach and adherence of web-based interventions: A design research viewpoint. *Journal of Medical Internet Research*, 17(7), e172.
- Ludden, G.D. & Schifferstein, H.N.J. (2009). Should Mary smell like biscuit? Investigating scents in product design. *International Journal of Design*, 3(3), 1-12.
- Lutters, E., van Houten, F., Bernard, A., Mermoz, E. & Schutte, C.S.L. (2014). Tools and techniques for product design. *CIRP Annals - Manufacturing Technology*, 63, 607-630.
- Lyubomirsky, S. (2008). *The how of happiness: A scientific approach to getting the life you want*. New York: Penguin Press.
- Lyubomirsky, S. & Kurtz, J. (2008). *Positively Happy. Routes to sustainable happiness*. London: CreateSpace.
- Lyubomirsky, S., King, L. A., & Diener, E. (2005). *The benefits of frequent positive affect. Psychological Bulletin*, 131(6), 803-855.

- McCracken, G. (1986). Culture and consumption: A theoretical account of the structure and movement of the cultural meaning of consumer goods. *Journal of Consumer Research*, 13(1), 71-84.
- McDonagh, D. (2017). Emotional sustainability. In J. Chapman (Ed.), *The Routledge Handbook of Sustainable Product Design* (pp. 271-281). New York, NY: Routledge.
- Meerbeek, B., Bingley, P., Rijnen, W., & van den Hoven, E. (2010). Pipet: A design concept supporting photo sharing. In *Proceedings of the 6th Nordic Conference on Human-Computer Interaction, NordiCHI'10* (pp. 335-342). New York, NY: ACM.
- Mehta, R. & Belk, R.W. (1991). Artifacts, identity, and transition: Favorite possessions of Indians and Indian immigrants to the United States. *Journal of Consumer Research*, 17(4), 398-411.
- Mekler, E.D., & Hornbæk, K. (2016). Momentary pleasure or lasting meaning?: Distinguishing eudaimonic and hedonic user experiences. In *CHI '16 Proceedings of the Conference on Human Factors in Computing Systems* (pp. 4509-4520). New York, NY: ACM.
- Mellor, D., Stokes, M., Firth, L., Hayashi, Y., & Cummins, R. (2008). Need for belonging, relationship satisfaction, loneliness, and life satisfaction. *Personality and Individual Differences*, 45(3), 213-218.
- Metcalfe, J. & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: Dynamics of willpower. *Psychological Review*, 106(1), 3-19.
- Mols, I., van den Hoeven, E., & Eggen, B. (2017). Balance, Cogito and Dott: Exploring media modalities for everyday-life reflection. In *Proceedings of the Eleventh International Conference on Tangible, Embedded, and Embodied Interaction - TEI '17* (pp. 427-433). New York, NY: ACM.
- Mugge, R. (2007). *Product attachment* (Doctoral dissertation). Delft: Delft University of Technology.
- Mugge, R., Schifferstein, H.N.J., & Schoormans, J.P.L. (2010). Product attachment and satisfaction: Understanding consumers' post-purchase behaviour. *Journal of Consumer Marketing*, 27(3), 271-282.
- Mugge, R., Schoormans, J.P.L., & Schifferstein, H.N.J. (2005). Design strategies to postpone consumers' product replacement: The value of a strong person-product relationship. *The Design Journal*, 8(2), 38-48.
- Mugge, R., Schoormans, J.P.L., & Schifferstein, H.N.J. (2009). Emotional bonding with personalized products. *Journal of Engineering Design*, 20(5), 467-476.
- Neff, K. (2003). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, 2(2), 85-101.

- Neves M. (2019). Design for (Inter)Actions: A teaching experience in graphic design. In: F. Rebelo & M.M. Soares (Eds). *Advances in Ergonomics in Design AHFE 2018: Advances in Intelligent Systems and Computing*, 777 (pp. 422-431). Springer.
- Nicolao, L., Irwin, J.R., & Goodman, J.K. (2009). Happiness for sale: Do experiential purchases make consumers happier than material purchases? *Journal of consumer research*, 36(2), 188-198.
- Norman, D.A. (1988). *The design of everyday things*. Broadway, NY: Currency Doubleday.
- Norman, D.A. (2004). *Emotional Design. Why we love (or hate) everyday things*. New York, NY: Basic Books.
- Odom, W., Pierce, J., Stolterman, E., & Blevis, E. (2009). Understanding why we preserve some things and discard others in the context of interaction design. In *CHI '09, Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 395-404). New York, NY: ACM.
- Odom, W., Selby, M., Sellen, A., Kirk, D.S., Banks, R., & Regan, T. (2012). Photobox: On the design of a slow technology. In *DIS '12 Proceedings of the Designing Interactive Systems Conference* (pp. 665-668). New York, NY: ACM.
- Oleksik, G. & Brown, L.M. (2008). Sonic gems: Exploring the potential of audio recording as a form of sentimental memory capture. In *Proceedings of the 22nd British HCI Group Annual Conference on People and Computers*, Vol. 1 (pp. 163-172). Liverpool: British Computer Society.
- Olson, C.D. (1985). Materialism in the home: The impact of artifacts on dyadic communication. In E.C. Hirschman & M.B. Holbrook (Eds.), *Advances in Consumer Research*, Vol. 12 (pp. 388-393). Provo, UT: Association for Consumer Research.
- Ortony, A., Norman, D.A., & Revelle, W. (2005). The role of affect and proto-affect in effective functioning. In J.-M. Fellous & M.A. Arbib (Eds.), *Who needs emotions? The brain meets the machine* (pp. 173-202). New York, NY: Oxford University Press.
- Ozkaramanli, D. & Desmet, P.M.A. (2012). I knew I shouldn't, yet I did it again! Emotion-driven design as a means to subjective well-being. *International Journal of Design*, 6(1), 27-39.
- Paivio, A. (1990). *Mental representations. A dual coding approach*. New York: Oxford University Press. (Original work published 1986).
- Parks, A. C. & Biswas-Diener, R. (2013). Positive interventions: Past, present and future. In T. Kashdan & J. Ciarrochi (Eds.), *Bridging Acceptance and Commitment Therapy and Positive Psychology: A practitioner's guide to a unifying framework* (pp. 140-165). Oakland, CA: New Harbinger.
- Patterson, D. (2016). Design for happiness: Positive psychology through social media games. In T. Marsh et al. (Eds). *Serious Games. JCSG 2016. Lecture Notes in Computer Science*, Vol 9894 (pp. 134-139). Springer, Cham.

- Patterson, L., & Biswas-Diener, R. (2012). Consuming happiness. In P. Brey, A. Briggie, & E. Spence (Eds.), *The good life in a technological age* (pp. 147–156). New York: Routledge.
- Pearce, S.M. (1994). The urge to collect. In S.M. Pearce (Ed.), *Interpreting objects and collections* (pp. 157-159). London: Routledge.
- Pohlmeier, A.E. (2012). Design for Happiness. *Interfaces*, 92, 8-11.
- Pohlmeier, A.E. (2014). Enjoying joy: A process-based approach to design for prolonged pleasure. In *Proceedings of the NordiCHI'14, the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational* (pp. 871-876). New York, NY: ACM.
- Pohlmeier, A.E. (2015). Design well-being matrix. In S. Jimenez, A.E. Pohlmeier, & P.M.A. Desmet (Eds), *Positive Design Reference Guide* (pp. 50-51). Delft: Delft University of Technology.
- Pohlmeier, A.E. & Desmet, P.M.A. (2017). From good to the greater good. In J. Chapman (Ed.), *Routledge Book of Sustainable Product Design* (pp. 469-486). London: Taylor & Francis.
- Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology*, 24(1998), 1-24.
- Price, L.L., Arnould, E.J., & Folkman Curasi, C. (2000). Older consumers' disposition of special possessions. *Journal of Consumer Research*, 27(2), 179-201.
- Punsmann, H. (1962). Daruma, a symbol of luck. *Folklore Studies*, 21(1962), 241-244.
- Ragunathan, R., & Irwin, J. R. (2001). Walking the hedonic product treadmill: Default contrast and mood-based assimilation in judgments of predicted happiness with a target product. *Journal of Consumer Research*, 28(3), 355-368.
- Richins, M.L. (1994a). Valuing things: The public and private meanings of possessions. *Journal of Consumer Research*, 21(3), 504-521.
- Richins, M.L. (1994b). Special possessions and the expression of material values. *Journal of Consumer Research*, 21(3), 522-533.
- Robinson, H., MacDonald, B., Kerse, N., & Broadbent, E. (2013). The psychosocial effects of a companion robot: A randomized controlled trial. *Journal of the American Medical Directors Association*, 14(9), 661-667.
- Robitschek, C. (1998). Personal growth initiative: The construct and its measure. *Measurement and Evaluation in Counseling and Development*, 30(4), 183-198.
- Rogers, Y. (2004). New theoretical approaches for human-computer interaction. *Annual Review of Information Science and Technology*, 38(1), 87-143.
- Rokka, J. & Hietanen, J. (2018). On positioning videography as a tool for theorizing. *Recherche et Applications en Marketing*, 33(3), 106-121.
- Rook, D.W. (1985). The ritual dimension of consumer behavior. *Journal of Consumer Research*, 12(3), 251-264.

- Roy, R. & Warren, J. (2018). Card-based tools for creative and systematic design. In C. Storni, K. Leahy, M. McMahon, P. Lloyd, & E. Bohemia (Eds.), *Proceedings of the Design Research Society conference DRS2018: Design as a Catalyst for Change*, Vol. 3, No. 10 (pp. 1075-1087). London: Design Research Society.
- Ruitenbergh, H.P. & Desmet, P.M.A. (2012). Design thinking in positive psychology. The development of a product-service combination that stimulates happiness-enhancing activities In J. Brassett et al. (Eds.), *Out of Control: Proceedings of the 8th International Design and Emotion Conference* (pp. 1-10). London: Design and Emotion Society.
- Russo, B. (2010). *Shoes, cars and other love stories: Investigating the experience of love for products* (Doctoral dissertation). Delft: Delft University of Technology.
- Ruth, J.A., Otnes, C.C., & Brunel, F.F. (1999). Gift receipt and the reformulation of interpersonal relationships. *Journal of Consumer Research*, 25(4), 385-402.
- Ryan, R.M. & Deci, E.L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52(1), 141-166.
- Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
- Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069-1081.
- Ryff, C.D. (1995). Psychological well-being in adult life. *Current Directions in Psychological Science*, 4(4), 99-104.
- Ryff, C.D. & Singer, B.H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *Journal of Happiness Studies*, 9(1), 13-39.
- Sääksjärvi, M., & Hellén, K. (2013). How designers and marketers can work together to support consumers' happiness. *International Journal of Design*, 7(3), 33-44.
- Sääksjärvi, M., Hellén, K., & Desmet, P.M.A. (2016). The effects of the experience recommendation on short-and long-term happiness. *Marketing Letters* 27(4), 675-686.
- Sanders, E., Brandt, B., & Binder, T. (2010). A framework for organizing the tools and techniques of participatory design. In *Proceedings of the 11th Biennial Participatory Design Conference PDC '10* (pp. 195-198). New York, NY: ACM.
- Sang, D. (2018). *Enhancing the well-being of older adults through IoT design with music* (Master dissertation). Norway: Norwegian University of Science and Technology.
- Saramifar, Y. (2018). Objects, object-ness, and shadows of meanings: Carving prayer beads and exploring their materiality alongside a Khaksari Sufi Murshid. *Material Religion*, 14(3), 368-388.

- Savaş, Ö. (2004). A perspective on the person-product relationship: attachment and detachment. In D. McDonagh et al. (Eds.), *Design and emotion: The experience of everyday things* (pp. 366-371), London: Taylor & Francis.
- Schifferstein, H.N.J. (2011). Multi sensory design. In C.J. Hooper et al. (Eds.), *Proceedings of the DESIRE'11 Conference: Creativity and Innovation in Design* (pp. 361-362). New York, NY: ACM.
- Schifferstein, H.N.J. & Desmet, P.M.A. (2008). Tools facilitating multi-sensory product design. *The Design Journal*, 11(2), 137-158.
- Schifferstein, H.N.J. & Zwartkruis-Pelgrim, E.P.H. (2008). Consumer-product attachment: Measurement and design implications. *International Journal of Design*, 2(3), 1-13.
- Sedikides, C., Wildschut, T., Arndt, J., & Routledge, C. (2006). Affect and the self. In J.P. Forgas (Ed.), *Affect in social thinking and behavior: Frontiers in social psychology* (pp. 197-215). New York, NY: Psychology Press.
- Seligman, M.E. (2011). *Flourish*. London: Nicholas Brealey.
- Seligman, M.E., Steen, T.A., Park, N., & Peterson, C. (2005). Positive psychology progress: empirical validation of interventions. *American psychologist*, 60(5), 410-429.
- Sheldon, K.M. & Kasser, T. (2001). Getting older, getting better? Personal strivings and psychological maturity across the life span. *Developmental Psychology*, 37(4), 491-501.
- Sleeswijk Visser, F. (2009). *Bringing the everyday life of people into design* (Doctoral dissertation). Delft: Delft University of Technology.
- Sleeswijk Visser, F., Stappers P.J., van der Lugt, R., & Sanders, E.B.N. (2005). Contextmapping: Experiences from practice. *CoDesign*, 1(2), 119-149.
- Smith, A., Reitsma, L., van den Hoven, E., Kotzé, P., & Coetzee, L. (2011). Towards preserving indigenous oral stories using tangible objects. In *Proceedings of the Second International Conference on Culture and Computing 2011* (pp. 86-91). Los Alamitos, CA: IEEE Computer Society.
- Smith, J. & MacLean, K. (2007). Communicating emotion through a haptic link: Design space and methodology. *International Journal of Human-Computer Studies*, 65(4), 376-387.
- Smith, S., Fisher, D., & Cole, S.J. (2007). The lived meanings of fanaticism: Understanding the complex role of labels and categories in defining the self in consumer culture. *Consumption, Markets and Culture*, 10(2), 77-94.
- Snyder, C.R. & Lopez, S.J. (2002). *Oxford Handbook of Positive Psychology*. New York, NY: Oxford University Press.
- Solomon, M.R. (1983). The role of products as social stimuli: A symbolic interactionism perspective. *Journal of Consumer Research*, 10(3), 319-329.

- Sosin, D.A. (1983). The diary as transitional object in female adolescent development. *Adolescent Psychiatry*, 11(1983), 92-103.
- Spencer, J., Alwani, R., Raby, E., Richard, J.-A., & West, J. (2019). Improving community well-being: A case of architectural interventions in Derry/Londonderry. In M. Jones, L. Rice, & F. Meraz (Eds.), *Designing for health & well-being: Home, city, society* (pp. 205-218). Wilmington, DE: Vernon Press.
- Steffen, D. (2010). Design semantics of innovation. In S. Vihma (Ed.), *Design semiotics in use*, Publication Series A100 (pp. 82-110). Helsinki: Aalto University, School of Art and Design.
- Stewart, S. (1993). *On longing: Narratives of the miniature, the gigantic, the souvenir, the collection*. Durham, NC: Duke University Press.
- Swanson, K.K. & Timothy, D.J. (2012). Souvenirs: Icons of meaning, commercialization and commoditization. *Tourism Management*, 33(3), 489-499.
- Swilley, E., Cowart, K.O., & Flynn, L.R. (2014). An examination of regifting. *Journal of Consumer Behaviour*, 13(4), 251-261.
- Thaler, R.H. & Sunstein, C.R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. New York: Penguin Random House.
- Tobin, S. (1996). Cherished possessions: The meaning of things. *Generations*, 20, 46-49.
- Tromp, N. (2013). *Social Design: How products and services can help us act in ways that benefit society* (Doctoral dissertation). Delft: Delft University of Technology.
- Trudel, R., Argo, J., & Meng, M. (2016). The Recycled Self: Consumers' Disposal Decisions of Identity-Linked Products. *Journal of Consumer Research*, 43(2), 246–264.
- Vaes, K. (2014). *Product stigmativity: Understanding measuring and managing product-related stigma* (Doctoral dissertation). Delft: Delft University of Technology.
- van Boven, L., & Gilovich, T. (2003). To Do or to Have? That is the question. *Journal of Personality and Social Psychology*, 85(6), 1193–1202.
- van den Hoven, E. & Eggen, B. (2005). Personal souvenirs as ambient intelligent objects. In *sOc-EUSAI '05 Proceedings of the 2005 Joint Conference on Smart Objects and Ambient Intelligence. Innovative Context-Aware Services: Usages and Technologies* (pp. 123-128). New York, NY: ACM.
- van den Hoven, E., Sas, C., & Whittaker, S. (2012). Introduction to this special issue on designing for personal memories: Past, present, and future. *Human-Computer Interaction*, 27(1-2), 1-12.
- van Dijken, T. (2019). Transition of the mixed plastic household waste value chain (Master dissertation). Delft: Delft University of Technology.
- van Gennip, D., van den Hoven, E., & Markopoulos, P. (2015). Things that make us reminisce: Everyday memory cues as opportunities for interaction design. In *CHI*

- '15 *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems* (pp. 3443-3452). New York, NY: ACM.
- van Nes, N. & Cramer, J. (2005). Influencing product lifetime through product design. *Business Strategy and the Environment*, 14(5), 286-299.
- van Selm, M. & Dittmann-Kohli, F. (1998). Meaninglessness in the second half of life: The development of a construct. *International Journal of Aging and Human Development*, 47(2), 81-104.
- Veenhoven, R. (2000). The four qualities of life: Ordering concepts and measures of the good life. *Journal of Happiness Studies*, 1(1), 1-39.
- Verplanken, B. & Aarts, H. (1999). Habit, attitude, and planned behaviour: Is habit an empty construct or an interesting case of goal-directed automaticity? *European Review of Social Psychology*, 10(1), 101-134.
- Vetere, F., Gibbs, M.R., Kjeldskov, J., Howard, S., Mueller, F., Pedell, S., Mecoles, K., & Bunyan, M. (2005). Mediating intimacy: designing technologies to support strong-tie relationships. In *Proceedings of the SIGCHI conference on Human factors in computing systems* (pp. 471-480). New York, NY: ACM.
- Visser, T., Vastenburg, M.H., & Keyson, D.V. (2011). Designing to support social connectedness: The case of SnowGlobe. *International Journal of Design*, 5(3), 129-142.
- Vyse, S. (2014). *Believing in magic. The psychology of superstition*. New York, NY: Oxford University Press.
- Walker, S. (2006). Object lessons: Enduring artifacts and sustainable solutions. *Design Issues*, 22(1), 20-31.
- Wallis Budge, E.A. (1978). *Amulets and superstitions*. New York, NY: Dover Publications.
- Wang, J., Novemsky, N., & Dhar, R. (2009). Anticipating adaptation to products. *Journal of Consumer Research*, 36(2), 149-159.
- Wastiels, L., Schifferstein, H. N. J., Wouters, I., & Heylighen, A. (2013). Touching materials visually: About the dominance of vision in building material assessment. *International Journal of Design*, 7(2), 31-41.
- Watson, J., Lysonski, S., Gillan, T., & Raymore, L. (2002). Cultural values and important possessions: a cross-cultural analysis. *Journal of Business Research*, 55(11), 923-931.
- Whang, Y.-O., Allen, J., Sahoury, N., & Zhang, H. (2004). *Falling in love with a product: The structure of a romantic consumer-product relationship*. In B.E. Kahn & M.F. Luce (Eds.), *Advances in Consumer Research*, Vol. 31 (pp. 320-327). Valdosta, GA: Association of Consumer Research.
- Wicklund, R.A. & Gollwitzer P.M. (1981). Symbolic self-completion, attempted influence, and self-deprecation. *Basic and Applied Social Psychology*, 2(2), 89-114.

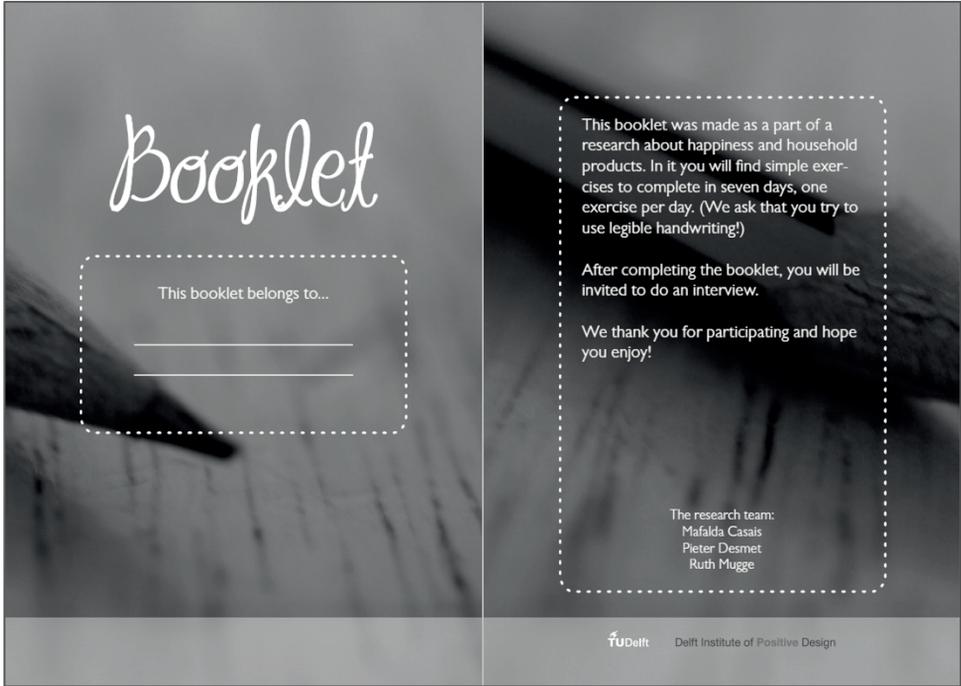
- Widman, D.R., Corcoran, K.E., & Nagy, R.E. (2009). Belonging to the same religion enhances the opinion of others' kindness and morality. *Journal of Social, Evolutionary, and Cultural Psychology*, 3(4), 281-289.
- Wilson, T.D. & Gilbert, D.T. (2008). Explaining away: A model of affective adaptation. *Perspectives on Psychological Science*, 3(5), 370-386.
- Wiseman, R. & Watt, C. (2004). Measuring superstitious belief: Why lucky charms matter. In S. Schmidt (Ed.), *The Parapsychological Association Convention 2004, Proceedings of Presented Papers* (pp. 291-298). Durham, NC: The Parapsychological Association.
- Wood, A.M., Linley, P.A., Maltby, J., Baliousis, M., & Joseph, S. (2008). The authentic personality: A theoretical and empirical conceptualization and the development of the Authenticity Scale. *Journal of Counseling Psychology*, 55(3), 385-399.
- Xue, H. & Almeida, P.C. (2011). Nostalgia and its value to design strategy: Some fundamental considerations. In J. Cai et al. (Eds.), *Proceedings of the Tsinghua-DMI International Design Management Symposium 2011* (pp. 1-12). Hong Kong: Innovation and Design Management Association.
- Yang, X., Aurisicchio, M., Mackrill, J., & Baxter, W. (2017). On the products and experiences that make us happy. In A. Maier et al. (Eds.). *Proceedings of the 21st International Conference on Engineering Design ICED 17*, Vol. 8 (pp. 499-508). Glasgow: The Design Society.
- Yang, Y. & Galak, J. (2015). Sentimental value and its influence on hedonic adaptation. *Journal of Personality and Social Psychology*, 109(5), 767.
- Yoon, J., Desmet, P.M.A., & Pohlmeier, A.E. (2013). Embodied typology of positive emotions: The development of a tool to facilitate emotional granularity in design. *5th International Congress of International Association of Societies of Design Research IASDR* (pp. 1195-1206). Tokyo: IASDR.
- Yoon, J., Desmet, P.M.A., & van der Helm, A. (2012). Design for interest: Exploratory study on a distinct positive emotion in human-product interaction. *International Journal of Design*, 6(2), 67-80.
- Yoon, J., Pohlmeier, A., & Desmet, P. (2016). 'Feeling good' unpacked: Developing design tools to facilitate a differentiated understanding of positive emotions. In P.M.A. Desmet et al. (Eds.), *Proceedings of the Tenth International Conference on Design and Emotion - Celebration & Contemplation* (pp. 266-274), Amsterdam: Design & Emotion Society.
- You, H.-c. & Chen, K. (2007). Applications of affordance and semantics in product design. *Design Studies*, 28(1), 23-38.
- Zhang, D. (2016). Courtyard housing in North America: Chinese design for health and happiness. *Urban Design International*, 21(4), 281-297.

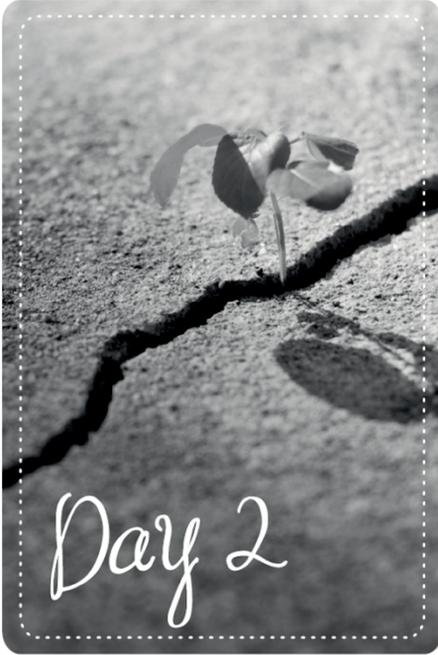
- Zhang, Y. & Epley, N. (2012). Exaggerated, mispredicted, and misplaced: When 'it's the thought that counts' in gift exchanges. *Journal of Experimental Psychology: General*, 141(4), 667-681.
- Zijlema, A., van den Hoven, E., & Eggen, B. (2016). Companions: Objects accruing value and memories by being a part of our lives. In *OzCHI '16, Proceedings of the 28th Australian Conference on Computer-Human Interaction* (pp. 170-174). New York, NY: ACM.
- Zimmer-Gembeck, M.J. & Collins, W.A. (2003). Autonomy development during adolescence. In G.R. Adams & M. Berzonsky (Eds.), *Blackwell Handbook of Adolescence* (pp. 175-204). Oxford: Blackwell Publishers.
- Zimmerman, J. (2009). Designing for the self: Making products that help people become the person they desire to be. In *Proceedings of the 27th International Conference on Human Factors in Computing Systems* (pp. 395-404). New York, NY: ACM.

Appendices

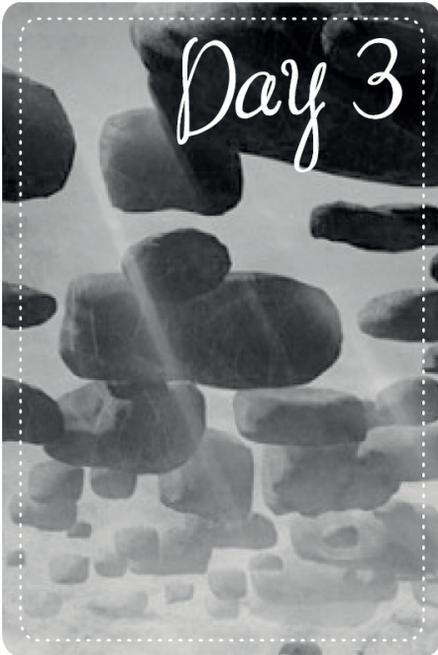
- Appendix 1: Sensitizing booklet of study 1
- Appendix 2: Interview script of study 1
- Appendix 3: Videography voice-over introduction
- Appendix 4: List of search keywords of study 2
- Appendix 5: Selected product examples for study 2
- Appendix 6: SIM card set distributed in study 3
- Appendix 7: SIM toolkit resulting from study 3

Appendix 1: Sensitizing booklet of study 1





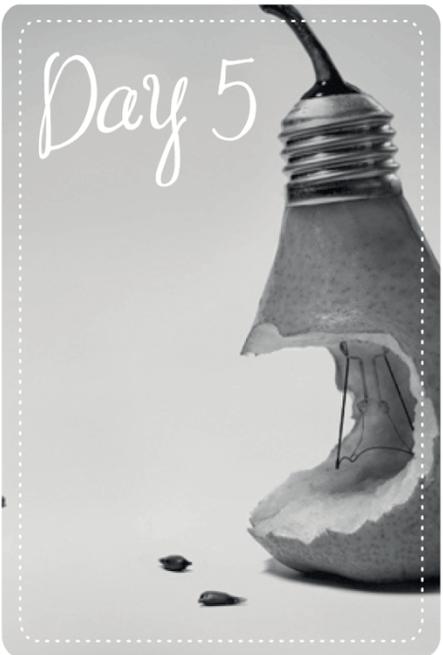
Find an object that relates to or represents a personal achievement, identify it and draw a mind map about it. Then write a text telling a story about the object you chose.



Choose an object that helps you feel like your life has purpose, identify it and build a mind map. Then write a text telling a story about the object you chose.



Identify an object that makes you feel good about yourself and tell a story about it.



Think of an object that has helped you develop as a person over time, identify it and tell the object's story in your life using a diagram, or writing a text.



Think of an object that helps you feel in charge of your life, identify it and tell a story about it.



Please think of some other products that make you feel good, identify them in a diagram, and write a small text about why you chose them.

Appendix 2: Interview script of study 1

A bit about yourself

Where are you from? What is your nationality?
How long have you lived in the Netherlands?
Why did you come to this country?
How long do you plan on staying?
Tell me about your cultural background (different nationalities, where you grew up, etc.).
Tell me about your studies background / what you do for work.

About the booklet

Day 1 asks for an object that relates to / represents a positive relationship

What object did you choose?
What positive relationship does it represent?
How close is this relationship? Can you describe it?
What does this relation mean to you?
How does the object remind you of that?
How often do you connect with the counterpart of this relationship?
How does this object make you feel?
Is there something in particular about it, a characteristic that you like?
When you see / touch / use it, does it change your disposition?
Can you walk me through the mind map / text that you wrote?
Is it a replaceable object?
Can you think of other objects that also represent positive relationships?
If this object was lost / stolen / replaced, how would you keep this remembrance?
How did this object gain this meaning?
How did you get it?
Do you show / share this object with other people?
Does it help you engage in any type of communication, connection, with other people?

Day 2 asks for an object that relates to / represents a personal achievement

What object did you choose?
What personal achievement does it represent?
Does it represent an investment you made?
Does this object remind you of that investment? What kind of investment (time, money, etc.)?
Did you consider other objects that represent personal achievements?
How did you get it?
Is it an important object to you? How did it become important?
What does this particular achievement mean to you?
Does this achievement relate to your personal beliefs?
Does it relate to any particular skills or talents that you have?
How does this object make you feel?
Does this object represent specific work and preparation (or an opportunity)?
When you come in contact with it does it change your mood?
Can you walk me through what you wrote?
Is it a replaceable object?
How would you keep this remembrance without this object?

Day 3 asks for an object that relates to / represents purpose in life

What object did you choose?
How did you get it?
Is this object special to you?
Can it be replaced?
Does it relate to any goals or aspirations you have for your life?
Does it challenge you to reach those goals?
Does this object represent progress in attaining those goals?
Do you feel in control of your life?
When you see or handle this object, does it encourage a different behaviour?
Does this object inspire you?
How did it become relevant?
Can you tell me what you wrote about it?

Day 4 asks for an object that makes you feel good about yourself

What object did you choose?
In what sense does it make you feel good?
Does it allow you to express yourself somehow?
How did you get it?
Is it special?
How did it become special?
Does it mean something?
Does it relate to a certain skill or talent that you have?
Does it make you feel proud?
Does it stimulate your creativity?
What did you write about it?
Can you replace it?
Is there something in particular you like about it – a characteristic?

Day 5 asks for an object that has helped you develop as a person over time

What object did you choose?
How has it helped you develop as a person?
Is it related to a particular experience or set of experiences?
Is it related to an activity or set of activities?
Does it grow and change with you, even if only in your perception?
Does it allow you to express who you are?
Does it encourage your potential?
Does it encourage a change in your behaviour?
Does it inspire you?
Does it represent a challenge?
Does it require an investment of time, or money, or attention?
Is it worth that investment?
Does it help you be a better person?
Does it give you a certain mood?
Does this object help you deal with life's hardships?
Does it help increase your self-esteem?
Does it remind you of your values?
What does this object mean to you?
How did it get its meaning?
Can it help you develop more in the future?

Day 6 asks for an object that helps you feel in charge of your life

What object did you choose?
How does it help you feel in charge of your life?
Do you feel like you control your life, the environment you live in?
Does your life reflect your choices?
Do you invest in yourself?
Does this object help you feel independent?
Does this object empower you?
Does this object give you a sense of structure?
Does it remind you of your goals?
Does it stimulate you to pursue those goals?
How does this object make you feel?
What kind of mood does it give you?
Is there a particular characteristic about it that you like?
Does this object help you if you feel overwhelmed?
Is it a special object to you?
How did it gain its meaning?
Where did you get it?
Does its story or origin make it more special?
What did you write about it?

Day 7 asks for other objects that make you feel good

What objects did you choose?
How do they make you feel?
What do they make you feel good about (yourself, others, life, job, etc.)?
What parts of you do they stimulate (intellectual skills, mental health, physical health, etc.)?
Do they make you happy?
What do these objects say about you?
Do they relate to any skills and talents that you have?
Is there something about them in particular that you like?
Is there a common theme, even if it is not obvious to others?
Are they special to you?
Can they be replaced?
Do you like the objects or what they allow you to do?
Did you write something about them?

Some additional questions

Is there an object you have always wanted – growing up, or as an adult – that you don't have? (Can be because it's not possible to have it, it doesn't exist, etc.)
Would it make you happy if you had it?
What would it mean to you?

What is the most valuable object you own? (If there was a fire and you could only save one)
What is value to you, in this context?
How does it contribute to your happiness?

Are there any objects that were special to you that you no longer have?
What happened to them (Replaced, lost, stolen, etc.)?
Did they make you happy?

Does your professional occupation make you feel happy?
Does it help you leave a legacy?
Does it give you purpose?
How does it change your relation with objects? (Affording more, thinking more carefully, etc.)
What does it say about you?
Would you like to change / are you in the process of changing jobs?
Does your current position allow you to go further in your career?
Are you happy with your job?
Do you have a hobby?

Do you think family is important?
How would you describe your family structure?
What was your upbringing like?
Are you in contact with them often?
How do you contact them?

Is religion a part of your life?
Did it play, or does it play a part in your personal growth?
Does it play a part in your family life?

How do you feel about your age?
Does it influence your perception about objects?

Thank you.

Appendix 3: Videography voice-over introduction

Consumption is often about much more than necessity. Consumer durables of all types are used to make our lives easier, to extend our own capabilities, but also to compensate emotional needs. Research on human happiness generally states that buying things in order to be happy can generate a negative adaptation effect. This assumption refers to terminal products, those which are an end in themselves. But not all objects have this effect.

This videography is a compilation of stories about objects that resist this adaptation – those with symbolic meaning – and reflects on the contribution of the material environment to the subjective well-being of individuals. Symbolically meaningful possessions have the ability to make our intentions tangible, to remind us of our aspirations and to keep our successes fresh.

In Consumer research and Consumer Psychology literature we often find material possessions described as potential repositories and mediators of meaning – which

have influence on identity construction, affirmation and expression; in relationship development; and in the expression of values and beliefs. Important research on this subject includes Belk's 'Extension of the Self', and Csikszentmihalyi and Rochberg-Halton's 'The Meaning of Things.'

Carol Ryff proposed a multi-dimensional theoretical model of psychological well-being to contribute to the understanding of human wellness and happiness. The scholar described the positively functioning individual as having autonomy, the extent to which a person views him or herself as being independent and able to resist social pressures; Environmental mastery, the ability to control and act in the environment taking advantage of opportunities that emerge; Personal growth, the sense of continued development and self-improvement and the openness to new challenges; Positive relationships with others, referring to intimate, reciprocal and satisfying relationships with other people; Purpose in life, a sense of directedness and the ability to have goals and beliefs that give life meaning; and self-acceptance, having a positive attitude about oneself accepting the positive and the negative.

The stories in this videography are part of a phenomenological study that aimed at understanding the influence of the symbolic meaning of material possessions on subjective well-being. Thirteen participants were recruited from all over the Netherlands, with diverse backgrounds, ages, types of households and occupations. They were instructed to walk around their homes and to tell stories about their objects, without a specific script. The stories were collected after a sensitizing phase in which participants were asked to relate their material possessions to Carol Ryff's determinants of psychological well-being.

The material possessions that hold symbolic meaning play an important role in the material environment embodying memories or abstract ideas or values, aiding transition moments and shaping people's lives. The resulting insights of this study represent possibilities for disciplines like design to contribute directly to the improvement of people's lives. Understanding in what ways symbolic meaning is present in people's material environment and how it impacts human flourishing represents a step towards enriching a new field of Positive Design which aims to generate meaningful, stimulating, and emotionally relevant environments for people to flourish in. (The full videography can be accessed at <https://vimeo.com/179011005>.)

Appendix 4: List of search keywords of study 2

Symbolic meaning related (*)

Symbolic meaning: something significant in terms of what is being represented or implied;

Symbolic / symbol / representation: a thing that represents or stands for something else, especially a material object representing something abstract;

Symbolism: the use of symbols to represent ideas or qualities;

Sentimental value: the value of an object deriving from personal or emotional associations rather than material worth;

Product attachment / attachment: affection, fondness, or sympathy for something;

Memories / memory: something remembered from the past;

Heritage: valued objects and qualities that have been passed down from previous generations;

Culture: the arts and other manifestations of human intellectual achievement regarded collectively.

Well-being related symbolic meanings (**) & related words

Autonomy: being self-determining and independent; being able to resist social pressures to think and act in certain ways; regulating behaviour from within; evaluating self by personal standards;

Environmental mastery: having sense of mastery and competence in managing the environment; controlling complex array of external activities; making effective use of surrounding opportunities; being able to choose or create contexts suitable to personal needs and values;

Personal growth: having feeling of continued development; seeing self as growing and expanding; being open to new experiences; having sense of realizing his or her potential; seeing improvement in self and behaviour over time; changing in ways that reflect more self-knowledge and effectiveness;

Positive relations with other people: having warm, satisfying, trusting relationships with others; being concerned about the welfare of others; being capable of strong empathy, affection, and intimacy; understanding give-and-take of human relationships;

Purpose in life: having goals in life and a sense of directedness; feeling there is meaning to present and past life; holding beliefs that give life purpose; having aims and objectives for living;

Self-acceptance: having a positive attitude toward self; acknowledging and accepting multiple aspects of self, including good and bad qualities; feeling positive about past life;

Identity (*): the characteristics determining who or what a person is;

Motivation (*): desire or willingness to do something; enthusiasm.

Products and product interaction (*)

Cherished possessions: something owned or possessed that is held dear;

Meaningful interactions: reciprocal action or influence (between people and their environment) which has significance;

Treasure: a very valuable object;

Precious: of great value; not to be wasted or treated carelessly;

Expression: the action of making known or embodying one's thoughts or feelings;

Reminder: a thing that causes someone to remember something;

Gift: a thing given willingly to someone without payment; a present.

Product typologies (*)

Heirloom: a valuable object that has belonged to a family for several generations;

Souvenir / Memento: a thing that is kept as a reminder of a person, place, or event;

Memorabilia: objects kept or collected because of their associations with memorable people or events (e.g., an era);

Token: a thing serving as a visible or tangible representation of a fact, quality, feeling, etc.;

Relic: an object surviving from an earlier time, especially one of historical interest;

Artefact: an object made by a human being, typically one of cultural or historical interest;

Keepsake: a small item kept in memory of the person who gave it or originally owned it;

Lucky charm: an object that is thought to bring good luck.

(*) definitions adapted from the English Oxford Dictionary; (**) definitions from Ryff (1995)

Appendix 5: Selected product examples for study 2





Six is a series of vases that reflect on loss and memories associated with it. Quite the opposite of flowers which slowly die, the vases are made from long-lasting materials that will continue along with memories of departed loved ones.

Six (by Hadar Glick)
Images and text (adapted): <http://design-milk.com/6/a-series-of-vases-inspired-by-memories-and-loss-by-hadar-glick/>



Family Matters is a collection of abstract soft toys resembling animals designed to facilitate communication in family therapy (through role-play). Each animal has a pocket containing "inner organs" that can be used to express the individual's range of emotions.

Family Matters (by Noa Dotan)
Images and text (adapted): <http://design-milk.com/family-matters-by-noa-dotan/>



Memorial jewellery is a custom made silver jewellery piece crafted from the written message or signature of the user's choosing.

Memorial jewellery (by Surfing Silver)
Images and text (adapted): www.sty.com/shop/surfing-silver



Torrebolella is a totem-like chocolate bonbons container. Each piece is hand crafted and hand painted in pastel colours contrasting its golden interior, which enhances the chocolates held inside.

Torrebolella candy container (by Andreu Cavilla)
Images and text (adapted): <http://moooboo.com/freak/2014/01/20/torrebolella-candy-jar-by-andreu-cavilla/>



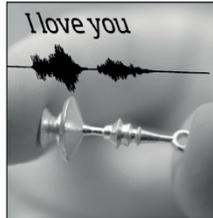
The Memory Bank was designed to remind users of the preciousness and permanence of memories through the items that hold them. It is intended to save items of personal significance, re-contextualizing "value" from the financial to the emotional. It has an extra-long slot that accepts small mementos, like written wishes, love notes, or tickets.

Memory Bank (by Speechless Studios)
Images and text (adapted): <http://speechlessstudios.com/shop/memory-bank>



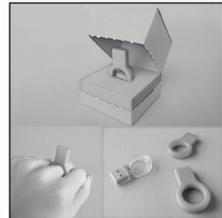
The Standard Collection was designed to change the subconscious way in which people interact with everyday objects in their homes. For example, the Standard Table Lamp does not have an on-off switch. Instead, the light needs to be manually placed into a low-voltage copper wire to complete an electric circuit.

The Standard Collection (by Krauf and Brown)
Images and text (adapted): <http://gvn.org/CheMKW/>



The Waveform jewellery uses 3D printing to shape sound (like the voice of a loved one) into silver jewellery pieces that can be worn by the users or kept as reminders.

Waveform jewellery (by David Rizer/ BZA)
Images and text (adapted): <http://www.bza.biz>



The Memoring is a USB memory storage device shaped like a ring that allows the user to carry with him/her important memories. The user can choose to make an original gift by putting photos or music in the ring.

Memoring (by Gung)
Images and text (adapted): <http://www.gung.jp/memoring/>



The Heirloom holds an inherited object in a glass jar, and its memories and stories are recorded by the owner of the object before passing it on. The object's (new) owner interacts with the Heirloom like an analogue radio, tuning through recorded memories, which are marked on the dial by each predecessor's signature.

The Heirloom (by Nikki George Ferguson)
Images and text (adapted): www.nikkigeorgeferguson.com/Design/The_Heirloom.html



The Do Hit Chair invites the user to change it. With the hammer provided and the users own resources, he/ she is able to shape the metal box into whatever he/she chooses. After a few minutes or hours of hard work the user become the co-designer of the product.

Do Hit Chair (by Droog design)
Images and text (adapted):



Create Me Textile is a product that allows the user to turn a hole or a stain in a favourite shirt into something new and good; or just to create something different. It works by ironing on one of the available pre-cut designs, or by cutting from the sheet.

Create Me Textile (by Droog design)
Images and text (adapted): <http://www.droog.com/webshop/products/create-me-textile/>



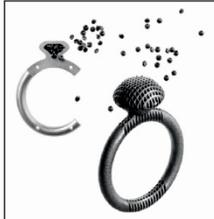
El Botijo is a redesigned item of Spanish culture. It makes use of traditional materials, colours, and manufacturing processes to produce a modern yet reliable water cooling container.

El Botijo (by WOW studio)
Images and text (adapted): <http://www.wowstudio.com/projects/2013/01/>



Konnekt is a kit of versatile set of shapes which can be attached to a window with suction cups (to play alone) and magnets (to play in pairs). It enables isolated children in hospitals to play with their peers by turning the window between their rooms and the hallways into a canvas for play. The shapes can be combined into dynamic structures, games, or chaises.

Konnekt (By Job Jansema)
Images and text (adapted): <http://konnektplay.nl/en>



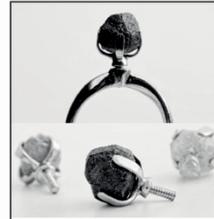
Tough Love is a collection of jewellery with a strong personality that explores the symbolic significance of conjugal rings, their overt value and their more covert meanings. Some pieces have hidden details and some even have precious components that are not visible at all.

Tough Love jewelry (By Cinnamon Lind)
Images and text (adapted): <http://www.cinnamonlind.com/>



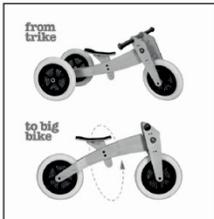
Vasi Emerso is a series of vases with a surface composed of several layers of superimposed colour. When the surface is worked with tools such as blades or steel brushes, the colours emerge into a design which is the created by the user.

Vasi Emerso (By Paolo Milani)
Images and text (adapted): <http://www.paolomilani.it/tracce.html>



Rng is a white gold ring that allows the user to choose and switch between different rough diamonds, which can have different meanings. The diamonds are set individually into screw-in pieces.

Rng (By Sv44 Reche Studio)
Images and text (adapted): <http://www.sv44reche.com/2382391661532-all.html#img>



The **Wishbone 3in1** is a convertible bicycle that fits several ages and development stages. It starts with three wheels, helping babies to walk and then ride. Later it converts to a two-wheel pedal-less bicycle for learning balance. Finally, it can be transformed into a small bicycle that is adequate for up to 5 year old children.

Wishbone 3in1 (By Wishbone Design Studio)
Images and text (adapted): <http://www.wishbonedesign.com/#/products/bikein3in1/>



365 is a knitting clock that works 24 hours a day and one year at the time, showing the physical representation of time as a creative and tangible result. After 365 days the clock has turned the passed year into a 2 metre long scarf so that the past can be carried out in the future.

365 knitting clock (By Siren Wilhelmsson)
Image <http://pat.com/Siren-Elise-Wilhelmsson-The-Knitting-Clock-And-The-Other>
Text (adapted): <http://www.ameebowilhemsson.com/work.html>



The **Spring Rings** are designed to be completed by the user, by decorating them with small wild flowers. Metal loops that protrude from the edge of the rings are used to tie on the stems.

Spring Rings (By Gabree Kang)
Images and text (adapted): <http://goo.gl/YV7Pgy>



The **Sound Pegs** device can change any tangible body like books, records, plant pots and even shoes into musical instruments. The device features a series of enlarged wooden pegs, two speakers and a converter that changes the vibrations of objects into a digital signal that can sound like drums, pianos, guitars or any instrument stored in the software.

Sound Pegs (By Nick Brennan)
Images and text (adapted): <http://goo.gl/H6RQZ5>



TinyTask is a collection of colourful key chain coins that inspire the users to do new things in their daily life. Each coin represents a small assignment for a little happiness adventure that supports an attitude of active experimentation and reflective observation.

TinyTask (By Hans Ruitenberg)
Images and text (adapted): <http://tinytaskfoundation.org/>



The **Weight Recorder** marks the changing weight of a person over a period of time, drawing it on a disk that can be used for reflection. The intended user of this product is a pregnant mother, who wants to record the happiness of pregnancy as the baby's gradually growing will respond to her body condition, especially weight gaining.

The Weight Recorder (By Wu Weiche)
Images and text (adapted): http://www.wuwei.chen.com/2012/05/01-weight-recorder-wr2.html?m_source=ip_recent



Stilleven is a piece of furniture that was designed to display whatever a user treasures under a glass covering. It includes also a small wood desk that allows him/her to take a break and to catalogue the contents of the mind; and a mirror that reminds of and reflects the surroundings.

Stilleven (By Valentin Garal / Peca)
Images and text (adapted): <http://valentingaral.es/STILLEVEN-2013>



Ringly is a line of rings that send notifications to the user about calls, messages, emails, social media, and apps, while the phone is put away. The rings are made of gold with precious and semi-precious stones, and use discrete signals of vibration and light.

Ringly
Images and text (adapted): <https://ringly.com/>



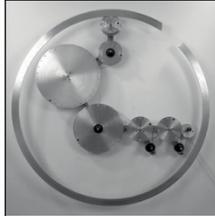
Liv is an interactive creature designed to make the stay at the hospital easier for children. It needs movement and social attention to stay "healthy": It asks the user to play with it, by glowing and can also ask to interact with another Liv (and another child) with noise, thereby facilitating human interaction.

Liv (by TU Delft)
Images and text (adapted):
<http://www.designinnovatorforhealthcare.org/themes-and-projects/research-theme-4-connected-careful/>



The Hug Shirt allows people to send hugs to loved ones from one device to another. It recreates the sensation of touch, warmth and emotion of the hug to the shirt of the distant loved one through its sensors (sender's shirt) and actuators (receiver's shirt).

Hug Shirt (by CateCircuit)
Images and text (adapted): <http://outcircuit.com/collections/the-hug-shirt/>



The 3.16 Billion Cycles is a wall clock designed to reflect upon time. It counts 100 years in a set of digestible increments (from seconds to minutes, to decades, to centuries). When the clock finally reaches the end of a 100 year cycle, the arc falls off its track.

3.16 Billion Cycles (by Che Wei Wong)
Images and text (adapted): <http://civewong.com/2009/05/16/3-16-billion-cycles/>



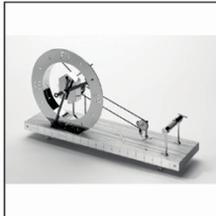
The Eloid is a hybrid of cellphone and robot with a simplified human figure, that transmits voice and motion to convey a person's "presence". It proposes an innovative communication medium capable of conveying human presence to remote locations using voice, appearance, motion, and touch.

Eloid (by Hiroshi Ishiguro)
Images and text (adapted): <http://www.toshiba.com/robotics/robotics-humanoids/elloid-portable-telepresence-android>



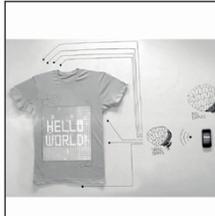
The Kitchen Safe is a time-lock container that cannot be opened until the timer reaches zero. It allows the user to have control over several situations such as excessive gaming, play time, and mindless snacking.

The Kitchen Safe (by David Krissendorfer and Ryan Tseng)
Images and text (adapted): <http://www.theblatnews.com/>



The Clock for an Architect is a part of a series of clocks that are inspired by different occupations. Each unique piece contains elements that can be associated with that occupation (e.g. Clock for a Film Maker, Clock for a Card Player, Clock for an Acrobat).

Clock for...an architect (by Daniel Weil)
Images <http://www.wel.com/2014/06/the-man-who-makes-the-coolest-clocks-you-never-see/>



The tshirtOS is a system designed to allow the user to program a thin digital display embedded on a t-shirt via his/her smartphone. The shirt can display live Twitter messages, as well as photos and videos transmitted from an iPhone.

tshirtOS (by CateCircuit)
Images and text (adapted): <http://www.dvico.com/articles/2012/06/programmable-t-grip>



Shaped-by-time is a clock that shapes itself by the passage of time, though its slow repetitive movement. The time is slightly visible when the clock starts running, after a few days it excavates itself out of the matter and time will appear. To "forget" time, the user can shake it a bit and it will start all over again.

Shaped by Time (by Studio Toet)
Images and text (adapted): <http://www.thalidotoet.com/shapetotime>



999Bottles is a stainless steel bottle that includes three numbered dials around its base. Every time the user refills the bottle, he/she advances the dial a notch, adding up the number of plastic bottles saved, thus encouraging sustainable behaviour.

999Bottles (by Artefact Group)
Images and text (adapted): <http://999bottles.com/>



My Life Urn is a memento mori that accompanies a user through all his/her life: it carries a seed that is meant to grow with the nutritional ingredients found in the placenta when his/her is born. The seed grows into a tree that lives and changes just like the user. Finally, the product can also serve as a carrier of the user's remains. The user's tree can grow into a memorial symbolizing his/her time on earth.

My Life Urn (by Matilda Wigg Eriksen)
Images and text (adapted): <http://miamemento.com/bg/matilda-wigg-eriksen/>



The Kiss Communicator allows a person to blow a kiss to his/her beloved when they are apart. It works by allowing the user to compose a "message" in the form of an animated light sequence.

Kiss Communicator (by IDEO)
Images and text (adapted): <http://designandinteraction.wordpress.com/2008/06/19/kiss-communicator/>



The Record Me concept is an alternative to sticky notes, letting users easily record notes in their own voice. It has the benefit of allowing the receiver to hear the tone of the message.

RecordMe (by Luc van Hoekel)
Images and text (adapted): <http://gall.com/voiceover-artist-walk-gadget-record-a-dozin-reminders/>



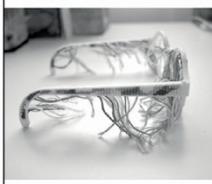
The Blank Wall Clock is an incomplete wall clock with a pen for customizing the hours. The user can assign specific moments of the day to different activities, help him/ her to perceive time in a different and unique way.

Blank Wall Clock (By Marti Guixà / Alessi)
 Images and text (adapted): <http://www.alessi.com/en/24765/clocks/mg40-1-blank-wall-clock-wall-clock>



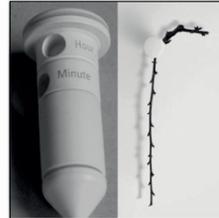
The Signature Necklace allows the user to have and wear a symbol of their own identity through a mark developed over the course of his/ her life. The user can also choose to honor a loved one by wearing their signature.

Signature Necklace (By Brenly)
 Images and text (adapted): <http://www.brenlyjewelry.com/products/signature-necklace/>



The Tapestry Spectacles are 3D printed frames with holes on almost all the surfaces to create glasses that can be customized by the user. Colored wool can be woven into the frame to create a mini tapestry.

Tapestry Spectacles (By Chloé McCormick and Nicholas O'Donnell/Koon)
 Images and text (adapted): <http://mooooloco.com/archives/026466.php>



The Meaning of Time is a clock concept that supplies the mechanism to keep time, while the user supplies the hour and minute hands. The user can use just about anything as long as it fits thru the holes, transforming it into something unique and personal.

Meaning of Time (By Barri Kim)
 Images and text (adapted): <http://www.yanibidesign.com/2008/05/01/making-your-own-clock/>



No Country For Old Men is a collection of walking aids that not only provides interstitial support to the elderly, but also allows them a modern and comfortable living.

No Country For Old Men (By Lantawechla and Wal)
 Images and text (adapted): <http://lanawechla-wal.com/projects/together/>



The El Sajadah is a mat for Muslim prayer that illuminates when facing Mecca. It has a built in compass that provides a visual feedback through electro luminescence, enabling the user to position him/herself in the correct way when praying.

El Sajadah (By SOPDS)
 Images and text (adapted): <http://www.soonerz.com/product/el-sajadah>



The Woolly and Stitch chairs are unfinished pieces of furnitures that are ment to be completed by the user. The more time the user spends, the more comfortable they become and the user can discover the possibilities of embroidery patterns. They were designed to make the user reflect about time.

The Discovery Of Slowness/ Woolly and Stitch Chairs (By Susanne Weinguth)
 Images and text (adapted): <http://www.susanneweinguth.de/index.php?project=die-entdeckung-der-langsamkeit/>



The Cook's Canvas is a handmade kitchen apron that folds up into a shoulder bag fastened by a wooden spoon. The decoration is built up by the user during the foraging, collecting, and cooking processes by the natural colours found in fruits, vegetables, flowers, spices, and plants. The more it is used, the greater and more creative is the expression of the user.

Cook's Canvas (By Lauren Davies/ Heba)
 Images and text (adapted): <http://hebabid.com/Cook-s-Canvas>



The USB Locket is a re-design of an mourning locket, which traditionally is contains a photo or lock of hair, and is kept as a reminder of a loved one. It contains a USB flash drive to hold important memories.

USB Locket (By Emily Rothchild)
 Images and text (adapted): www.emilyrothchild.com/index.php/ringsing/usb-locket/



Dos Pavos piggybank is a self-counting repository for €2 coins, with a wooden base and a ceramic top that rises as the bank is filled, revealing line indicators of the wealth contained within.

Dos Pavos piggybank (By Mr. Simon)
 Images and text (adapted): <http://mooooloco.com/feed/2014/02/19/dos-pavos-piggybank-by-mr-simon.php>

Appendix 6: SIM card set distributed in study 3

DesignforHappiness withSymbolicMeaning

The card set

This card set is the result of a research on happiness-related symbolic meaning in material possessions, as part of the Delft Institute of Positive Design (DIPD).

The card set can serve as inspiration to generate more reliable and personally relevant features and interactions in products, embodying (or facilitating the embodiment of) significant narratives. It contains a summary of 6 happiness-related symbolic meanings (see this card) and 18 design direction cards.

The card set can be used in several ways. For example, to understand the scope of product-mediated happiness, to complement an existing design brief, or to evaluate existing products or concepts.

The 6 symbolic meanings:

- Positive Relations with Others.** Symbolizes meaningful affiliations which provide a sense of belongingness.
- Environmental Mastery.** Symbolizes the individual's ability to master his/her context and build beneficial networks.
- Personal Growth.** Symbolizes transitions, acceptance of past experiences and continuous growth.
- Autonomy.** Symbolizes particular ways of living and life choices.
- Purpose in Life.** Symbolizes personally significant goals in life, and a sense of directedness.
- Self-Acceptance.** Symbolizes the positive aspects of the individual, promoting a positive self image.

DesignforHappiness withSymbolicMeaning

Stuff doesn't make us happy... Or does it?

Research in positive psychology shows that consumption of material goods is generally a counterproductive behavior for happiness. However, some products seem to defy this idea: Symbolically meaningful products have the ability to make our intentions tangible, or to remind us of our aspirations and to keep our successes vivid – and they provide a clue on how design can contribute to happiness.

This research is being developed within the DIPD (the Delft Institute of Positive Design) at the TU Delft. It is supported by a grant from the Foundation for Science and Technology of the Portuguese Government.

Delft Institute of Positive Design

FCT, Delft University of Technology, TU Delft, and other partners.

The card set:

The 6 symbolic meanings (see this card) help understand different possible symbolic meanings in products that relate to and influence happiness.

The 18 design direction cards offer inspiration to in the exploration of symbolic meaning to enrich and deepen product experiences and support user happiness, and include real examples and evocative questions.

Support meaningful affiliations.

Facilitating the practice of specific belongingness activities



(Positive relations with others)

Think about...

- ...what can be a meaningful affiliation for your target (group, institution, belief system, culture...)?
- ...what activities can make your target experience belongingness?

Positive relations with others.

Symbolizes meaningful affiliations which provide a sense of belongingness

El Sajadah by SORDS is a praying carpet with an embedded compass that lights up when facing Mecca.

Embody characteristics of a group.

Using unique characteristics of users (e.g. group, culture, profession) to design a representation of a group



(Positive relations with others)

Think about...

- ...to which groups does your target belong to?
- ...what are characteristics of those groups?

Positive relations with others.

Symbolizes meaningful affiliations which provide a sense of belongingness

El Botijo by WOW studio is a modern redesign of an iconic item of Spanish culture using traditional materials.

Support active personal development.

Providing a platform for active reflection on lessons learned and future expectations



(Personal growth)

Think about...

- ...through which processes/actions/activities can your target reflect on life and on personal growth?

Personal growth.

Symbolizes transitions, acceptance of past experiences and continuous growth

OWL (On the Wisdom of Life) by Designs On is a time capsule with tubes which contain reflections on the past and hopes for the future.

Embody personal growth.

Providing an adaptable design that can accommodate physical and psychological change



(Personal growth)

Think about...

...in what meaningful ways can your target physically and psychologically change or develop?
 ...what processes/actions/activities are related to it?

Personal growth.

Symbolizes transitions, acceptance of past experiences and continuous growth

The Weight Recorder by Wu Weihe marks the changing weight of a pregnant mother drawing it on a disk that can be preserved.

Support acceptance and growth from past experiences.

Designing a tangible representation of the passage of time



(Personal growth)

Think about...

...what scale of time is relevant for your target?
 ...what tangible form can be relevant to express personal growth in time?

Personal growth.

Symbolizes transitions, acceptance of past experiences and continuous growth

The 365 Knitting Clock by Soren Wilhelmsson works for one year producing a wearable "pass" scarf that can be carried out in the future.

Enhance memories.

Offering a positive context or activity to reflect on memories of loved ones



(Personal growth)

Think about...

...what are possible memories with loved ones that are relevant for your target (places, moments, life milestones, etc.)?
 ...in what ways can your target reminisce on memories in order to flourish from them?

Personal growth.

Symbolizes transitions, acceptance of past experiences and continuous growth

The Heirloom by Nikk George Ferguson holds an inherited object in a glass jar and its stories recorded by the owner before passing it on.

Encourage positive change.

Providing an external trigger that suggests beneficial activities or behaviours



(Purpose in life)

Think about...

...what can be beneficial activities or behaviours might contribute to a purposeful life for your target?

Purpose in life.

Symbolizes personally significant goals in life, and a sense of directedness

The Blank Wall Clock by Alessi is a blank surface to write or draw on.

Provide a sense of control.

Allowing the user to manage the progress towards personally significant goals, or to eliminate or mitigate obstacles that threaten their fulfillment



(Purpose in life)

Think about...

- ...what are personally significant goals that might give purpose to your target?
- ...what are possible obstacles for their fulfillment?

Purpose in life.

Symbolizes personally significant goals in life, and a sense of directedness

The Kitchen Safe by David Krappendorf and Ryan Tieng is a time lock container that cannot be opened until the timer reaches zero.

Keep track of progress.

Providing visual feedback to keep track of progress towards personally significant goals



(Purpose in life)

Think about...

- ...what are personally significant goals that might give purpose to your target?
- ...how can progress towards their fulfillment be measured?

Purpose in life.

Symbolizes personally significant goals in life, and a sense of directedness

999Bottles by Artefact is a stainless steel bottle that includes three numbered dials around its base to track the number of plastic bottles saved.

Improve multi-sensorial communication.

Improving communication mediums by translating a message into a sensorial experience, for example by simulating intimate physical behaviours



(Environmental mastery)

Think about...

- ...what are intimate physical behaviours that convey proximity, which can help your target build beneficial networks?
- ...what can be a sensorial communication experience that is interesting for your target?

Environmental mastery.

Symbolizes the individual's ability to master his/her context and build beneficial networks

The Efofil P1 by ATRH Hiroshi Ishiguro Laboratory is a hybrid of cellphone and robot that transmits voice and motion to convey a person's "presence".

Provide a context for meaningful interaction.

Facilitating interaction by making use of the context, or props as an advantage



(Environmental mastery)

Think about...

- ...what are interactions that your target engages in to have control of his/her context?
- ...what are interesting features of those interactions (who/where, when...) that can help in that sense of mastery?

Environmental mastery.

Symbolizes the individual's ability to master his/her context and build beneficial networks

Family Matters by Noa Dotan is a collection of soft toys resembling animals designed to facilitate communication in family therapy through role play.

Destigmatize.

Focusing on- and enhancing the aesthetic qualities of physically enabling products



(Autonomy)

Think about...

...what are enabling products that your target needs to support his/her autonomy?
...which characteristics potentially make that those physically enabling products stigmatizing?

Autonomy.

Symbolizes particular ways of living and life choices

No Country For Old Men by Lanzavecchia and Wai is a collection of comfortable walking aids for a modern living.

Design for mindfulness.

Slowing down processes or disclosing the mechanisms behind how products work to promote a mindful living



(Autonomy)

Think about...

...which products are interesting to deconstruct (slow down, uncover mechanisms, etc.) to add a sense of control to your target?
...which mechanisms of common use products are interesting for mindful living?

Autonomy.

Symbolizes particular ways of living and life choices

The Standard Table Lamp from The Standard Collection by Knud and Brown needs to be manually placed into a low-voltage copper wire to complete an electric circuit.

Redirect the user's attention.

Designing a product that actively requires attention from the user to mitigate or distract from negative situations



(Autonomy)

Think about...

...what are negative situations that your target might be exposed to that could limit his/her autonomy?
...what opportunities can you find in those limitations?

Autonomy.

Symbolizes particular ways of living and life choices

Liv by TU Delft is an interactive creature for hospitalized children. It needs movement and social attention to stay "healthy" and asks to interact with other Livs (and other children) through noise and light.

Allow shared transformation.

Providing tools for user input at aesthetic and functional level, in a permanent or temporary way



(Self-acceptance)

Think about...

...what transformations/outlets could be interesting for your target to experience in his/her self-discovery?
...what processes or interactions are part of those transformations/outlets?

Self-acceptance.

Symbolizes the positive aspects of the individual, promoting a positive self image

The Meaning of Time by Bomi Kim is a clock concept that supplies the mechanism to keep time, while the user supplies the hour and minute hands.

Allow self-expression.
 Providing a tangible platform to wear, share, or display aspects of identity, personally significant ideas, principles, relationships, etc.



(Self-acceptance)

Think about...

- ...what are interesting and positive aspects of your target's identity that can be enhanced to promote self-acceptance?
- ...what are ideas or principles that your target finds important to support his/her identity?

Self-acceptance.
 Symbolizes the positive aspects of the individual, promoting a positive self image

Favourite Thing by Chen Karfsoon Studio is a lamp that allows treasured objects be exhibited and highlighted.

Appendix 7: SIM toolkit resulting from study 3

(SIM toolkit introductory document)



design with symbolic meaning for user happiness

Using design to improve the lives of people towards a positive flourishing state is the main premise of Positive Design. Our contribution to this growing field focuses on making use of the symbolic meaning that design can have to bolster human happiness.

The SIM toolkit for designers (composed of a card set and a website) aims to inspire design that is open for symbolic meaning attribution and supports subjective well-being.

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PERSONAL GROWTH

SYMBOLIC MEANING

Symbolizes the acceptance of past experiences, the openness to new challenges, continued development and maturity



design with symbolic meaning for user happiness

PERSONAL GROWTH

SYMBOLIC MEANING

Proposed design directions:

Support active personal development by providing a platform for users to learn new lessons, set and future expectations

Embodiment personal growth by focusing on adaptability to accommodate physical and psychological change

Support acceptance and growth from past experiences by providing a platform for users to reflect on the passage of time

Enhance memories by offering a positive context or activity to reflect on memories of loved ones



design with symbolic meaning for user happiness

PURPOSE IN LIFE

SYMBOLIC MEANING

Symbolizes personally significant goals and aspirations, and a sense of directedness



design with symbolic meaning for user happiness

PURPOSE IN LIFE

SYMBOLIC MEANING

Proposed design directions:

Encourage positive change by providing an external trigger that suggests beneficial activities or behaviours

Provide a sense of control by allowing the user to manage personally significant. Set and overcome obstacles in their fulfillment

Keep track of progress by providing visual feedback on progress towards personally significant goals



design with symbolic meaning for user happiness

POSITIVE RELATIONS WITH OTHERS

SYMBOLIC MEANING

Symbolizes quality relations and affiliations that contribute to a sense of belongingness



design with symbolic meaning for user happiness

POSITIVE RELATIONS WITH OTHERS

SYMBOLIC MEANING

Proposed design directions:

Support meaningful affiliations by facilitating the practice of group/community activities

Embody characteristics of a group by using unique characteristics of groups the user belongs to (e.g. culture, profession)



design with symbolic meaning for user happiness

SELF-ACCEPTANCE

SYMBOLIC MEANING

Symbolizes the acceptance of positive and negative aspects of oneself, self-compassion and a positive self-image



design with symbolic meaning for user happiness

SELF-ACCEPTANCE

SYMBOLIC MEANING

Proposed design directions:

Allow shared transformation by providing tools for user input at an aesthetic and/or functional level

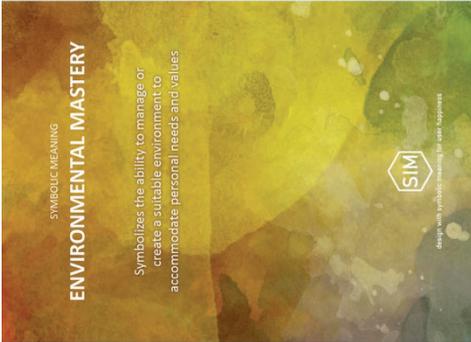
Allow self-expression by providing a tangible platform to wear, share, or display personally significant ideas



design with symbolic meaning for user happiness

SYMBOLIC MEANING
ENVIRONMENTAL MASTERY

Symbolizes the ability to manage or create a suitable environment to accommodate personal needs and values



SIM

design with symbolic meaning for user happiness

SYMBOLIC MEANING
ENVIRONMENTAL MASTERY

Proposed design directions:

- Support multi-sensory communication** by translating messages into sensory experiences (e.g. simulating physical behaviours or emotions)
- Provide a context for meaningful interaction** by making use of the context or limitations as an advantage

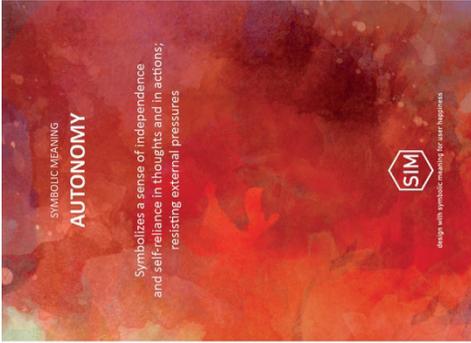


SIM

design with symbolic meaning for user happiness

SYMBOLIC MEANING
AUTONOMY

Symbolizes a sense of independence and self-reliance in thoughts and in actions; resisting external pressures



SIM

design with symbolic meaning for user happiness

SYMBOLIC MEANING
AUTONOMY

Proposed design directions:

- Destigmatise** by enhancing the aesthetic qualities of physically enabling products
- Design for mindfulness** by slowing down processes or disclosing the mechanisms behind products to promote a mindful living
- Redirect the user's attention** by designing an intervention that requires attention from the user to distract from negative situations



SIM

design with symbolic meaning for user happiness

SUPPORT MEANINGFUL AFFILIATIONS

by facilitating the practice of group/community activities



Think about...
...to which meaningful groups or communities does your user belong?
...what activities make your user feel like he/ she belongs?



EMBODY CHARACTERISTICS OF A GROUP

By using unique characteristics of groups the user belongs to (e.g. cultures, profession)



Think about...
...to which meaningful groups or communities does your user belong?
...what are unique characteristics of those groups?



ENCOURAGE POSITIVE CHANGE

By providing an external trigger that suggests beneficial activities or behaviours



Think about...
...which activities or behaviours can benefit your user, and contribute to a purposeful life?



PROVIDE A SENSE OF CONTROL

By allowing the user to manage personally significant goals, or to eliminate obstacles in their fulfilment



Think about...
...what are personally significant goals that give purpose to your user?
...what are possible obstacles in their fulfilment?



KEEP TRACK OF PROGRESS

By providing visual feedback on progress towards personally significant goals



Think about...
...what are personally significant goals that give purpose to your user?
...how can progress towards their fulfilment be measured?



SUPPORT ACTIVE PERSONAL DEVELOPMENT

by providing a platform for active reflection on lessons learned and future expectations



Think about...
...through which processes, actions or activities can your user reflect on life and on personal growth?



EMBODY PERSONAL GROWTH

By focusing on adaptability to accommodate physical and psychological change



Think about...
...in what meaningful ways can your user change or develop (physically and psychologically)?
...what processes, actions or activities are related to it?



SUPPORT ACCEPTANCE AND GROWTH FROM PAST EXPERIENCES

By providing a tangible representation of the passage of time



Think about...
...what scale of time is most relevant for your user?



ENHANCE MEMORIES

By offering a positive context or activity to reflect on memories of loved ones



Think about...
...who are your user's loved ones?
...what positive memories does your user have with his/her loved ones (places, moments, life milestones, etc)?



<p>DESTIGMATIZE</p> <p>by enhancing the aesthetic qualities of physically enabling products</p> 	<p>Think about...</p> <p>...what products enable your user and support his/her autonomy?</p> <p>...which (physical) characteristics of those products make your user feel self-conscious?</p> 	<p>SUPPORT MULTI-SENSORIAL COMMUNICATION</p> <p>by translating messages into sensorial experiences (e.g., stimulating physical behaviours and emotions)</p> 	<p>Think about...</p> <p>...how does your user convey proximity?</p> 
<p>DESIGN FOR MINDFULNESS</p> <p>by slowing down processes or disclosing mechanisms and products to promote a mindful living</p> 	<p>Think about...</p> <p>...how can your user have more control over his/her context (think of small everyday things)?</p> 	<p>PROVIDE A CONTEXT FOR MEANINGFUL INTERACTIONS</p> <p>by making use of the context or limitations as an advantage</p> 	<p>Think about...</p> <p>...what opportunities/limitations does your user's context present?</p> 
<p>REDIRECT THE USER'S ATTENTION</p> <p>by designing an intervention that requires attention from the user to distract from negative situations</p> 	<p>Think about...</p> <p>...to what negative situations is your user exposed to?</p> <p>...how do these limit your user's autonomy?</p> 		
<p>ALLOW SHARED TRANSFORMATION</p> <p>by providing tools for user input at an aesthetic and/or functional level</p> 	<p>Think about...</p> <p>...what skills and competences is your user proud of?</p> 		
<p>ALLOW SELF-EXPRESSION</p> <p>by providing a tangible platform to wear, share or express personality significant ideas</p> 	<p>Think about...</p> <p>...what positive aspects of your user's identity can be enhanced to promote self-acceptance?</p> <p>...what ideas or principles does your user find important to support his/her identity?</p> 		

SUMMARY

This doctoral thesis focuses on the positive design strategy of designing with symbolic meaning as a way to support people's well-being. It investigates the concept of well-being related symbolic meaning, and proposes design directions to inspire and inform designers to introduce it in the design process. This concept of well-being related symbolic meaning is defined as the intangible quality products have that links to and affects people's psychological well-being (their mental fortitude, their sense of self-worth and belonging, their sense of purposefulness, etc.) and, in turn, affects their subjective well-being (their perception of how happy they are). It originates in representations of personally significant things (memories, people, places, ideals, achievements, goals, etc.) and in meaningful interactions (rituals, mediation of relationships, etc.) and subsequent representation of these interactions, linked to determinants of well-being – purpose in life, personal growth, self-acceptance, positive relations with others, autonomy, and environmental mastery. This meaning implies a process of cultivation and can evoke different types of emotions, often complex.

Positive design aims to develop design that is pleasurable, virtuous, and personally significant, having explored different strategic paths to achieve that: design as a direct source of well-being, as a facilitator of experiences and activities that are well-being conducive, as an indirect cue or nudge towards well-being, focusing on experiences, focusing on emotions, etc. Our approach contributes to that goal by investigating design as a symbol of well-being. Consequently, design with well-being related symbolic meaning – i.e., design with the deliberate intention to represent, anticipate, preserve, or revisit significant aspects of life linked to people's well-being – can be a strategy to develop products that support people's well-being, and that are potentially relevant and emotionally durable, have continued value and appreciation, and that stimulate deeper and longer-lasting person-product relationships.

This research fulfils three goals: to understand, to translate, and to communicate. The first goal refers to understanding the phenomenon of well-being related symbolic meaning in material possessions. We addressed it by investigating 'lived' products with personal meaning, in people's homes. The second goal concerns the translation of knowledge about well-being related symbolic meaning into actionable design directions that are understandable and usable by designers. The third goal is about communicating the design directions in an engaging and usable format for designers.

Chapter 1 explains the concept of well-being and describes its link to products and to design, specifying our approach within the field of positive design. Chapter 2 reviews literature to present types of product meaning, and to characterize and differentiate symbolic product meaning. Chapter 3 reports a study that looks at determinants of psychological well-being in cherished material possessions, resulting in six well-being related symbolic meanings that can be designed for. Chapter 4 reports a study that resulted in sixteen design direction from the six symbolic meanings, as a way to design for well-being. Chapter 5 explores a means to communicate the developed design directions through an iterative process and proposes a toolkit for designers (i.e., the SIM toolkit). Chapter 6 reports the application of the developed toolkit in workshops and in industry cases, and results in insights about its use, format, and impact. Chapter 7 summarizes the main insights and respective implications of this thesis, discussing them and presents limitations and possible future avenues for research.

SAMENVATTING

Dit proefschrift focust zich op de *positive design* strategie van het ontwerpen met symbolische betekenis om bij te dragen aan het welzijn van mensen. Het onderzoekt het concept van welzijn gerelateerd aan symbolische betekenis, en introduceert ontwerp strategieën om ontwerpers te inspireren en informeren. Dit concept van welzijn gerelateerde symbolische betekenis is gedefinieerd als de immateriële kwaliteit van producten die het psychologische welzijn van de mens beïnvloedt (hun mentale kracht, hun gevoel van zelfwaarde, verbondenheid, doelgerichtheid, etc.). Deze kwaliteit beïnvloedt hun subjectieve welzijn (hun idee van hoe gelukkig ze zijn). Het ontstaat in representaties van persoonlijke, betekenisvolle dingen (herinneringen, mensen, plaatsen, idealen, prestaties, doelen, etc.) en in betekenisvolle interacties (rituelen, bemiddeling van relaties, etc.), en de resulterende representaties hiervan, gekoppeld aan determinanten van welzijn — richting in het leven, persoonlijke groei, zelf acceptatie, positieve relaties met anderen, autonomie en beheersing van de omgeving.

Positive design heeft als doel ontwerpen te ontwikkelen die plezierig, virtuoos en persoonlijk betekenisvol zijn. Verschillende strategieën om dit te bereiken zijn onderzocht: design als een directe bron van welzijn, als facilitator van wijlzijn bevorderende ervaringen en activiteiten, en als een aanwijzing of een duwtje in de rug naar welzijn, gefocust op ervaringen, emoties, etc.

Onze benadering draagt bij aan dit doel door te onderzoeken hoe design een symbool voor welzijn kan zijn. Derhalve, design met welzijn gerelateerde symbolische betekenis — dat wil zeggen, design met de bewuste intentie om betekenisvolle aspecten van het leven gerelateerd aan het welzijn van de mens te representeren, anticiperen, preserven of te herzien — kan een strategie zijn om producten te ontwikkelen die bijdragen aan het welzijn van mensen en een diepere en langdurige persoon-product relatie stimuleren.

Dit onderzoek bereikt drie doelen: begrijpen, vertalen en communiceren. Het eerste doel is het begrijpen van het fenomeen van welzijn gerelateerde symbolische betekenis in materiële bezittingen. We hebben dit geadresseerd door 'beleefde' bezittingen met persoonlijke betekenis te onderzoeken, in de thuisomgeving van de eigenaren van deze bezittingen. Het tweede doel betreft de vertaling van kennis over welzijn gerelateerde symbolische betekenis naar actiegerichte ontwerpstrategieën die te begrijpen en bruikbaar zijn voor ontwerpers. Het derde doel betreft het communiceren van de ontwerpstrategieën in een aantrekkelijke en bruikbare vorm.

Hoofdstuk 1 legt het concept van welzijn uit en beschrijft de link naar producten en ontwerpen; we specificeren onze benadering op het gebied van *positive design*. Hoofdstuk 2 rapporteert een literatuuronderzoek om verschillende typen product betekenissen te onderscheiden en symbolische product betekenis te differentiëren. Hoofdstuk 3 rapporteert een studie die determinanten van psychologisch welzijn in dierbare materiële bezittingen onderzocht, resulterend in zes welzijn gerelateerde symbolische betekenissen waarvoor men kan ontwerpen. Hoofdstuk 4 rapporteert een studie die resulteerde in zestien ontwerpstrategieën vanuit zes symbolische betekenissen, als een aanpak voor welzijn-gedreven ontwerpen. Hoofdstuk 5 rapporteert een iteratief proces om tot communicatiemiddelen te komen voor de ontwikkelde ontwerpstrategieën, en presenteert een *toolkit* voor ontwerpers (de SIM *toolkit*). Hoofdstuk 6 rapporteert de toepassing van de ontwikkelde *toolkit* in workshops en de industriële praktijk, welke resulteert in inzichten in het gebruik, vorm en effect van de *toolkit*. Hoofdstuk 7 geeft een samenvatting van de belangrijkste inzichten en implicaties van dit proefschrift, en presenteert beperkingen van het onderzoek en richtingen voor toekomstig onderzoek.

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Finally, I would like to dedicate this work to my twin sister, Inês. Nothing compares to our relationship, it is truly of always and forever.

ABOUT THE AUTHOR



Mafalda Casais was born on November 25th, 1984, in Lisbon, Portugal. She did a three-year illustration course, followed by an undergraduate degree in Design, from the Lisbon School of Architecture. During the undergraduate degree, Mafalda spent one year in Italy, at the University of Genoa, within the European exchange programme Erasmus. She then was awarded a Master degree in Product Design, by the Lisbon School of Architecture, University of Lisbon. In her Master thesis, Mafalda investigated the green kitchen as a central part of an emerging type of consumer. This work laid the foundation for what it meant to conduct user research and design things that are relevant for longer – a seed of meaningful relations between products and people, which then inspired the PhD project.

In 2011, Mafalda received a doctoral grant awarded by the Foundation for Science and Technology (FCT), a public agency part of the Portuguese Ministry for Science, Technology and Higher Education, to conduct a PhD project. This project was developed at the Delft Institute of Positive Design, at the Faculty of Industrial Design Engineering, TU Delft. The research focused on well-being related symbolic meaning in products.

List of author's publications

Publications as first author

Casais, M. (2020). Facilitating complex knowledge in design education through design tools. In R. Almendra & J. Ferreira (Eds.). *Research & Education in Design: People & Processes & Products & Philosophy, Part 1: Design & Pedagogy* (pp. 3-12). Oxford: Taylor & Francis.

Casais, M., Mugge, R., & Desmet, P.M.A. (2018). Objects with symbolic meaning: Sixteen directions to inspire design for happiness. *Journal of Design Research*, 16(3/4), 247-281.

Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Using symbolic meaning as a means to design for happiness: The development of a card set for designers. In P. Lloyd & E. Bohemia (Eds.). *Proceedings of DRS2016: Design+Research+Society: Future- Focused Thinking*, Vol. 4 (pp. 1553-1571). Brighton: Design Research Society.

Casais, M., Mugge, R. & Desmet, P.M.A. (2015). Extending product life by introducing symbolic meaning: An exploration of design strategies to support subjective well-being. In T. Cooper et al. (Eds.), *Product Lifetimes and the Environment (PLATE) Conference Proceedings* (pp. 44–51). Nottingham: CADBE.

Casais, M., Christiaans, H. & Almendra, R. (2012). Sustainability curricula in design education. In L. Buck et al. (Eds.), *DS 74: Proceedings of the 14th International Conference on Engineering & Product Design Education (E&PDE12) Design Education for Future Wellbeing* (pp. 599-604). Glasgow: The Design Society.

Casais, M. & Almendra, R. (2012). Objetos sustentáveis para um habitar sustentável. In *VI Encontro Nacional de Estudos do Consumo, II Encontro Luso-Brasileiro de Estudos do Consumo (VIENEC) Vida sustentável: Práticas cotidianas de consumo* (pp. 1-14). Online: <http://estudosdoconsumo.com/anais-do-vi-enec/>

Casais, M., & Almendra, R. (2011). The green kitchen as a catalyst of a sustainable living. In *Proceedings of CIPED'06 - VI Congresso Internacional de Pesquisa em Design*. Lisboa: CIAUD.

Publications as secondary author

Marujo, H.Á., Neto, L.M., & Casais, M. (2020). Felicitas Publica, urbanization, and the availability of relational goods: Impacts on collective happiness. In M. Boyle, C. Murray, & S. Jarvis (Eds.). *Journal of Urban Regeneration and Renewal, Special Issue: Improving Urban Regeneration and Renewal Outcomes by Engaging an Urban Psychology*, 13(3), 310-321. London: Henry Stewart Publications.

De Francisco Vela, S. & Casais, M. (2018). Billy Cash: Digital piggybank for meaningful saving behaviour. *Revista Chilena de Diseño, RChD: creación y pensamiento*, 3(4), 1-12.

De Francisco Vela, S., Desmet, P.M.A. & Casais, M. (2014). Feeding your piggy bank with intentions: A study on saving behaviour, saving strategies, and happiness. In J. Salamanca et al. (Eds.), *Proceedings of the Colors of Care: The 9th International Conference on Design & Emotion* (pp. 64-69). Bogotá: Ediciones Uniandes.

Other publications

Casais, M. (2020). Cruzando disciplinas: Elementos pedagógicos de design aplicados no ensino da psicologia positiva. *Presented at the 7th EIMAD – Encontro de Investigação em Música, Arte e Design* (May 14-15, 2020). Fábrica da Criatividade, Castelo Branco, Portugal (online).

Casais, M. (2019). The value of design education for other fields: Using design tools to teach psychology. *Presented at the 10th International Conference Senses & Sensibility 2019: Lost in (G)localization* (November 27-29, 2019). Sociedade de Geografia de Lisboa, Portugal.

Casais, M., Mugge, R., & Desmet, P.M.A. (2016). Designing for Happiness: A workshop about symbolic meaning (workshop & short paper). In P.M.A. Desmet et al. (2016) (Eds.). *Celebration & Contemplation: Proceedings of the Tenth International Conference on Design and Emotion* (pp. 581-587). Amsterdam: The Design & Emotion Society.

Casais, M., Mugge, R., & Desmet, P.M.A. (2016). Symbolic meaning attribution as a means to design for happiness (poster presentation). *Presented at Celebration & Contemplation: Tenth International Conference on Design and Emotion* (September 27-30). Amsterdam.

Casais, M., Mugge, R. & Desmet, P.M.A. (2016). *Design with symbolic meaning for user happiness card set (SIM)*. ISBN/EAN: 9789461866387. Delft: Delft University of Technology. Online: <http://www.designwithmeaning.org/>

Casais, M., Mugge, R. & Desmet, P.M.A. (2016). Meaningful Things: Exploring the symbolic meaning of the material environment and its impact on happiness (videography). *Presented at North American Association for Consumer Research Conference (ACR) Film Festival* (28-29 october). Berlin. Online <https://vimeo.com/179011005>

