Master Thesis

Creating meaningful conversations user-data for the fitness tracker experience

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Graduation project

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Master Thesis
Design for interaction

September, 2019

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Acknowledgements

This report has an academic and an emotional part, and it has been nourished by all the caring and talented people that I have had the luck to be surrounded by. I would like to thank everyone who has helped and supported me in making this project possible.

My chair and mentor

I would like to thank Pieter for being a career inspiration. I came to Delft after getting inspired by reading the papers of design for emotion, so it has been a dream to graduate with him. But further, than that, I have valued a lot during the process his caring, his enthusiasm and the trust he placed in me. Thank you for listening to my interest and motivate me to follow my passions during the project. Finally, I would like to thank him for his emotional sensitivity and how he cared about finding the best way to emotionally and academically support me during the project.

I would like to thank Valeria for her smartness and emotional intelligence. I am very thankful for her critical questions, I not only enjoyed the debates but also pushed me to define very well the statements made throughout the process. Moreover, I am very thankful for all the time she has dedicated to the project and for her attention to detail to make the best out of it. Personally, I have valued a lot her infinite emotional and academic support, her involvement in the project and her contagious enthusiasm throughout the process.

Finally, I would like to thank both for making me feel part of a team, and for your constructive criticism and the rich conversations we have had throughout the project that pushed me to do my best and also learn from you to grow as a designer.

Tu Delft

I would like to thank the professors that have offered me their time and knowledge to enrich the project. Thanks to Elisa Giaccardi for the insightful conversation regarding user empowerment. Moreover, I would like to thank Paul Hekker for giving me insights about user engagement. And las but not least, thanks to Mafalda Casais for your kindness and her availability to discuss intangible meaning of products, her insights and inspiration were essential to define a meaningful design direction.

Philips

I would like to thank Marleen van Leengoed for her advice when defining the target group, which added a lot of value to the project scope. Moreover, I am very thankful for her enthusiasm, the shared

interest in philosophy, and for her inspiring feedback.

Experts

I would like to thank Jesus Zarza Mota for his involvement in the project and for making time to share his expertise in psychology and to enrich my understanding of the habit formation and life transformations.

My family in The Netherlads

This project has been nourished with conversations, emotional support and help from all the talented and loving friends that surround me.

Maria, Lynn, Celeste, Damien, Nirav, Taresh, Emanuele, Pelin, Alev, Joost, Andrea, Angeles, Carolina, Mark, Nounou, Gijs, Dani, Michael... Thank you for your unconditional love and support, for your smart criticism, your involvement in the project and for all the smiles that you have enabled me throughout the process. You have been the biggest present that TU Delft could give me.

And especially Joost, who has made the video possible, for your patience and unconditional support.

My family

I would like to thank my family for all the trust and love, which have given me strength and energy during the process. I would like to thank them for motivating me always to grow and for being always there and making me feel at home even if there is an ocean between us. And most importantly, I would like to thank them for their example, which have always inspired me to do my best personally and professionally.

My mom

I would never have enough paper to thank her you for everything because everything I accomplish and everything I am is because of her. But this time I would like to especially thank her for her values, this project has also been a path of self-discovery, and I have seen very clearly her values reflected in my values as a designer. In specific, thank you for teaching me the enormous value of being enthusiastic, strong, resilient and authentic, this attitude has been a key factor throughout my master and my graduation project.

Glossary

This section briefly describes the definitions of terms and abbreviations used within this theses and potentially unfamiliar to the reader. of terms and abbreviations used within this thesis.

Terms

Health promotion: Health promotion is the process of empowering people to increase control over their health and its determinants through health literacy efforts and multi sectorial action to increase healthy behaviors. This process includes activities for the community-at-large or for populations at increased risk of negative health outcomes. Health promotion usually addresses behavioral risk factors such as tobacco use, obesity, diet and physical inactivity, as well as the areas of mental health, injury prevention, drug abuse control, alcohol control, health behavior related to HIV, and sexual health (Nutbeam, 1998).
Primary prevention: Primary prevention refers to actions aimed at avoiding the manifestation of a disease (this may include actions to improve health through changing the impact of social and economic determinants on health; the provision of information on behavioral and medical health risks, alongside consultation and measures to decrease them at the personal and community level; nutritional and food supplementation; oral and dental hygiene education; and clinical preventive services such as immunization and vaccination of children, adults and the elderly, as well as vaccination or post-exposure prophylaxis for people exposed to a communicable disease) (WHO, 2019)

Abbreviations

BP: Blood pressure.

CVD: Cardiovascular diseases

NCD: Non-communicable disease

SDT: Self determination theory

WHO: World Health Organization

Excecutive summary

This thesis presents the results of the project “Creating meaningful conversations user-data”. The aim of this project is to understand the impact that interactions with technology currently have on users and to redesign a fitness tracker service to create more personal and meaningful experiences. These experiences enable fostering the users’ wellbeing and ultimately user engagement. The project explores the personality (conceptual characteristics) of the fitness tracker and its impact on user interaction. Moreover, it researches the meaning and value of health for the individual.

Literature shows that the conceptual approach of fitness trackers is characterized by a focus on fitness and is driven by optimizing human bodies. Moreover, the tracker’s tone of voice follows an acute care language, which means that it brings a set of prescriptions for a healthy lifestyle.

The user study performed with eight participants evidences a disagreement in the health approach; While the fitness tracker focuses on optimizing the user’s fitness, the user values health as a source of holistic self-care (nutrition, fitness, and mind) through personally joyful activities to balance the stress of everyday life. For the user, health is about balance and ease instead of achievement.
Regarding the effect of the tracker’s personality on the user, the user study shows that the experience is technology-centered. Therefore the conversation “user-data” is blocked by the excessive control that the device has on the experience, which puts the user in a passive and disempowered role. This problem is manifested in the user experience by the following five challenge areas in the interaction: meaningless/ impersonal goals, lack of balance, trainer tone of voice, goal-driven experience and perceived lack of self-control.

Firstly, due to the disagreement regarding the definition of health, two challenges are manifested: on one hand, the goals offered are perceived as meaningless and impersonal, and on the other hand, there is a lack of self-care balance due to the prime focus on fitness health. Secondly, the technology has a trainer tone of voice (as a result of the acute care language) that not only dominates the conversation, which is perceived as demanding and intrusive but also disempowers the user since the user feels helped all the time, and therefore the ownership of health management lies in the tracker. Besides, the optimization purpose of the tracker provokes the experience to be focused on achievement. This creates a perception of a linear process for the user that conflicts with the ups and downs that characterizes the process of building a healthier lifestyle. This discrepancy in expectations provokes frustration and self-disappointment. Finally, although fitness trackers reward the user’s achievements, they don’t consider to support the user during the low points of motivation. However, this support is critical for engagement because it helps users to leave a vicious circle, where otherwise users that are at a low point of motivation make more impulsive unhealthy decisions which makes them feel incapable of managing their health and therefore decrease their motivation even further.

As a consequence, alternative personality approach for the fitness tracker is defined that enables meaningful conversations between user and data. The goal of this proposed personality is to establish a meaningful and positive relationship with the user and it has been inspired by Aristotle’s virtue theory and users’ meaning of health:
On one hand, Aristotle’s virtue theory is relevant because (1) it adds personal meaning to the concept of improvement by approaching improvement as a journey to build a better version of yourself (healthier lifestyle in this project) based on mastering skills, rather than reaching goals. Moreover, (2) building a better version of yourself inspires a tone of voice based on having conversations with your future-healthier self, rather than a trainer tone of voice. Finally, (3) mastery is based on personal experiences in the journey where low-points are seen as learning opportunities in the process of self-growth, rather than being based on linear improvement.
On the other hand, the new personality of the device shares the meaning of health of the user. Therefore, rather than focusing on fitness, this personality focusses on building healthier habits for a healthier mind, fitness, and nutrition.

In order to define more tangible interaction characteristics for a redesign, the challenge areas have been translated to four characteristics according to the new personality approach: personal and specific habits to master your

future-self, frame goals as paths towards your future self, focus on balance on the path and talk with your future self to learn from the path.

The redesign is a new concept for the fitness tracker service (mobile and smartwatch app). It tackles the entire concept of the fitness tracker service (mobile and smartwatch app), rather than only data visualization because there needs to be a common ground regarding the personality of the user and the tracker (such as having a common approach to health) before the user-data conversations can become meaningful. Therefore, the redesign focuses on three problematic service areas found in user research: *goal setting, data visualization and notifications for motivation*.
Goal setting has been tackled by the intervention "Imagine and create your future-self's healthy habits" where the user can define specific and holistic habits of his healthier-future self. This intervention aims to establish the common ground of a meaningful conversation by giving ownership to the user on the experience and defining meaningful goals that would increase the meaning of data presented later.

Data visualization has been dealt with through the metaphor of "Balloon journey towards future-self". In this metaphor, the user propels a balloon forward by maintaining his habits and the conversation user-data is enabled with the intention of supporting the user during the low-points of his journey. These low-points occur when the user does not work towards his future-self and are represented by a balloon that is unable to fly, presenting a moment to slow down and reflect by answering a future-oriented "what"-question, enabling the user to look beyond the frustration and learn from these negative experiences.
Notifications for motivations are resolved by "Get inspired and inspire others' journeys" with the intent of making notifications dynamic and spark inspiration. Since the design is focussed on the user's journey rather than achievement, this motivation strategy focuses on exchanging learnings about health management instead of provoking a competition for the best achiever.

The design intentions and assignment have been validated in the evaluation and new learnings have emerged.
The definition of personal and holistic habits to envision a future-self and the framing of goals as journeys to build a healthier life have provoked in the users to look beyond the tangible activity and find in the experience a meaningful value for their lives. Moreover, the insights were perceived to be meaningful for its focus on the learnings exchange instead of interpersonal competition.
Meaningful conversations with data have been enabled through "what" questions, which not only gave to the user an empowering and proactive role in the interaction but has been unexpectedly perceived as extra motivation. The reason is that since it enables to understand unconscious behavior, the users feel the urge to transform the behavioral learnings into actions. Moreover, the metaphor has been unexpectedly taken as a healthy life symbolism which's meaning varied per participant.
Regarding motivation, it has been found that behavioral inspiration (instead of behavioral instructions) are key to motivate the user. Therefore, motivational experiences for trackers depend on the creativity that the interactions sparks in the user.

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1. Introduction

This chapter introduces the product that this project tackles, the fitness tracker, and it discusses the potential of the tracker as well as existing problems. Moreover, the chapter introduces the concept of wellbeing and discusses its value for the project. Afterward, the chapter details the assignment description.

Finally, this chapter presents an overview of the approach and structure of the project describing the main activities that have been done to develop the assignment.

Introduction

Fitness trackers

The last century has meant a change in health trends but also in society lifestyle. These changes have resulted in a current concern for preventing chronic illnesses and specially cardiovascular diseases (CVD) since is the leading cause of death nowadays. Moreover the lifestyle changes of the past decades have brought the concern of combating the current sedentary lifestyle by promoting an active lifestyle through fitness (Blair et al. 2009). The focus on prevention and promoting a healthy lifestyle delegates the health responsibility to the individuals, who become active participants in self-promoting their health and wellbeing. (For more details read the Appendix 1)

Given this individual empowerment, the industry started developing product and services that enable the individual to self-promote his health such as gyms or home fitness videos. There has been an special focus on promoting an active lifestyle. In specific, the technology of fitness trackers wearables have brought personal and portable solutions.

Due to its wearability, this technology has the advantage of enabling the user to self-track his physical activity anywhere and anytime. Moreover, since is a personal device, enables the user to keep a personal overview on his progress. The fact of being a wearable technology has the potential of creating intimate daily experiences.

Nowadays, fitness trackers have become significant in encouraging physical activity, and are even becoming part of political recommendation (HM Government, 2015) for combating the sedentary nature of modern living, and therefore the illness associated to it.

Fitness trackers promise improve the user's active and healthy lifestyle (Endeavour partners, 2014) by monitor user's fitness and motivating to be active through social challenges and reminders.

Fitness trackers track the user's activity through numerous sensors (i.e., GPS, 3-axis accelerometers, 3-axis gyroscope, digital compass, optical heart rate monitor, altimeter, ambient light sensor, vibration motor, etc.) (Angelides et al., 2018) to monitor the individual's steps, sailed distances, calories burned, active minutes, hourly activity and stationary time. The result of these measurements and the overviews offer an assessment of the level of active lifestyle. The device also reminds to move and tracks user's sleeping habits. It also has the option of sharing the user's activities on social network to challenge friends and encourage to be active (Endeavour partners, 2014).
The main brands leading the market of fitness trackers are Fitbit, Apple, Garmin and Samsung (See Figures 1 and 2). These devices expect the individual to be motivated to promote his health due to the service of goal

Figure 1 Apple watch. Fitness tracking and progress

Figure 2 Fitbit

setting, activity tracking and coaching that the product offers. This approach can be found in their missions statements as expressed in Figure 3 Another example of the mission of fitness trackers can be describes through samsung as follows:

Using GPS tracking, it logs and monitors your activities, like running, swimming, cycling or even canoeing. You can set personal goals, better understand your progress, and be inspired to achieve your fitness goals (Samsung, 2017).

In conclusion, one main goal of fitness trackers is to inspire the user to achieve their fitness goals by monitoring their everyday activities and offering feedback about the user progress.

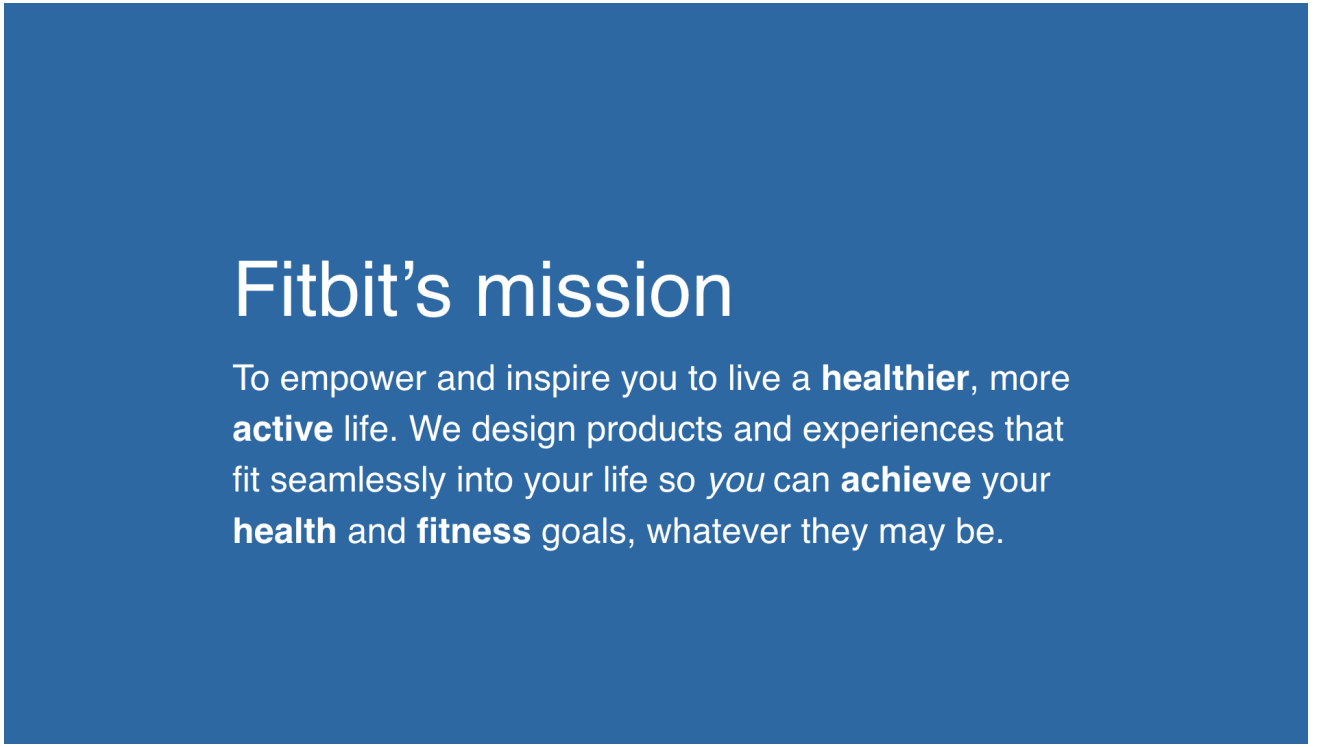


Figure 3 Fitbit mission

Problematic

The effects of the lack of focus on user experience.

As it has been shown in the previous section, fitness trackers tackle the need of being physically active due to the sedentary lifestyle that characterizes the modern era. At the same time, physical activity is an important behaviour factor to prevent CVD's.

This industry is technology driven. Therefore the industry's approach for promoting physical activity is trough fitness monitoring. Thus, important investment and advances has been made in technology development. However, fitness trackers face challenges in the engagement of the users with the product, since very little has been achieved in behaviour modification or experience (Bird et al., 2013)

Although wearable technologies offer the potential of creating everyday experiences that are personally meaningful, research has found that there is a lack of engagement since the experience is not perceived as meaningful for the users. In 2014 a study found that only half of fitness tracker owners wear their devices every day, (PwC Health Research Institute, 2014) and although the users are aware of the wearable technology, they fail to recognize its potential benefits. The lack of engagement with the device due to the lack of focus on the experience, since users do not find it meaningful for his everyday life.

This lack of personal meaning is evidenced by a generalized way of providing information and experiences (Ellis et al., 2017). The data only represents the physical state, failing to represent the whole picture of the individual, which includes his context (how he lives) and his concerns (what matters to him). This lack of identity with the data results first of all in meaningless information, since it doesn't align with what matters to the user, and secondly, in an easy-to-be-forgotten device, since it doesn't take into account how the user lives, in order to support better lifestyle choices. The situation doesn't only affect the impact that the shown data has on the user, but also his engagement with the device.

Conclusion

Although fitness trackers have the potential of engaging the users on their health promotion through they daily life, the lack of focus on user experience has affected the engagement and meaning of the device despite its technology advances. The information and experience are generalized and focused only on physical quantitative data, making the experience be perceived as meaningless and impersonal.

Therefore, it is relevant to focus on the exploration of how this technology can create a personally meaningful experience for the user and how it can communicate information in a personally relevant way. Translating this understanding into a design proposal can facilitate
engaging fitness tracker experiences, and therefore increase the engagement in the development of a healthier lifestyle. Finally, in prevention individuals are empowered to self-promote their health, which doesn't only means physical activity, but physical mental and social wellbeing.

Wellbeing: the importance of wellbeing in health and prevention

The previous section has stressed that the current health approach of fitness trackers is mainly focused on tracking and managing physical activities, but they fail in creating meaningful experiences for the user, leading to the lack of engagement with the technology.

This sections highlights the importance of moving from risk factor management to wellness in order to create interventions that are meaningful for the user's life, and therefore engaging. Rather than focusing only on the activity (body), health has been defined from a more holistic perspective that not only embraces the activity but also tackles the importance of achieving a positive psychological state for a healthy life.

Moving beyond the fitness promotion (body), to wellness (mind and body) open relevant opportunities to create meaningful experiences with fitness trackers. The reason is that the focus on the body is general for all the users, but focusing on the mind means to explore personal psychology and therefore enables to understand how to create personal and significative experiences.

First, this section will introduce the concept of wellbeing and its connection with health. Secondly will introduce the advantages that wellness can have in creating positive and meaningful fitness tracker experiences.

Health is more than physical health: is wellbeing

Beyond than physical health, the World Health Organization (WHO) defines health as "a state of complete physical, mental and social well-being" and not " merely the absence of disease or infirmity." Therefore, in order to live a healthy life the absence of illness is not enough, and therefore the control of risks factors is not sufficient to describe a healthy individual.

The definition of health given by the WHO brings health closer to our human nature, since takes into consideration humans as social beings with who's mental wellbeing is as important as physical wellbeing in order to describe a healthy individual.

Another important aspect in this definition is the reference to wellbeing as a definition of health. (Lyubomirsky, 2007), defined subjective wellbeing as "the experience of joy, contentment or positive wellbeing, combined with a sense that one's life is good, meaningful and worthwhile"

The association of wellbeing to health is not only theoretical, this concept has also been associated with numerous health benefits (Lyubomirsky et al., 2005). For example, higher levels of well-being are associated with decreased risk of disease, illness, and injury; better immune functioning; speedier recovery; and increased longevity (Fredrickson & Levenson, 1998; Pressman & Cohen, 2005)

Therefore, tackling wellbeing not only means to take a more integral and personally significant perspective about health but also to has a direct positive impact on physical health and life expectancy.

From risk factor management (body) to wellness (mind and body)

As has been described, the experiences that tackle wellbeing and subjective wellbeing are more meaningful for the user. On the other hand, the main challenge that fitness trackers tackle in order to create engagement is the general experience and information that the the products currently provide, which lead the user to no recognize the benefits that the product can bring and therefore discontinue the use of the fitness tracker.

Therefore, promoting subjective wellbeing could be an approach in order to promote meaningful and more personal experiences and information to fitness trackers, that could contribute to a long-term engagement with the device, and therefore with the adoption of health behaviors.

To sum up, moving from prevention (body) to wellness (mind and body) implies a more holistic approach to disease prevention and health promotion, allowing the user to reach a more fulfilling state of health.

Assignment description

Fitness trackers are becoming a popular tool for promoting physical activity. Its popularity is not only raising from a customer level, but also governmental institutions have begun to highlight their potential for preventing CVD (HM Government, 2015), since physical activity is one of the behavior factors for the development of these diseases.

Moreover, these devices have the benefit of being wearable and personal, so they have the potential of creating personalized experiences for everyday life. However, fitness trackers are facing challenges about the engagement of users with the product because the experience, and in special the information provided lacks meaning for the user.

To increase the meaning of the experience for the user's life is necessary to move beyond an experience based on physical performance (based on body) to wellness (based on mind and body). Focusing on wellness not only allows to create personally significant and positive experiences but also follows a more holistic perspective of health aligned with the health definition of WHO.

On the other hand, smart wearables become an agent that generates interactions with the user daily. Therefore this project embraces this agent and frames the challenge of increasing the experience meaning as to **how to create meaningful conversations user-data.**

Enabling meaningful conversations user-data through fitness trackers can have a positive impact on the personal meaning that this device has for the user, leading to an increase in the engagement.

Assignment

The fitness tracker's potential for creating personal and meaningful experiences for everyday life will be explored in this project, phrased as "how to create meaningful conversations user-data". The aim of this exploration is to understand how to create significant experiences that will increase the user's engagement and promote the user's wellbeing.

In order to explore how to create a meaningful conversation, first is needed to understand what is a meaningful health for the user. Moreover, the conceptual characteristics of the technology it will be analyzed and it will be explored whether they are contributing or not to wellbeing. This knowledge will serve as a means to define the challenges to enable positive and significant experiences for the user.

For more details, the briefing of the project can be found in Appendix 2.

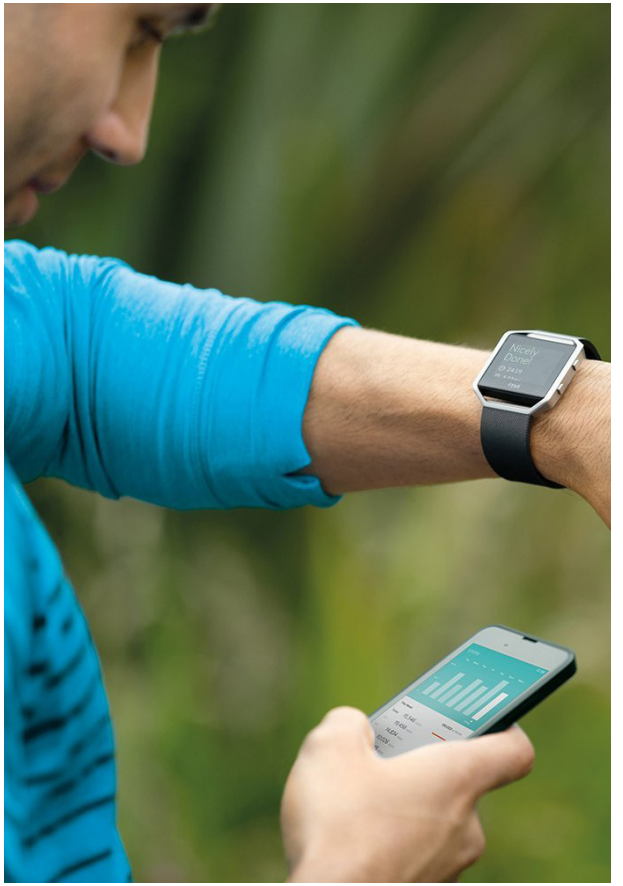


Figure 4 f User interacting with fitness tracker data.

Method

The approaches of Design for Emotion and in specific, design with Dilemmas, enable the exploration of the meaning of health for the user. Moreover, the research tools that these approaches present allows to research the experience effects of the fitness tracker experience and assess the impact on the user's wellbeing.

Design for emotion approach

By researching and understanding user's emotion, concerns, and human needs, Design for emotion approach provides a means for understanding the impact of experience on subjective wellbeing and to design for positive experiences.

Emotions can highlight personal goals when a specific concern gets has a higher priority in the hierarchical concern structure of a person (Frijda, 2007, p. 194). Personal concerns are often long-term goals with high emotional value. When a person pursues a goal, his actions are motivated by his expectations about the emotional outcome when the goal will be achieved, and is fueled by "intention, anticipation, and reflective control" to reach the desired end-state (Frijda, 2007, p. 194). Given that the desired end-state aligns with one's true values and intrinsic interests, the fulfillment of long-term goals can enhance subjective wellbeing (Brunstein, 1993; Desmet & Pohlmeyer, 2013).

Therefore, the experience of positive or negative emotions towards a given situation depends on whether that situation fulfills or harms one's concern(s) (Frijda, 1986).

Since fitness trackers have the potential of creating a deeply personal experience, Design for emotion approach can serve as a means to analyze whether the product evokes negative or positive emotions, and which are the concerns of the participants, in order to explore solutions that enhance subjective wellbeing and that are aligned to the user's meaning of health.

Design with dilemmas approach

Moreover, to promote wellbeing it has to be considered that individuals have different concerns that often can contradict each other. This is especially important in the case of the fitness trackers since these devices are wearables, which means that are eliciting emotions (and therefore concerns) 24/7. While fitness trackers are focused on the concern of physical activity, the everyday practices of the user can elicit other concerns creating emotional contradictions. The reason is that people pursue multiple and often conflicting goals during their everyday activities (Ozkaramanli, 2017). For example, we may decide to skip our gym-night (concern of fitness) to go to spend time with our friend (concern for relatedness). In this context, Design with Dilemmas approach can focus on this everyday tension between the concerns, rather than on specific concerns in isolation. Focusing on only one concern can lead to ignoring other user's goals, leading to unpleasant experiences. However, design for dilemmas allows creating solutions that tackle this emotional duality which will promote an individual's wellbeing.

Finally, Design with dilemmas allows creating interventions that support in this case healthy habits by gaining a holistic understanding of human behavior (Ozkaramanli, 2017). Identifying conflicting concerns not only ensures a positive effect on the individual's wellbeing but allows to identify the true motivations that might fuel behavior change (Ozkaramanli, 2017).

Target group

This project has a user focus on young healthy adults going through a lifestyle change.

The engagement of young healthy adults in a healthier lifestyle has an important impact on longevity and the prevention of chronic illnesses. The deaths due to CVD's occur after 30 (WHO, 2018), and in case that the individual survives to the cardiovascular event since is a chronic illness it will carry permanent negative effects in his everyday life. Therefore interventions to prevent CVD's before 30 is can have a meaningful impact not only on the prevention of premature mortality but also on the development of chronic conditions. For this reason, this project focuses on young healthy adults (18-30 years old) that want to leave a healthy life.

Moreover, it has been also decided to narrow the target group to individuals going through a lifestyle change. The reason for that scope is that during lifestyle changes (such as changing jobs, having a newborn, moving to another city, etc) the routines and habits of an individual are altered, and therefore their habits can be harmed. For example, if an individual has the habit of running, moving to a different location can affect that routine until he gets adapted to the new context. Moreover, the activities that imply the change of residence can affect his lifestyle habits.

Approach and report structure

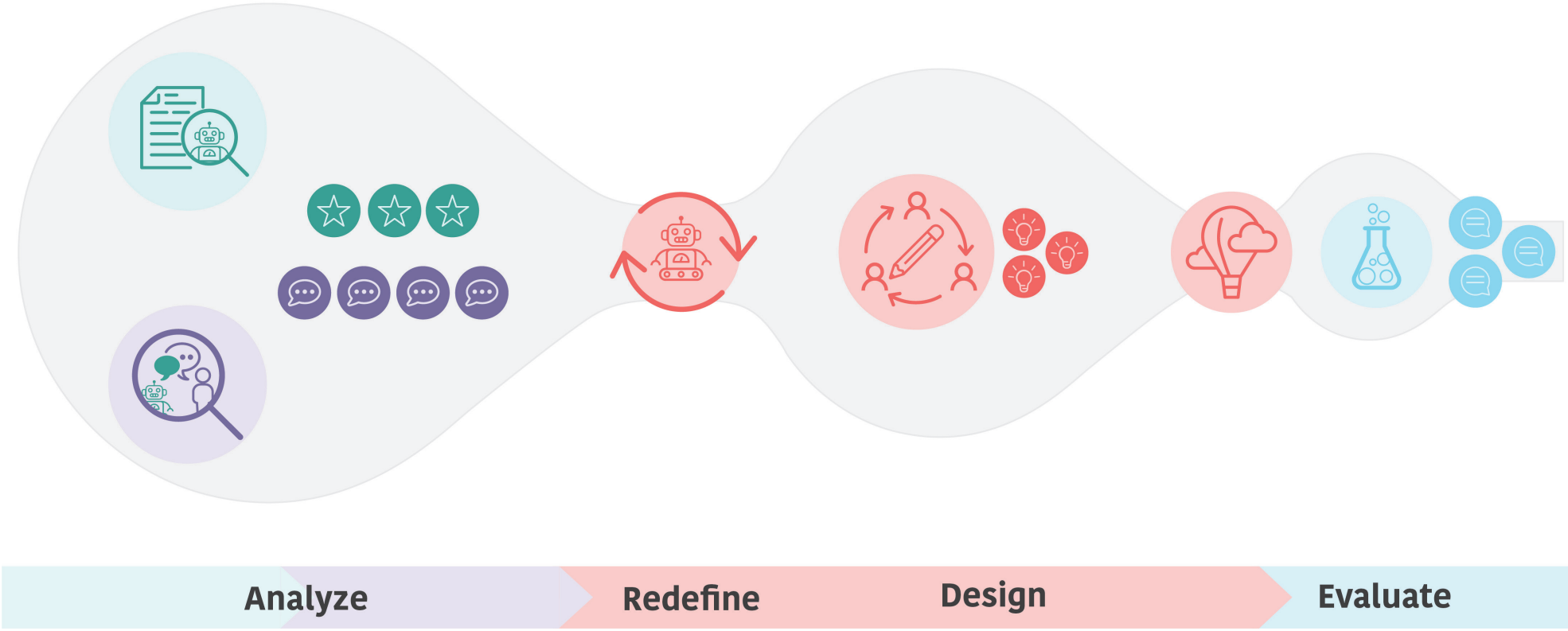


Figure 5 Visualization of the project approach and structure

Approach and report structure

The design assignment has been tackled through four different stages: *Analyze, Redefine, Design and Evaluate*. (See Figure 5)

Analyze

To get a holistic understanding of the design context of the fitness tracker experience, the topic has been analyzed with different research methods. On one hand, a **literature review** was developed to get a more conceptual understanding of the characteristics of the fitness tracker experience (the current personality), why the experience is as it is and which values it follows. It was also investigated how the current approach could affect the user's wellbeing and engagement. On the other hand, a **user research** was carried out to gain a more tangible understanding of the effect of the interactions with the technology on the user experience. The study was focused on understanding the meaning of health for the participants, what they valued about the technology, and which dilemmas they experienced during the usage.

These research enabled an unserdyanding of how the cuurent conceptual approach could be affecting the user experience in terms of wellbeing and engagement.

Redefine

From the analysis outcomes, a set of **challenge areas** were defined that needed to be tackled to facilitate a positive and meaningful experience. These areas were defined in a user experience level, so they responded to specific problems found in the user research.
Moreover, a **new experience approach** was proposed (a new technology personality) as an alternative based on the understanding obtained in Literature Research about how the current fitness tracker approach affects the user experience. Following this new experience approach (redefined technology personality), a set of experience characteristics (how this person talks to the user in the service) were redefined in answer to the challenge areas defined from the research phase.

Design

From the values of the proposed approach a set of how-tos were obtained. The goal of this **how-tos** was to zoom out from the fitness tracker assignment and start the ideation from a more general perspective.

As part of the ideation phase, a **creative session** was carried to broaden the horizon of solution space. A brainstorming session based on the how-tos was carried out for the **generation of ideas**. Moreover, this session allowed to identify key insights regarding what made a concept valuable based on the goals of the project. These insights were discussed after a brainstorming session by voting for the favorite ideas and explaining why. They were called **golden rules.**

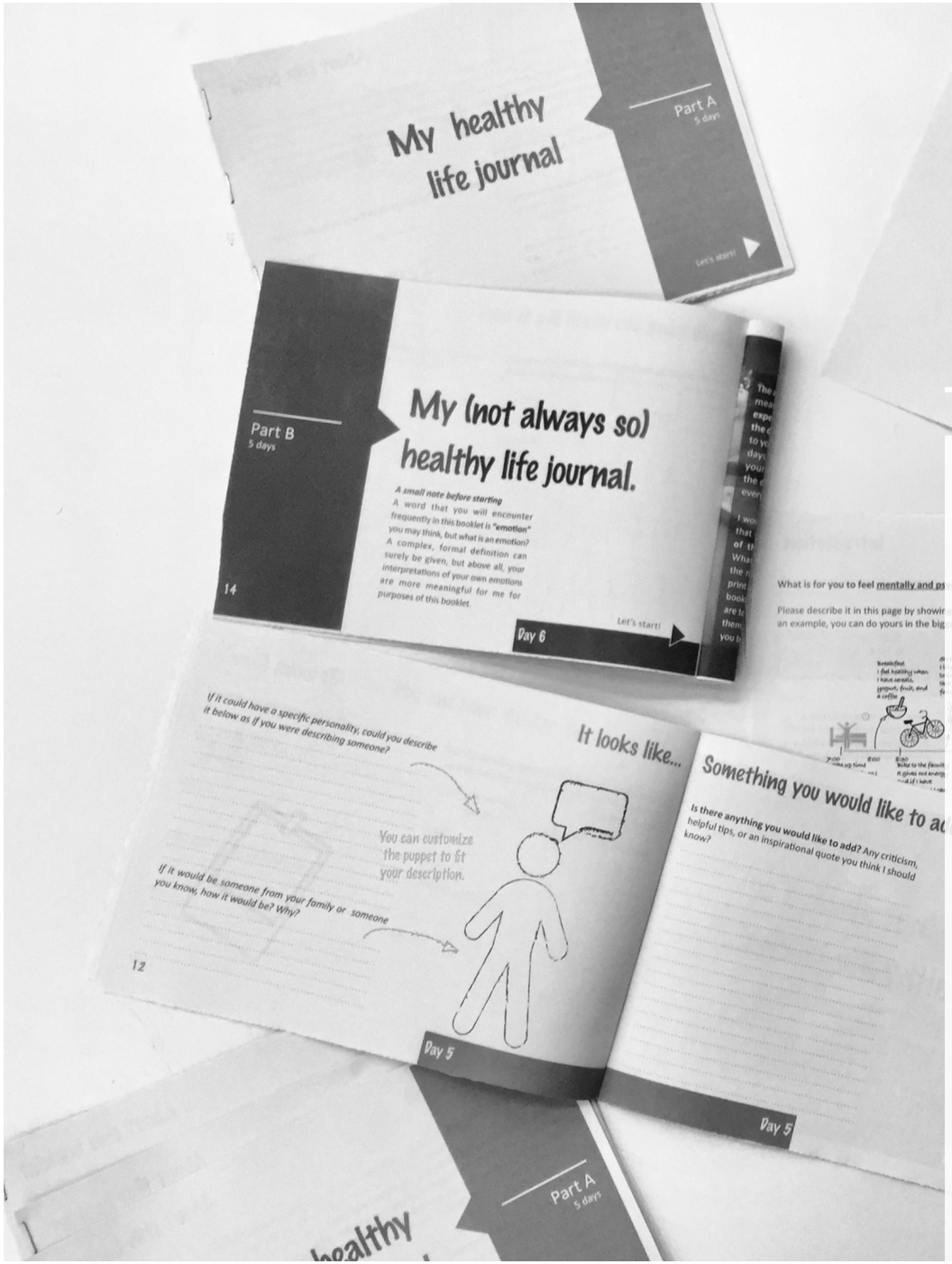
After this ideation, it was created a matrix that defined the design directions and structured the ideas by different levels of the control that the user and the technology had over the interaction. The goal of this structure was to determine which ideas allowed a conversation (when both have a level of control over the experience). For creating this matrix, the ideas of the participants were taken as inspiration to create ideas that would fit more the final goal of redesigning the fitness tracker experience.

Since the matrix was based on the how-to's, the final redesign of the service conveyed different from the ideas of the matrix. This final redesign included the selection of one **concept** and an iteration to define a final concept that included rapid prototyping and ideation of three design alternatives as well as a **concept evaluation**. The insights from this evaluation together with the insights gathered through the project were conveyed in the final service proposal. This **final design proposal** was detailed by a paper and a digital prototype.

Evaluation

An individual session with users was performed to evaluate the design in three levels: the object, the interaction, and the personal direct impact of the design. The session was mainly based on open questions. The feedback of the participants was contrasted with the intended design effects to **validate the concept**. Moreover, this session served to gain **insights for future design iterations**, and therefore recommendations for future design iterations were made.

Finally, as conclusions, there was presented a **guideline for designers** to facilitate the creation of meaningful and engaging fitness tracker experience. The considerations stated in the guidelines are based on the learning that the designer has acquired through the process.



2. Analyze

This section aims to understand the conceptual characteristics of the fitness tracker experience, and how these characteristics are impacting the user experience. For that purpose, the topic has been analyzed from two perspectives. On one hand, a literature review was developed to get a more conceptual understanding of the characteristics of the fitness tracker experience (the current personality), why the experience is as it is and which values it follows. In this part of the analysis, it was also researched how the current approach could affect the user's wellbeing and engagement regarding literature.

On the other hand, user research was carried out to gain a more tangible understanding of the effect of the interactions with the technology on the user experience. This study was focused on understanding the meaning of health for the participants, what they valued about the technology, and which dilemmas they experienced during the usage.

The conceptual outcomes of the literature review were aligned with the tangible outcomes of the User research to get an overall view of how the conceptual approach could be affecting the user experience in terms of wellbeing and engagement.

Introduction

In the previous section has been discussed that although fitness tracker industry aims to engage the users in health promotion, the lack of meaning together with a general experience and information are affecting user engagement. This leads to a significant number of users discontinuing the usage of the device, and therefore failing to adopt new healthy behaviors.
Promoting wellbeing, not only for tackling health but also for creating personally meaningful, and positive experiences can open opportunities to increase the engagement in these devices and therefore the adoption of new health behaviors.
For creating positive and meaningful experiences for the user, research is needed to understand the current user concerns and needs and to define opportunity areas in order to define new experience approaches that have a positive and meaningful impact on user's life.
Literature Review and User Research have been conducted. The literature review has served to understand the origins of this new technology and why the experience was shaped as it is. Secondly, User Research has been conducted to look at the experience through the user's lenses and to understand the user's context, needs, and concerns.

Literature review

Although fitness trackers are a new technology, it seems to be a common experience approach that different companies are taking for the experience of these products. As a consequence, they all are facing the same challenges. A literature review has been conducted to understand why this technology is as it is.
Being aware of these factors have two main advantages for proposing valuable design alternatives. First, it will allow developing a critical perspective about the industry and therefore propose meaningful and informed alternatives. Secondly, this contextual awareness will also serve to get more meaningful insights from the user research interviews, since the researcher will be more aware of the cultural assumptions and values embedded in the technology being able to connect them with the impact on the user experience.
Technologies are ways of doing and making (practices) which are both affected by and affect ways of thinking. (Oberdiek & & Tiles, 2005). As practices, technology involves presuppositions, the acquisition of skills, norms of behavior, and value commitments. The interesting advantage of being aware of this way of thinking is that usually a practice from a technology is accepted as it is, the underlying values and assumptions are absorbed without being made explicit, unless or until it faces troubling internal problems, such as those posed by the rapid development of technology (Oberdiek & & Tiles, 2005). These problems can be identified by the negative experiences found during User Research, allowing a more holistic understanding of how this way of thinking impacts on user experience and user's wellbeing.
Moreover, the literature review will also serve to explore if any characteristic of the fitness tracker experience has been reported to have negative effects on the user's wellbeing.
Finally, an interview with the psychologist Jesús Zarza Mota was conducted. The goal of this interview is to understand the effects of fitness tracker's characteristics in individual wellbeing.

In order to tackle subjective wellbeing, User Research has been conducted to understand how these devices are contributing to or affecting the user's wellbeing. Moreover, User Research has given an understanding of the user's needs and concerns that will serve to find opportunity areas to create meaningful experiences.

User Reserarch

The User Research consisted on a 10-day booklet with reflection activities that the user had to fill in while using a fitness tracker and a cuff, followed by a one-hour in-depth interview to get a richer understanding of their experiences.

2.1. Literature review

The literature review was conducted following three explorative questions that the research formulated, based on her research areas of interest. The explorative questions are the following:

Where the approach to help of the fitness trackers come form?

Which are the values embedded in the fitness tracker technology?

How these values can influence human wellbeing?

The research outcomes following this are following described under the sections "Contextual origin of the technology" and "Effects of technology approach on the user for wellbeing and motivation".

2.1.1. Contextual origin of the technology

There are two characteristics of the technology that were a result of the context in which this technology was born and are contradictory with the definition of health as "a state of complete physical, mental and social well-being"(WHO). These characteristics are: ***(A)Machinery driven technology for human optimization, (B) Human optimization linked to a life well lived and (C) Self care as somatic individuality.***

A.Machinery driven technology for human optimization.

Wearables are focused on tracking body signs (physical tracking) for human optimization, but not necessarily for wellbeing. The concept of human optimization was originated in the era of modernity with the goal include bodies into the machinery of production and spreading capitalism (Schüll, 2016).

In the seventies, Foucault (Schüll, 2016) described how in modernity, the vital characteristics of human life became political objects meaning that were elements to be understood, regulated and controlled (Foucault, 1980).

Foucault identified two poles of bipower: the anatomo-political, which concerned the discipline and optimization of the capacities of individual human bodies (efficiency, docility, posture and the like); and the biopolitical, which concerned the regulation of the biological life of the "species body" – the population's birth, disease, productivity and mortality rates (Rabinow and Rose, 2006, p. 196). This bipolar technology (Foucault, 1980) allowed human optimization and was a key element to spread capitalism, since inserted bodies into the machinery of production.

B. Human optimization linked with "a life well lived"

The control and regulation of human bodies for human optimization brought humans health into data points. Deleuze, also born in modernity, defined in 1990 (Deleuze, 1992) the concept of "Dividuals" as a subdivided collection of data points moved through a networked web of continuous monitoring assessment and modulation. Later, the philosopher Berson (Berson, 2015) added that this concept of dividuals based on tracking and coding bodies started defining a good life and therefore wellbeing.

C. Self care as somatic individuality

This approach of self-care was defined by Rose (2001) as "somatic individuality" that is grounded that is "grounded in our fleshy, corporeal existence" and filtered through the language of biomedicine. Therefore in contrast with the definition of health given by the WHO where wellbeing is a pillar, in this context physical health and physical health optimization is the description for health, and the one that influenced the creation of fitness trackers.

To elaborate on how somatic individuals and human optimization define a life well lived in this context, it is interesting to highlight that in the context of modernity and post modernity, one of the strongest values is "Autonomous individualism" (Hall, 1990) which assumes that moral authority comes essentially from within. In this societies somatic individuals are expected are expected to be prudent, calculating actors who "aspire to autonomy", embracing responsibility for their bodies and the choices they make (Schüll, 2016). "The self government of the autonomous individual",

writes Rose (2007), is “connected up with the imperatives of good government” (p. 27), being good government connected with the concept of a good life.

2.1.2. Effects of technology’s conceptual approach on the users’ wellbeing and motivation.

This section analyzes the characteristics of the technology that can be affecting the user’s wellbeing and engagement since these two concepts were defined as the main challenges in the section “Problematic” (Part 1· Introduction). The research findings are structured in two main topics “Effect of the Machinery driven approach and somatic individuality for user’s wellbeing” and “Effect of Healthcare Tone of fitness trackers”. The outcomes are structured in two main topics (A) The effect of the Machinery driven approach and somatic individuality for user’s wellbeing. and (B) Effect of Healthcare Tone of fitness trackers.

Before describing the outcomes, is important to describe the criteria followed to analyze wellbeing and engagement during the research:

The concept of wellbeing, individual wellbeing, and its importance for a healthy lifestyle has been defined before through the definition of wellbeing of Lyubomirsky (2007), who defined subjective wellbeing as “the experience of joy, contentment or positive wellbeing, combined with a sense that one’s life is good, meaningful and worthwhile” (Lyubomirsky, 2007). However, in order to evaluate the impact of the technology on the user’s engagement is going to be used the Self Determination Theory.

Self-determination theory (SDT) tackles the motivation behind choices people make without external influence and interference (Ryan & Deci, 2017). Regarding SDT, there are three psychological needs that motivate the individual to initiate behavior and specify nutriments that are essential for psychological health and well-being of an individual These needs are said to be universal, innate and psychological and include the need for competence, autonomy, and relatedness (Deci & Ryan, 2000).

According to Deci and Ryan, the three psychological needs motivate the self to initiate behavior and specify nutriments that are essential for psychological health and well-being of an individual. These needs are said to be universal, innate and psychological and include the need for competence, autonomy, and relatedness (Deci & Ryan, 2000).

When a context enables an individual to experience these needs (autonomy, competence, and relatedness) high-quality forms of motivation and engagement can be fostered. This includes enhanced performance, persistence, and creativity (Deci & Ryan, 2008).

In specific, these three human needs are defined as follows:

-Competence: Seek to control the outcome and experience mastery (White, 1959).

-Relatedness : Will to interact, be connected to, and experience caring for others (Baumeister & Leray, 1995)

-Autonomy: Desire to be causal agents of one’s own life and act in harmony with one’s integrated self (Deci and Vansteenkiste ,2004); however, Deci and Vansteenkiste (2004) note this does not mean to be independent of others.

Being aware of this three elements and how they are affected by the current experience approach is important in order to analyze how the approach is currently contributing to engagement.

A-Effect of the Machinery driven approach and somatic individuality for user’s wellbeing.

This characteristic impacts on the user in two ways, which are detailed through the following two topics: *Outsourcing self-regulation: Impact on Autonomy. and Data dependency for self-knowledge: Impact on Competence.*

Outsourcing self-regulation: Impact on Autonomy.

Previously, the machinery-driven approach of fitness trackers was introduced. This approach present the concept of “bipowers”

and “dividuals” where the data of the user is generated in order to optimize human’s physical health. This approach also has effects on the role that the user has in the fitness tracking industry. The concept of optimization carries a dehumanization of the experience (as previously mentioned) since in this approach humans are depicted as long-term goals pursuers. Purely rational agents focused on a long-term result.

However, the reality is opposite to this machinery dystopian vision. Humans are rational but also emotional beings, and regarding the psychologist Jesus Zarza Mota since few decades our short life expectancy didn’t push us to take many long-term decisions. So from a evolutionary point of view, the human nature is not adapted to constantly pursue long-term goals.
Moreover, this human complexity between rationality and emotions, conscious and unconscious, or just having conflicting desires leads humans to everyday interpersonal conflicts that I will call dilemmas (Ozcaramanli, 2017).

Regarding Ozcaramanli (2017), The dilemma phenomenon is a well studied psychological phenomenon that represents an important aspect of the variety and complexity of human experience. For example, the concept appeared in the writings of Freud o emphasize the hidden conflicts between the conscious and the unconscious mind (Freud, 1929). It was also used by Lewin (1935) to describe basic motivational poles, or motivational conflicts (i.e., approach–approach, approach–withdraw, withdraw–withdraw) and by Erikson (1980) to illustrate the tensions within the stages of psychosocial development (e.g., initiative vs. guilt, at play-age). Ozcaramanli (2017).

Therefore, everyday dilemmas are an intrinsic part of humanity, where our long-term goals are sometimes hindered by short-term temptations (for example, coming from goals contradictions, or unconscious human needs). By embracing this interpersonal conflict, it is possible to give a humanized role to the individuals and to develop aligned solutions that can make a meaningful impact in their everyday lives and support us better in long-term goals pursuit.

However, this is not the trend observed in the wearable technology industries. Regarding Melichar (Nike Fuelband wearing labor economist employed by the Robert Wood Johnson Foundation), “It turns out we are not rational actors when it comes to making decisions now about things that affect us in the future, even when we know what we should choose”. Although the statement is true, the statement is true, the solution that she proposed to this phenomena is far from a humanized approach. Melichar proposes to “relieve the stress of a person’s choice and free up bandwidth for that person to make other choices that are more important”. A similar approach to this outsourcing of self-regulation is proposed by Leslie Zeigler (health-technology designer and longtime self-tracker, in her capacity as moderator for a panel at the Digital Health Summit). “I don’t want to track – I want it to be done for me”. Regarding (data for life) The customers that device-makers imagine resembling Zeliger: **instead of aspiring to autonomy, they wish to outsource the labor of self-regulation to personal sensor technology.**

Finally, to add a physiological argument that stresses the importance of keeping the self-regulation in hand of the user, it has been shown the importance of training self-control to improve this ability (Baumeister et al.,2011). Therefore the outsourcing of self-regulation is not something to be seen as an stress to relieve the user from, but something that should be supported so it can be improved.

Humans are rational and emotional beings. Therefore, rather than long-term goal pursuers, human decision making usually is affected by conflict desires. Embracing these personal conflicts (human dilemmas) through design gives a humanized perspective to the individuals and enables to develop solutions that can make a meaningful impact in their everyday lives and support us better in long-term goals pursuit.

Moreover, the self-regulation of these daily dilemmas can be mastered through practice, so supporting its management through design can help people to improve in their decision-making skills.

Data dependency for self-knowledge: Impact on Competence.

The fitness tracker industry approaches self-knowledge through data-dependency based on body tracking. However, the self-knowledge based on self-management is left away, which doesn't only includes body tracking, but also elements such as self-regulation, the individual definition of health, emotional awareness, etc.

The weight of data for self-knowledge is shown in the trends shared by the leading wearable technology industries. For example, in a recent video, Samsung proposes the following question: What if you could ask your body questions and listen to the answers, every minute of every day? You could adjust your habits according to your body's advice. Imagine the insights gained, the mysteries unlocked; it would change your life". The critical point to rise from this approach is that the psychological aspect of human health and wellbeing is left apart and substituted by a quantitative data wizard.

This approach seems a dehumanizing approach of health where human preferences, needs, self-management (human reflexion) and sensing organs are substituted by a "data generating device that must be coupled to sensor technology and analytic algorithms in order to be known" (Schüll, 2016).

Is important to mention that data can add benefit to health self-knowledge, but what is being stressed in this section is that beyond self-tracking, the human complexity makes it essential the need of an individual active role in health self-knowledge, that is not only based on data, but also in understanding emotions, and what is important (or not) for the individual. The reason is that health is not only reached by human fitness optimization (self-tracking). Health is intrinsically connected to the concept of wellbeing, which needs from the individual who is in charge to take a holistic and contextual decision where factors related to physiological, physical and social wellbeing need to be taken into account to make meaningful choices.

Self-knowledge through self-tracking doesn't enable the individual to manage his conflicting desires since is based on the body and the individual has a passive role. The lack of management on conflicting desires has a negative effect on personal wellbeing. However, approaching self-knowledge through self-management means to not only rely on physical data for decision making but also bringing the psychological aspect. To tackle self-knowledge through self-tracking needs to go beyond providing data, and supporting the user on reflecting on his personal contradictions for enabling the user to make more conscious decisions.

B-Effect of the Machinery driven approach and somatic individuality for user's wellbeing.

Impact of Acute care language on Autonomy.

The language of the acute condition has been the one framing of health (Dubberly et al., 2010)

In the frame of healthcare, the individuals are called patients and the physicians' healthcare "professionals". Professionals "care for" patients by observing symptoms, diagnosing diseases, and proposing therapies. These proposals in the frame of healthcare are prescriptions or literally "physician orders" , leaving a power imbalance where the patient has a passive role (Dubberly et al., 2010).

This acute language tone of voice is also found in Fitness Trackers. The product is based on a "prescription" that always includes steps, sleep, heartbeat and calories, and you have to reach certain goals a day to keep a healthy lifestyle.

The use of this the acute care language (that depicts an ill patient) in prevention is opposed to the autonomy and empowerment that is is inherent to prevention management. And once defined this language as the approach used for prevention, it is relevant to recall the statement made by (data for life) who stated that in prevention "everyone is potentially sick and must take measures to keep well".

2.1.3. Conclusions

In the Literature Review it has been found the experience characteristics of the fitness trackers to its personality. Moreover, it has been researched how this personality is impacting on the user, and therefore what is impeding to create a conversation through user-device interactions. This section summarizes the fining into conclusions and its relevance for the project.

Finally, from the insights gain it has been possible to start defining the role of the user and the role of the technology in this conversation, in order to enable meaningful experiences.

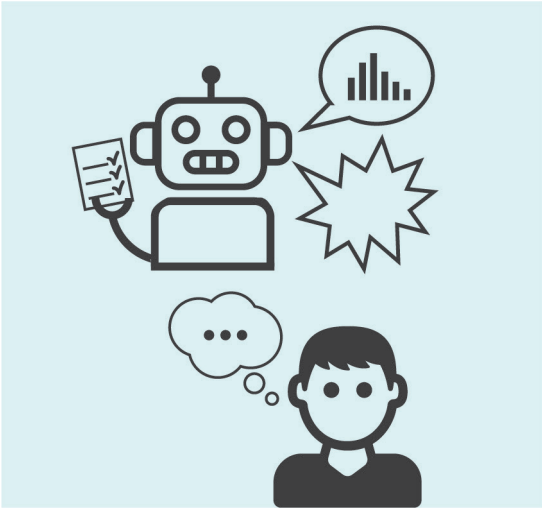


Figure 6 Conversation challenges in the interaction due to tracker concep's approach.

The conclusions have been summarized regarding the ropics that have been approached in the Literature review:

Outsourcing self-regulation: impact on Autonomy

It was found that these devices rather than embracing human dilemmas (rationality and emotions) are proposing to outsource self-regulation. However, training self-regulation is key for improving this ability. In addition, there is evidence in psychology literature that supporting people in dealing with their dilemmas has implications for everyday experiences as well as subjective wellbeing (Ozcaramanli, 2017).

Therefore outsourcing self-regulation can have negative effects on the individual's wellbeing, in the autonomy of decision making and in the individual's competence for self-regulation.

However, supporting self-regulation in this project can have positive implications for user experience since it can increase user engagement due to two factors. On one hand, this project aims to go beyond the focus on fitness (body) to the focus on wellbeing (mind and body). This section highlights an opportunity to embrace the human psyche by supporting the user in training self-regulation and decision making. This focus can have positive impact wellbeing of the individual and his engagement with the technology. On the other hand, supporting the user to train self-regulation can make the experience more meaningful since the experience would allow the user to master his own self-regulation).

Data dependency for self-knowledge: Impact on Competence.

Fitness trackers approach Self-knowledge through data dependency based on body tracking, but self-knowledge through self-management is left away. Self-management, beyond body tracking, also includes self-regulation, emotional awareness, and individual health concerns. Therefore enabling self-management not only considers body but also mental health (wellbeing).

Moreover, differentiating self-knowledge through self-tracking and self-knowledge through self-management enables to distinguish two different roles that the user can play on the experience.

On the approach of self-knowledge based only on fitness tracking, the user is a patient that is waiting for guidance to follow goals from a generalized concept of heath. This approach can deprive individuals of their own wellbeing, from listening to their senses, thoughts or emotions, and from taking critical opinions about their health management.

However, the approach of self-knowledge through self-management gives the individuals a proactive role and critical thinking about their needs and their definition of health. Dubberly et al. (2010) argue that self-management reframes patents as “designers of their own wellbeing”. Therefore Self-knowledge through self-management doesn’t only make them the experts of their data, but the designers of their health. Finally, through self-management users listen and answer to their individual needs, these approach tackles the human needs of Competence and Autonomy and enhances personal wellbeing and not only risk factor.

The insights of this section enable to define the role of the user for this project in order to enable a conversations user-data. Giving the user a voice in the conversation means to make the user the designer of his wellbeing instead of being passively waiting for guidance. The user can become the designer of his wellbeing by having an active role in his health management where are personal preferences and needs can be expressed in the experience.

Ultimately, this proactive user role can impact positively in user engagement since it increases his competence for personal health management and his autonomy for designing his wellbeing.

Effect of acute care tone on fitness trackers: Impact on Autonomy

A preventive system that is driven by an imminent risk and that imposes the individual a strict health prescription (such as risk management control: sleep, weight, steps...) results in an imbalance in power. This power imbalance doesn’t allow people to determine how they want to define and manage their individual health.

For this project this fining is key since shows the current role of the technology in the interactions. The current conversation is difficult by a power imbalance where the technology is at the center of the experience. Therefore, to enable a meaningful conversation the fitness tracker need to step back in order to allow the user to be at the center of his health management. A more user-centered experience could be achieved by, for example, leaving these define his own goals based on individual concerns.

Ultimately, this role of the fitness tracker in the experience can have a positive effect on the user’s competence and autonomy about his health management.

Insights for the experience redesign

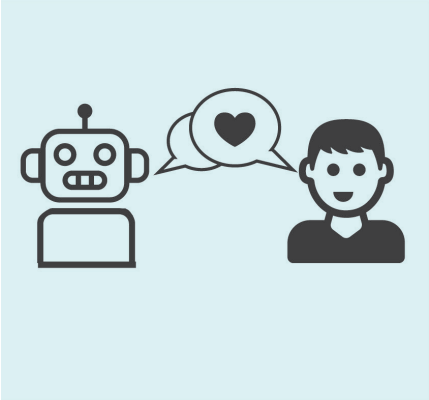


Figure 7 Learnings of the Literature Review for designing meaningful conversations.

Role of the user in the experience.

From the conclusions it is possible to start defining the key roles that the fitness tracker and the user should have in the experience in order to allow meaningful conversations between them. These roles are specified as follows:

The user is proactive in his health management by:

-Reflecting on his health needs.
-Designing his own wellbeing components (based on his needs and preferences).

Role of the technology in the experience:

-Platform to master self-regulation.
-Support the user on increasing his self-knowledge.
-Platform for the user to design his wellbeing.

Technology's conceptual approach (personality) challenges.

There are three conceptual characteristics of fitness trackers that have been found to create a negative impact with the user.

Self-care as a somatic individual

It has been found to affect the user's wellbeing since the focus of self-care is only on the body. Moreover, missing the psychological aspect also leaves the user a passive role where his wellbeing is defined by the results of the data.

Acute care language

This language approach has been found to disempower the users since the tracker (instead of the user) is at the center of the experience. Moreover, this approach also contradicts the definition of the WHO regarding health self-promotion on primary prevention

Personal improvement as machine optimization

It has been found that the psychological part of decision making is not embraced. Moreover, self-regulation seems to be based on machine output and guidelines. Not supporting the emotional contradictions on decision making can affect the user's health management since facilitates impulsive decisions.

2.2. User research

In the previous section, it has been defined as the conceptual characteristics of the fitness tracker. This research if focused on the user's perspective about the fitness tracker experience, and therefore aims to understand the impact that the tracker has on the user experience.

In order to get insights about how to enable meaningful conversations user-data, the first aim of this research is to understand the meaning and value of health for the user. Moreover, the research explores the user experience with the fitness tracker to understand the interactions that contribute to positive and negative experiences. e center of his health management. A more user-centered experience could be achieved by, for example, leaving these define his own goals based on individual concerns.

Participants

In the Introduction Chapter, it was defined as the target group as young healthy adults going through a lifestyle change.

For the User Research, Eight participants that fit the target group were recruited to take part in the study. The group of participants consisted on 4 females and 4 males, they all were concerned about living a healthy life and they were all going through a lifestyle change for various reasons (recently married, looking for a job, starting their thesis, or Ph.D., etc).

To ensure rich results regarding the experience and engagement through the time, there were recruited five long-term users of fitness trackers (more than one year) as well as three novel users of the technology (they used a fitness tracker for the first time). For both groups was their first time using blood pressure monitors. All the participants had different cultural backgrounds (Italy, Turkey, Netherlands, India, Ireland, and Germany).

All participants are referred by an acronym to ensure their privacy.

2.2.1. Introduction to the User Research

As an overview, this research is focused on two main sections. On one hand, the first section is based on looking at the concept of health from the user's perspective, and understanding what are the wishes and needs of the participants to have a healthy life, and what is for them the value of health. On the other hand, the second section is about understanding how the participant experiences the technology and when the technology contributes to positive or negative experiences.

The user study has been structured based on several explorative topics defined by the researcher. These topics are the following:

Regarding section 1:

A. Which are the pillars for people to achieve a healthy life?
B. Why is it important for people to be healthy?
C. What is the meaning that this technology has in the life of the fitness tracker user?

Regarding Section 2:

D. On which interactions do fitness trackers user feel supported to reach a healthy lifestyle?
E. On which interactions the fitness trackers users have negative experiences that affect their wellbeing or health management?
F. Which dilemmas do the fitness tracker users experience when interacting with the device that affect their wellbeing and motivation for health management?

These two sections were materialized for the study into a booklet journal with activities that the participants filled individually for a week while using the device. Once the booklet was filled by the participant, an in depth interview was conducted.

Materials

The participants received a Fitness tracker, a blood pressure cuff and a booklet journal that they used and reflected on for nine days:

Figure 8 Materials: Apple watch.

Figure 9 Materials: Fitbit Charge 2.

Figure 10 Materials: Fitbit Flex 2.

1. The Fitness tracker
The long-term users (people who have been wearing fitness trackers for more than a year) were able to keep their devices: Two of them wore an apple watch (Figure 8), two of them a Fitbit Charge 2 (Figure 9) and one of them a Fitbit Flex 2. (Figure 10). The novice users received a Fitbit Flex 2.

Figure 11 Materials: Omron RS7 Intelli IT

Figure 12 Materials: Different pages of the booket.

2. The Blood pressure monitor
All the participants received an Omron RS7 Intelli IT that performs measurements via the wrist (See figure 11).

3. The booklet
The booklet had different activities to reflect on during the nine days. This booklet was meant for making the participants more aware of their everyday experiences not only with the devices, but with the concept of living a healthy life, and through that understanding what was meaningful for them. Moreover, through these sensitizing activities, the research could find out wished and needs that could be analyzed in-depth in the following interviews.

The booklet consisted of two parts. The first part (Part A) consisted of five days and was more general. Part A was based on understanding the meaning of health for the user and making them aware of their everyday experiences with a healthy lifestyle, and the emotional impact and meaning that the data had in the user's life. Additionally, the second part (Part B) consisted of six days and was focused on understanding user's emotional contradictions between long-term goals and short-term desires, and the ideal personality that the device would have in order to empower and have a positive influence on the user. (More details about the booklet can be found in the Appendix 3)

2.2.2. User Research Part A (five days): My healthy life journal

Goal 1- Making the participant aware of that is important for them in order to live a meaningful healthy life.

The firsts three days were focused on sensitizing the participants about what a healthy day meant for them and what was important for them in order to reach a healthy life. Not diving directly into the device helped the novel users to get used to the device and also allowed all the participants to become aware of what was meaningful for them in order to live a healthy life, which would allow a more critical reflexion in the "Part B" about the effects of the device in their health and subjective wellbeing.

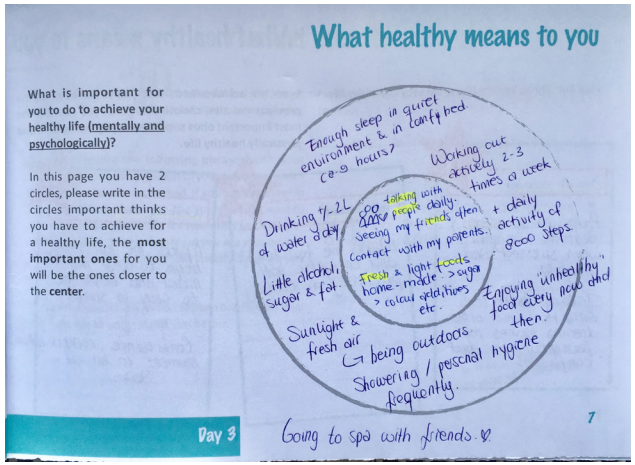


Figure 13 Booklet: Activity of day 3

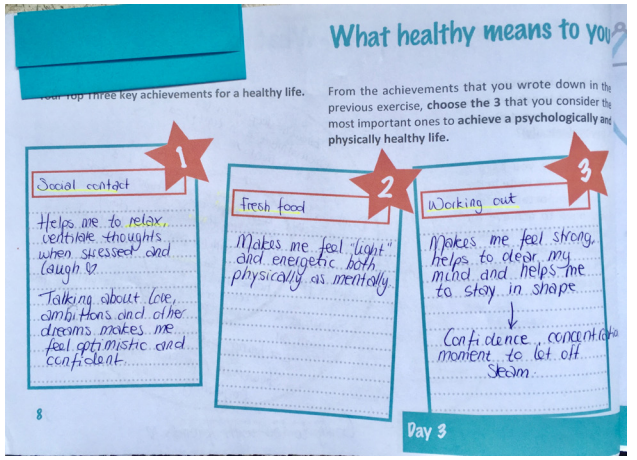


Figure 14 Booklet: Activity of day 3. Key elements.

Activities:

Day 1. Following the activities of the booklet, the first day consisted of an introduction to the booklet and also invited the user to introduce himself. The researcher introduced herself giving an inspirational structure to the participant where the origin, the lifestyle and hobbies, and the professional aspirations were shared. This structure gave the researcher a feeling of the user's interests and lifestyle.

Day 2. The second day consisted of filling in a timeline of a day where the user could draw and describe how his ideal healthy day would look like. This activity helped the user to get sensitized to what is meaningful to him or her for a healthy lifestyle.

Day 3. The third day consisted of prioritizing these elements to find out which were the three most important achievements that the participant's needed to accomplish in order to feel that they were living a healthy life. In order to introspect on that, in the first activity, the participant was asked to note down in two concentric circles (See Figure 13) the important things that he or she needed to achieve for a healthy life. In the center were written the most important ones for the participant, and close to the circumference the ones that were less meaningful. Followed by this exercise, the next step consisted of choosing three elements that the participant would consider to be key in order to live a healthy life (See Figure 14)

Since by the definition of the WHO healthy life consists on a healthy body but also a healthy mind, this was specified in the booklets, mentioning always "psychologically and physically" when referring to a healthy life.

Goal 2- Understanding meaning and emotional impact that the data has in the user.

Once the participant was aware and reflected on what was a meaningful healthy life for him, this part of the booklet was focused on understanding the emotional impact that data had in the participant, and also the meaning that the device had in the participant's life. For this purpose, there were two activities proposed.

Day 4. The first activity (for day four) was focused on filling open sentences that helped the participants described the impact that data had. and why. This activity allowed the research to understand when the data provided has value and meaning for the participant life, and in which situations could be challenges found to improve the impact of the data in the user's life.

In order to find characteristics that would determine if the data given by fitness trackers was meaningful for the user and if it had an impact on the user's life, The Exemplification

Theory Model was analyzed. This theory describes factors that make information meaningful and carrying an emotional impact for the user.

Exemplification theory model (ET) (Zillmann & Brosius, 2012) highlights the importance of the information presented which are qualities, salience, and vividness. These characteristics can present evidence more effectively in terms of engagement and persuasion in comparison to qualitative and factual evidence for the same health behavior (Gray, 2009)

Based on these factors obtained, the activity of day four was based on answers to open sentences that would evaluate these characteristics. These sentences were tested with three users to iterate on them and verify that the answers of the users were related to these factors. The goal of this activity was not a specific answer, but more to make the user sensitized with these characteristics and being able to talk about them during the interview and to understand the impact that they could have in the experience and engagement of the user. As an example, for the factor "personal (or feeling identified)" The open question that the user had to answer was: For me the data is... because...

Day 5. The second activity (for the day five), was focused on creating a metaphor about the experience of the device that would also contribute to understanding the meaning and impact that the data had in the users. First, the participant was asked to think about which object or objects the fitness tracker would be (for example, a participant mentioned that could be a mirror since it summarizes yourself). Secondly, a deeper question was asked. In this second activity, participants were invited to reflect and describe the personality that this

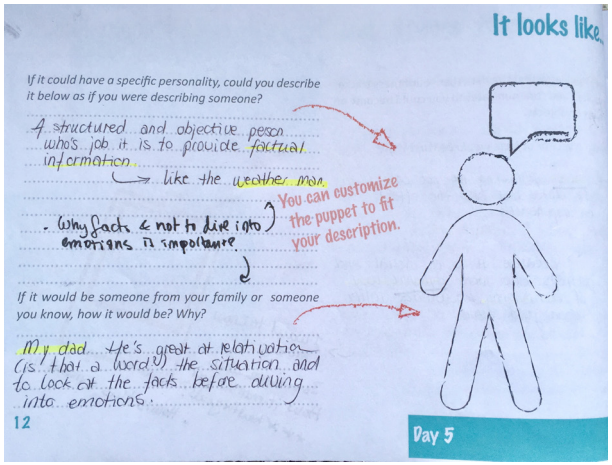


Figure 15 Booklet: Activity of day 5.

device would have if it would be a person. Finally, they were also asked in this activity to identify if this personality would fit with someone they knew, and if so what is their relationship with that person (See Figure 15).

This second activity allowed the researcher to understand the perception that the participants had about this device and to materialize key experience elements and its impact in the user. For example, a participant compared the device with the weather man, an objective person who's job is to provide factual information, but who overlook emotions. These insight will become key to create experiences that improve user's wellbeing.

2.2.3. User Research Part B (five days): My healthy life journal

Once the participant was aware of what was important to him or her in order to live a healthy life, The part B of the booklet had two main aims: *Understanding dilemmas* and *Understanding what would be the ideal experience for the user*

Understanding dilemmas

Days 6, 7 and 8- On one hand, the firsts two days were focused on understanding how these important achievements for a meaningful healthy life could contradict with short-term desires in their everyday healthy choices creating emotional contradictions (dilemmas). Moreover, in this section of the booklet, it was also analyzed how the participant coped with these dilemmas and if the data of the devices had any influence on the decisions made (Figure 16).

For these goals, there were two activities (one the day six and another one the day seven) called "Little confessions" (Figure 16). First of all the participant was asked to remember the top 3 important achievements for a healthy life described in the activity of the part of the booklet. Afterward was asked to remember and explain a situation where he did/eat something that he thought was not healthy for him. As a second step, the participant was asked to describe three pleasant and unpleasant emotions before, during and after that behavior. As a third step to reflect on the dilemma and its emotional impact, the participant was asked to pick the strongest pleasant and unpleasant emotion experienced and explain why the participant though he felt that way.

Moreover, to understand how the participant coped with that emotional contradiction, he was asked to described if he did anything in

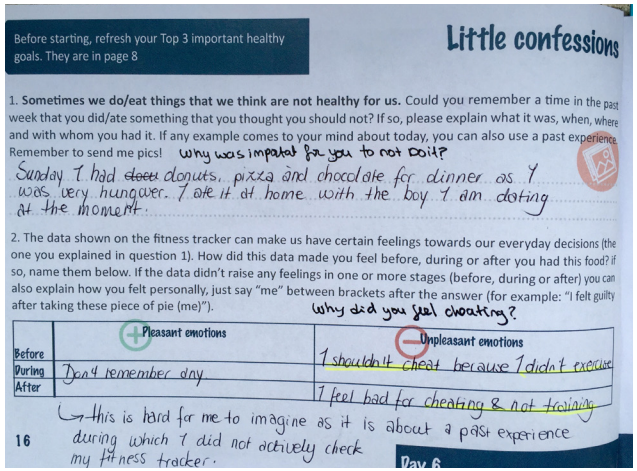


Figure 16 Booklet: Activity of day 6.

response to that strong pleasant or unpleasant emotions.

Finally, to understand if the devices (fitness tracker and blood pressure monitor) had any impact in these dilemmas, the participant was asked to reflect and explain if the devices and the data provided by them drove them to make the decision they choose, and if so, how.

Understanding what would be the ideal experience for the user

Day 9- As the last activity, once the participant was sensitized about what was important to him for a meaningful healthy life, the dilemmas experienced about healthy choices, and the impact and meaning that the device had in his life and health, the last activity was focused on understanding how an ideal experience would be (Figure 17).

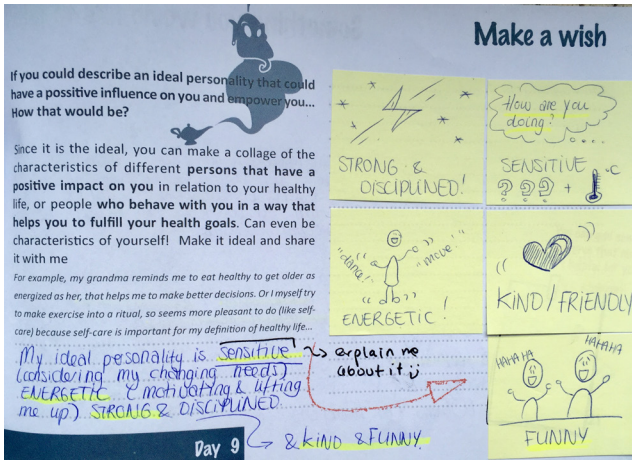


Figure 17 Booklet: Activity of day 9.

The purpose of this last activity was to focus on imagining and describing the ideal personality that the participant would like to experience from the device, in order to empower him and have a positive influence on his healthy choices. This activity helped the researcher to understand the wishes of the participant in terms of device tone of voice and the ideal experience, and being able to compare this ideal personality with the current one. Moreover, during the interviews the researcher could ask why this personality is so valuable, getting the key elements for an experience that would increase the wellbeing and engagement of the user.

Day 10- Finally, day ten was focused on personal feedback from the participant, in case there would be something that the participant would like to add.

2.2.4. Research procedure

The user research consisted of two parts: a booklet diary that has been introduced followed by an interview session. Each participant received the booklet 13 days before the interview.

As described, the booklet allowed the participants to reflect on what was a healthy life for them, which was essential to reach a healthy life, and think about everyday conflicting life-goal experiences. Moreover, during these 10 days, novice users could get used to the devices.

After the 10 days, the researcher collected the booklets and analyzed them to structure the interviews. The interviews lasted one hour per participant and were focused on discussing in-depth the booklet to have a rich understanding of the participant's experience and how it affected their emotions, engagement and wellbeing. Moreover, since the booklet was analyzed before the interview, some patterns among participants were found and could be discussed in the interview in order to understand if the concerns behind this pattern the participants had similar or different concerns. All the interview were recorded with the previous consent of the participants.

2.2.5. Data analysis and results

The results of the research will be focused on the experience with fitness trackers.

To analyze the data, the in-depth interviews were analyzed together with the booklet to find relevant phrases and statements aligned with the research goals. These phrases were grouped in the wall and analyzed to find patterns, repetition and to group them into key topics, the visualization of these clusters can be found online at https://bit.ly/2ZIeR58.

To have an overview of the relationships among the topic and how they could affect each other, a mind map was visualized in paper. Moreover, the topics that caused negative experience were aligned to the briefing were represented in a user journey to visualize the impact of these problem areas in the user experience and determine key challenge areas. In addition, different dilemmas were defined, iterated and compared with the topics in order to fin the dilemma that would describe the best the problematic for this project.

The key findings are explained in this sections, its importance is given by the impact that has in the meaning and engagement with the device. Moreover, these findings are also connected with the approach and origins of fitness trackers that has been described in the Literature research, this alignment will be also described in this section.

The research finding are going to be described in the next page following the research questions described at the begging of the section (2.1.1 Introduction to the User Research).

A. Which are the pillars for the target group to achieve a healthy life?

Figure 18 Health pillars for the target group.

Key pillars for young healthy adults to live a healthy life.

It was found in five out of seven users a pattern where their three key achievements to live a healthy live were related to three main themes:

1- Nutrition related (they described achievements such as drink more water, eat less sugar or to keep a balanced diet).
2-Mind related (they described achievements such as having social relationships, reading, writing their diary, doing mindfulness, meditating or listening to their favorite music).
3-Physical related (they described achievements such as doing yoga, walk more, or do workouts three times a week).

This finding was unexpected, and a very valuable opportunity to add meaning to the experience and understanding of health of fitnesses trackers. This definition of health that the user provides shows a holistic approach that is more aligned with the WHO than with the current approach of Fitness trackers.

B. Why is it important for the target group to be healthy?

Health: positive energy from the three sources

This finding was also unexpected and surprising, since the users reported that keeping these three pillars for their health would allow them to get positive energy from different sources to their lives. Moreover, they also reported these three elements to be interdependent, for example eating healthy will give them positive energy but if they would not be active that would affect their overall energy. On the contrary, focusing on having a healthy breakfast would motivate them to have healthy snacks afterwards and also to keep active. Therefore these sources of energy are interdependent and influence each other both positively and negatively, so for the user to feel healthy the three of them have to be practiced and promoted

In conclusion, for the user health is about feeling full of positive energy. And taking care of their psychological health, of eating healthy and having an energized body through fitness are the sources of energy to achieve it.

C. What is the meaning that this technology has in the life of the fitness tracker user?

Figure 19 The metaphor of the tracker personality.

Personality metaphor : The weatherman

Aligned with the “Problematic” defined in the Introduction chapter, the research shows that the information is perceived as meaningless and general. Two users specifically described the experience to be like “the weatherman”. Similarly, the factual information doesn’t generate an emotional impact on the user.

The information seems to be too objective to create personal meaning for the user, leading to a lack of engagement with the tracker.

D. On which interactions do fitness trackers users feel supported to reach a healthy lifestyle?

The valuable characteristics of the device for creating meaningful interactions user-data

There were three elements that the users defined as valuable from these devices, there were characteristics of the fitness tracker that the user values since they felt supported by them to reach their goals. These were attributes that were meaningful for the user and had a positive impact on the user's wellbeing. The insights were found in the booklets and discussed in the in-depth interviews.

Tangible goals

Participants reported that the fact of making the goals tangible through visualizations (Figure 20) bring them from wishes to realities to pursue since bring them from the unconscious to the consciousness. A participant expressed "Makes me more conscious about my goals, if I only think about them I forget"

Visual Overview

The visual overviews about the participant's behaviour (Figure 21) have an a meaningful and impactful message to the participant's motivation.

It motivated the participant since is a visual way to show what has been done. As participants reported, "A week overview shows me if I have been healthy enough" (Participant T) or "I feel supported to reach my goals when I have an overview of my habits long-term" (Participant Le).

Moreover, regarding the importance of the visuals a participant mentioned that "Is key to see it, numbers mean little" (participant D). Visualization plays an important role in the emotional impact and meaning that the data has on the user, this value of the visual overview can be related to the characteristics previously described in the Exemplification Theory about salience and vividness of information in order to create engagement and persuasion. Since a visual is more concrete and descriptive it can facilitate the user to feel more identified with the information presented, and recall it later, having a higher impact on persuasion and meaning than a number, as the participant reported at the beginning of the paragraph.

Visual Progress

Finally, the reason why visual progress is valued is aligned to the values given to the visual overview. The difference is that progress is focused especially on the goal (Figure 22), means how much the user has done for reaching the goal. This element can be seen, for example, in the bracelets (Figure 23 and 24). It visualizes what has been done regarding the goal set. The visual overview contributes to the benefits described in the Visual Overview. Moreover, the tracking system allows the user to materialize what has been done, which is a source of motivation since the user feels capable of being active. This is explained by two participants that seeing the overview though that "I am not that bad at being active and I can do better" (Participant Ln and participant A).

Figure 20 Valuable characteristic: Make goals tangible.

Figure 21 Valuable characteristic: Visual overview of behavior.

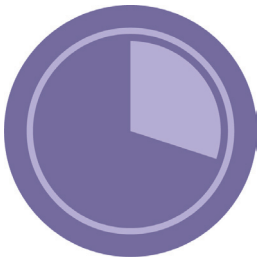


Figure 22 Valuable characteristic: Visual progress of goal.

Figure 23 Visual progress of fitbit

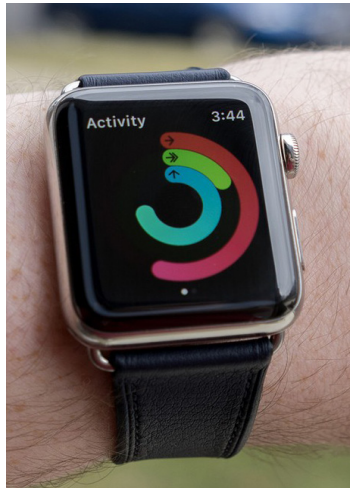


Figure 24 Visual progress of Apple watch

Moreover, is important to mention that participants reported that when the progress is focused on what is missing (for example "Do 500 steps to reach your daily goal", or the visualization focused on what is missing) that is perceived as more demotivating than when is focused in what has been done (for example "you have done 1000 steps today"). The reason is that the focus on what has been done is perceived as more honest and realistic information.

D. On which interactions the fitness trackers users have negative experiences that affect their wellbeing or health management?

The challenge areas of the device for creating meaningful interactions user-data

This section defines and describes five of challenge areas that were found during user research that provoked a negative experience not only in terms lack of engagement creating health habits, but they also were found to affect the wellbeing of the participants.

Problematic components of the service

Before detailing the "Challenge areas" is important to introduce that the characteristics found belonged to three components of the service (both app and device). Therefore, the three components of the service that result in present negative effects on the experience are:

Goal setting: The user reported negative experiences and lack of engagement and meaning due to the default goals that the service offers from both for Fitbits and for the Apple Watch (Figure 25). These goals were reported by the users to not be aligned with their concerns about health.

Progress and feedback: The meaning

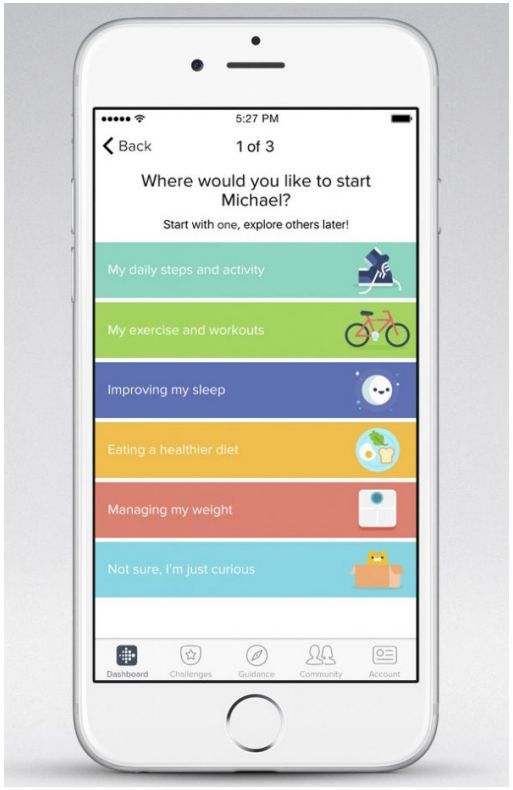


Figure 25 Problematic service component: Goal setting of Fitbit.

of the data of fitness trackers and the communication and meaning that the user experiences regarding this data are one of the key element of this project. Moreover, is also one of the most problematic areas reported by the users.

Data visualization (Figure 26) is meant to inform the user about his progress and performance, and as information, is very objective. However, this section is going to be discussed how this objective information from the machine can become subjective in user experience affecting the engagement and wellbeing of the individual

Notifications for motivation and goal reminder: The notifications (Figure 27) that the service provides have the intention of motivating the user to keep active. However, these notifications approach the user in a very direct and coach-driven tone of voice, which can roughen with the user's context and create the opposite effect on the use's motivation. An example of these motivational notifications can be found in

Figure 26 Problematic service component: Data Visualization example of Apple watch.

Figure 27 Problematic service component: Goal setting of Fitbit.

User journey

Introduction

In order to describe the blocking characteristics found on the User study in a contextual way, a User Journey has been visualized (Figure 28) with the goal of explaining the impact of these characteristics in the emotions and engagement of the participant through the day.

The journey has been developed based on the insights of the participants during the interviews and the journeys that the participants did themselves as a first activity of the booklet. In this case, this journey follows a specific context of a stressful day for the participant. Since the user group is young adults going through a lifestyle change, they are described especially negative experiences with the device when facing a stressful day, which is an often situation due to their lifestyle transition. The fact that the device has an extra negative effect on their wellbeing in this context made a stressful day journey an opportunity to find elements to improve in the experience. The key opportunity areas are given by moments of the journey where the wellbeing of the participant was affected.

User journey

As previously introduced, this journey narrates the experience of the user in his health management through a fitness tracker during a stressful day.

Before going into detail with the opportunity areas found, the journey depicted in Figure 28 requires an introductory description.

As introduced, the journey describes a day in the participant's life. This day has been divided into five general **Stages** (See "Stages" row in Figure 28) which are: Morning routine, the journey to work, working day, journey back from work, and evening.

In the row below the journey stages, the experience curve is represented in the row called **Actions**. Over the horizontal line are observed positive experiences and under its negative ones. The drops located along the experience curve represent emotions experienced by the participants or dilemmas, the letters represent specific situations. The key situations that explain more in details the emotions and experiences described in the chart will be visualized as storyboard and explained later in this section to give a more tangible explanation of the context and interactions occurred.

Followed by the user's Actions is described his **Thoughts**. This section exemplifies a representative quote expressed by the user about this specific situation, this will support the research in keeping the journey concrete and illustrating the original concerns of the user.

The key insights gathered by the user journey are conveyed into **Challenge areas**. Five main challenge areas are defined in the Visual next to a short description. Each challenge area is liked through lines with the experience moments of the journey that they connect to, and also with the quotes that they relate to.

Experience on heath management with a fitness tracker in an stressful week

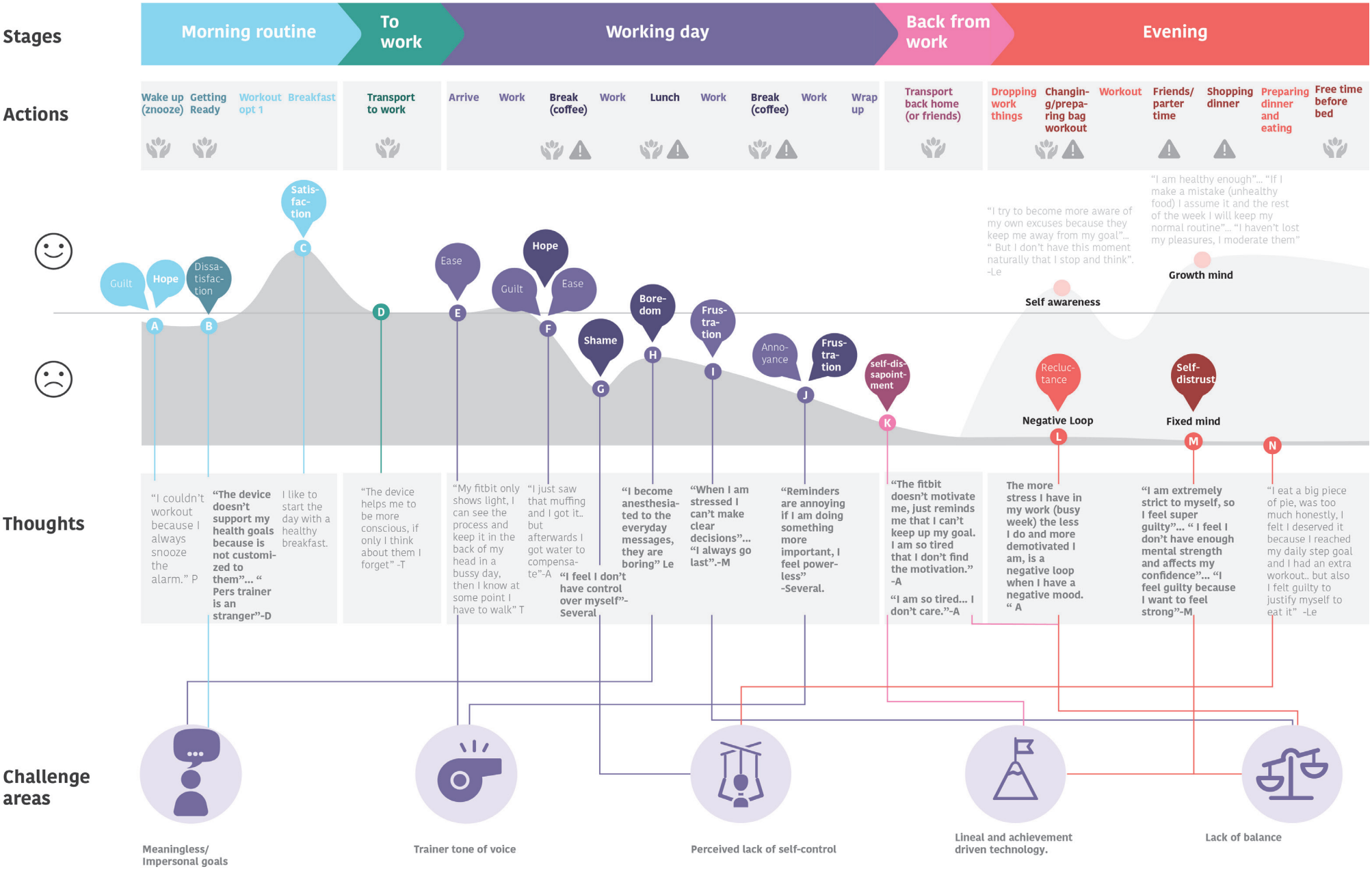


Figure 28 User Journey

Challenge areas for fitness tracker experience.

Criteria
To find the key opportunity areas, a criteria was followed. First, the researcher looked at the strong negative emotions given in the journey. Then it was analyzed from the interviews how these moments affected negatively to the user's engagement with the device, his motivation to manage his health, and his perception of wellbeing.

To give a general understanding of the application of these criteria, the example of the notifications will be given:

In the specific case of Fitbit, the device reminds you to be active by sending you hourly reminders in the bracelet, where vibration and a character motivates you to go for a stroll. Even though this feature is meant to be friendly and gentle, in everyday life can provoke the opposite effect generating negative experiences.

For this attribute, It was noted that the mid negative experiences (such boredom from the notifications) generated emotions towards the device that would affect engagement but would not have a big impact on user's wellbeing. For example, the user would be bored with the device, frustrated with the device, etc. As it affects engagement and generates negative emotions is an element to take into account as a design challenge, but is not critical.

However, the more negative the experience was (as is the care towards the end of the working day and the evening) the negative emotions experienced would be against the user himself, this context would not only have an impact on the engagement but also on the user's wellbeing. For example, the same notifications expressed before as "boring" by the user, after a long working day would provoke emotions in the user of Frustration, but also of Self-disappointment or Self-distrust. In conclusion, these negative experiences could affect very personally the user by, for example, lowering his self-esteem. In these contexts, the engagement of the user will be negatively affected, and in a stronger way than in the first example, the reason is that in the case of developing negative emotions toward the user himself, that would also have a negative effect on user's motivation and on his own wellbeing. In this case, the same feature became critical for the user's wellbeing and engagement, so this context has been taken as a design challenge area.

At the end of this section, a more holistic explanation of why this challenge areas are key to ensure a positive impact on the user's wellbeing and engagement will be developed.

For example, in the case of the notifications. This impact on motivation is given by the negative effect that these emotions towards the self would provoke in the human needs of competence and autonomy, that have been mentioned as two of the three pillars of the Self Determination Theory, explained in the section of "Literature Research". At the end of this section, some conclusions will be given about the alignments found between the "Challenge areas" and the conclusions described in "Literature Research".

Finally, a conclusion will be given in terms of the type of communication that this technology has currently with the user, and what how these elements are decreasing the meaning of it.

Challenge areas description

Meaningless/ impersonal goals and notifications.

Goals: In the findings described in "The health of the user" was found that the pillars of health for the user are not aligned. In a more practical way, the users themselves expressed their disinterest with the goals given by the device. The following quotes from the participants show this concern:

" Fitbit looks at what matters first... Is that what matters? The device only helps me in the activity part" (Participant Ln). Another participant expressed that " The device doesn't support my health goals because is not customized to them" (Participant D). These participants have in their booklet their three pillars of their health-related to fitness but also nutrition and mental health.

Notifications: The participants mentioned the notifications to be meaningless and boring for various reasons. One because they could become "anesthetized" to them (Participant Le) since they were always the same. The vibration would be the same and the reminder as well, so it won't have a special meaning and they would get used to it. A participant even mentioned that she would not even feel the vibration in her writs anymore. Moreover, the coach seemed impersonal as a participant expressed " I don't have any relationship with that person" (Participant D). This definition of the notifications fits the image of the weatherman described by the participants previously to depict the technology personality.

Trainer tone of voice

The users described this approach as imperative, intrusive and demanding. This happens in different features of the device but was mainly described in the notification reminders.

The reminders to keep active were described below as meaningless, but in certain context, they can create a stronger negative effect on the user's experience. The context following decried will be used to exemplify this situation

In Figure (29) (The elements of the User Journey H and J) is described as a context where the user is focused on working. Although one of the human needs of the user is Fitness (the reason why he got the fitness tracker), in this context the user is focused on finishing work. Here There is another need that is more urgent to fulfill, the need of Competence.

This context was described by several users during a day of finishing deadlines for example. In this context, the priority of the user is to finish his task but the device keeps reminding him to be active. This situation leads the user to feel frustrated, not only by the demand and intrusiveness of the device that roughness with his current context, but also with himself since is a constant reminder that he can't keep up with his health management. As several participants expressed

Reminders are annoying if I am doing something more important, I feel powerless.

- Several participants

Concluding, reminders were meant to remind the user to be active in a daily basis, but this direct approach makes the user feel that the technology is intruding in his context and demanding attention that sometimes he is not able to offer, leaving the user feeling powerless in relation to his health management. This will affect the engagement of the user with the device, his motivation to manage his health, and his wellbeing.

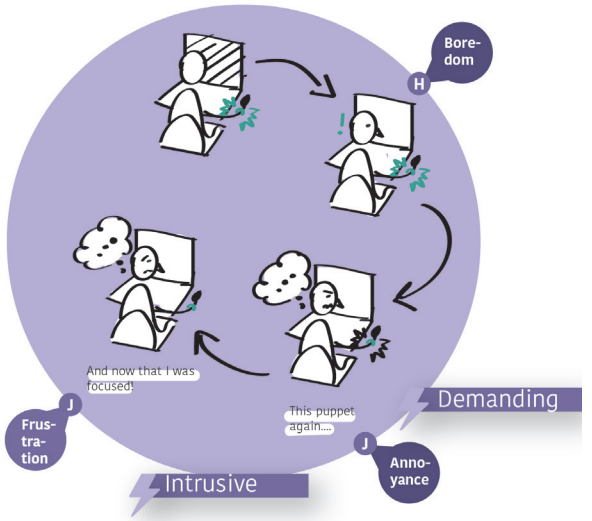


Figure 29 Storyboard from real context. Experience effect of the trainer tone of voice.

Perceived lack of self-control

During research it was found that satisfaction and motivation of health management were would be determined by in which degree the user would feel that his decisions were aligned with himself, that means that the user would have made more conscious decisions rather than impulsive ones.

As was described in the Literature Research, experiencing emotional contradictions about a choice and making impulsive decisions based on short term desires instead of long-term goals is part of human nature (since we are rationals and emotional beings). However, the device only seems to take into account the rational element. In connection to this finding, a participant reflected that for her "there is not good or bad, there is alignment and misalignment" referring to making conscious decisions based on her needs and concerns.

Regarding the negative effect that this feeling of personal misalignment can have in the experience, a participant expressed: "I hate to feel that I am fooling myself"... "I try to become aware of my own excuses because they keep me away from my goal" (Le)

Not embracing the impulsive behaviors of the user as part of the experience creates negative experiences since this part of human nature is not recognized. This leads to feelings of guilt and self-distrust since when the user makes one impulsive decision, thinks that doesn't have control over himself.

The perception of lack of control can create in the user to see his own health journey in "black and white". Seeing the experience in black and white means the user's expectations about the process are that either everything is done perfectly or is a failure. Do it perfect means all the behaviors are aligned with his goal. On the other hand, it will be a failure if a of the behavior is not aligned to the goal set. These expectations about the health journey have a negative impact on engagement. This situation is recognized in the experience of a participant who shared his thoughts after impulsively buying a package of M&M as follows: "After having these M&M I ruined my day, I feel guilty and demotivated, I am not going for a run tomorrow... What for? I will ruin the day again at the end of the day." (Participant D).

I hate to feel that I am fooling myself... I try to become aware of my own excuses because they keep me away from my goal.

- Participant Le

In conclusion, not embracing the possibility that humans will have ups and downs in the process that are needed to support, creates a feeling of self-distrust in the user since doesn't accepts his own lows in the way, and also creates dissatisfaction by making impulsive decisions.

Linear and achievement-driven technology

This challenge area is connected to the "Personal misalignment" finding. The difference is that whereas "Personal misalignment" comes from a characteristic of the individual, this area of improvement comes from the approach that the technology presents.

A participant's quote summarizes this section: "We are always trying to become better: happier, prettier, fitter... But what is better? Seems that only when you reach it you are good enough, that makes me feel insecure in the road"..."For this device is all go go go" (Participant Ln).

To explain the effect of this characteristic on the user's experience the following storyboard is described. As can be seen in the journey, this factor can have a big impact on the user's self-esteem. The participant expressed above that the device is always all "go go go!". The storyboard of (Figure 30) describes a common situation experienced by the participants. After a long day the participant couldn't manage his health goals due to stress at work for example, he arrives at home and the device shows how little he did. The perception of the participant is that until he doesn't complete the goal he is not enough as seen in the quote of Participant Ln below.

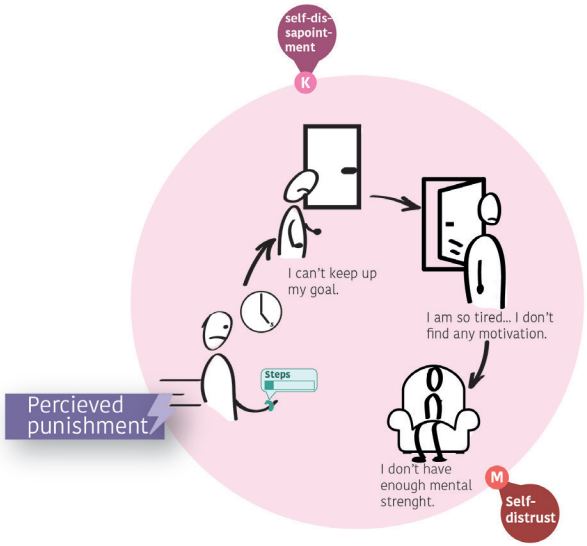


Figure 30 Storyboard from real context. Experience effect of the linear and achievement-driven technology:

There are two elements that contribute in this goal-driven approach to wellbeing: lack of support and fixed mindset.

Lack of support

The information presented in the device is objective (the weather man described by the participants), what is shown is what the user has done (in terms of fitness) that day. However, although this information is described as objective, the perception of the user creates a subjective experience.

This information has an impact on user experience, being perceived by the user as an extra punishment for not performing well enough. This perception decreases the user's engagement and also creates self-distrust about his capability to keep up his goals. Two participants expressed this situation as follows: " I am extremely strict to myself so I feel super guilty"... "I feel I don't have enough mental strength and that affects my confidence"... "I feel guilty because I want to feel strong" (Participant M). "The Fitbit doesn't motivate me, just reminds me that I can't keep up my goal. I am so tired that I don't find the motivation" (Participant A)

In this context, the participant needs support from the device to be reenergized by the device and feel strong (Participant M) and secure (Participant L) on the road, rather than extra punished by factual information.

"The Fitbit doesn't motivate me, just reminds me that I can't keep up my goal."

- Participant A

Lack of resilience

As it has been observed, when the participants don't hit their goals they experience very negative emotions that can even lower their self-esteem. But this goal-driven approach also affects the inability to learn from the way and develop a resilient mindset (see Figure 30) Storyboard developed to specify the context of the User Journey. Situation K.).

Only one participant in the research had a growth mindset as a personal characteristic. This was also the participant using the simplest device (Fitbit Flex 2), that doesn't show any information rather than 4 dots that represent how much the user has walked. The participant argument that having more information in his wrist would be intrusive and annoying for him.

The effects of this growth mindset in the experience can be seen and compared with the rest of in Figure 31 (see the dots: Growth mind and fixed mind):

In the "Evening" stage of the journey (Figure 31), it is depicted the journey of a participant with a resilient mindset (called "growth mind" since is the term used in psychology) in comparison with the rest of the participants (who showed a "fixed mindset"). The participant with a resilient minset also experienced a behavior that contradicted his goals (in this case having sweets) but the difference is that he reflected on that and though what could do better next time. As the participant expressed "I assume it (the unhealthy behaviour) and the rest of the week I will keep my normal routine"... "I haven't lost my pleasures, I moderate them" (Participant T).

In contrast, the rest of the participants didn't feel strong enough and also expressed to feel

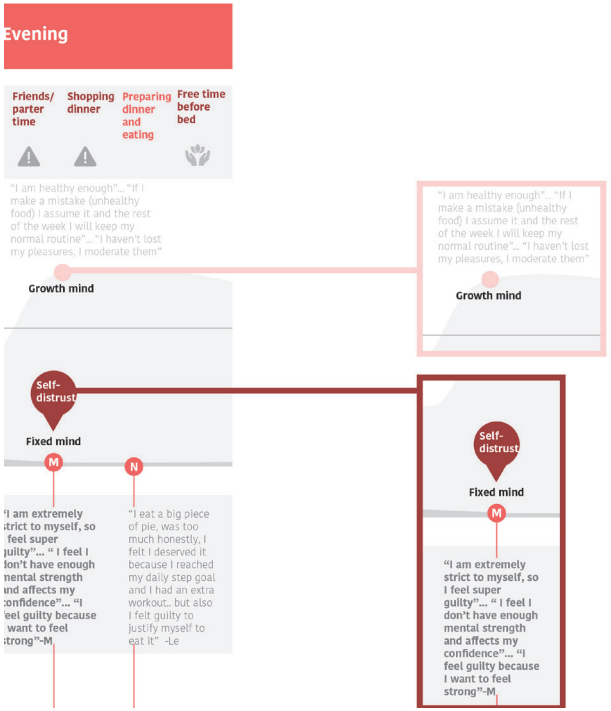


Figure 31 Detail from the User Journey: Difference of experience from a fixed mind approach and a growth mind approach.

guilty for their behaviour. One participant said "I am extremely strict to myself, so I feel super guilty"... "I feel I don't have enough mental strength and that affects my confidence" (Participant M).

Is an interesting insight because participants with "fixed mind" seem to focus on wanting to change the past, the unhealthy behavior they just did. However, the participant with a "growth mind" oriented his thoughts in learning about that behavior and balancing it out or applying this learning in the near future. This second mindset seems to have a positive influence on the wellbeing of the participant and on its engagement on his health management.

I hate to feel that I am fooling myself... I try to become aware of my own excuses because they keep me away from my goal.

- Participant M

Overall, it was observed a higher level of satisfaction with his health and better health management in the participant with "growth mindset" This would be a good opportunity for this technology to support a more resilient mindset.

In conclusion, although factual information seems to be objective, external inputs will create subjective meaning in the individuals who experience it. In this case, it has been found that factual information about goal performance can have a strong negative effect on participant's motivation when the goals haven't been met since is perceived as an extra punishment. Beyond focusing on reaching goals, supporting the participants on the lows and promoting a resilient mindset where the participant can learn from his mistakes, can improve the experience of the fitness trackers and bring it closer to human nature and the user's everyday context.

Lack of balance.

"For me (especially in a stressful day), wellness is about balance" Le

The lack of balance perceived in the experience comes from the fitness driven approach to health that these devices have but also from the achievement-driven technology explained below.

Regarding the effects on the definition of health, fitness trackers mainly focus on fitness, and that has effect on user's health in two cases: Nutrition and mental health

Regarding nutrition, during research, the most common conflict experienced by the participants was eating too much after having achieved a fitness goal. An exemplification of this is one of the experiences that one of the participants shared: "I finished a package of chips and two beers, I deserve it because I was active enough during the day"... "I felt guilty because I was doing very well until that moment" (Participant A). Another participant shared a similar experience " I eat a big piece of the pie, was too much honesty, I felt I deserved it because I reached my daily step goal and I had an extra workout but I also felt guilty because I justified myself to eat it".

In these cases, since the device highlights the importance and goals of fitness, the user unconsciously focuses in fitness health (are the ones made tangible) while unconsciously gives less attention to mental health and nutrition health management. However, un user research was found that these other two are as important for them, and therefore "cheating" on these aspects of their health create negative emotions.

Another contributor to these compensations that appear to happen after reaching the goals fitness wise is the "achievement driven technology" previously introduced. The reason is that health (fitness goals) is perceived as a "to do" to reach and not as self care, and therefore after being reached the user feels the need to compensate it, there isa lack of feeling of pleasure in this fitness activities that need to be compensated, in this case through food.

Regarding mental health, its management is also affected by this fitness driven health affecting the balance in the user's life. As mentioned, the goals set by the fitness trackers are not perceived as "personal care" (See Figure 32).

This is very evident in stressful contexts (for example after a long day at work) where the user arrives home and in the device sees another "to do" that couldn't be achieved. Participants described that the busier they were the less engaged they would be with the device, the fitness tracker will be perceived as a source of stress or even punishment since would make them feel even more frustrated with their performance on their health management.

Probably if the device would have a focus on mental health the engagement during a stressful day rather than being lost could be reinforced since it would be more related to self-care. Moreover, if the focus wouldn't be in the achievement of the goal, rather than be perceived as a "to do" could open opportunities to perceive it as a path to wellness and balance.

For me (specially in a stressful day) wellness is about balance.

- Participant M

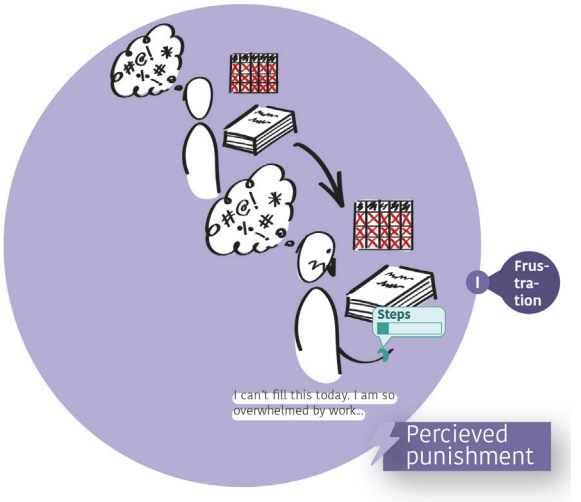


Figure 32 Storyboard from real context. Experience effect of the lack of balance.

F. Which are the dilemmas experienced by the participant with the use of the device than affect their wellbeing and motivation for health management?

From several dilemma iterations, the dilema depicted in Figure 33 has been found to be the most valuable for the project. The reason is that after being analyzed the personality characteristics of the device in the section of literature Review, this dilemma highlights the same conceptual problem of fitness trackers, but this time from the user's perspective.

In this dilemma can be seen the need of the user of being in control of his health management, but feeling at ease while doing it. This desire for health management is very aligned with the value of health for the user, which is about self-care and balance. However, it has been defined in these chapters that fitness trackers focus on competition and achievement as a motivation strategy. The current fitness tracker approach to health management, rather than motivating the user, is causing him anxiety and affecting the user engagement with the technology.

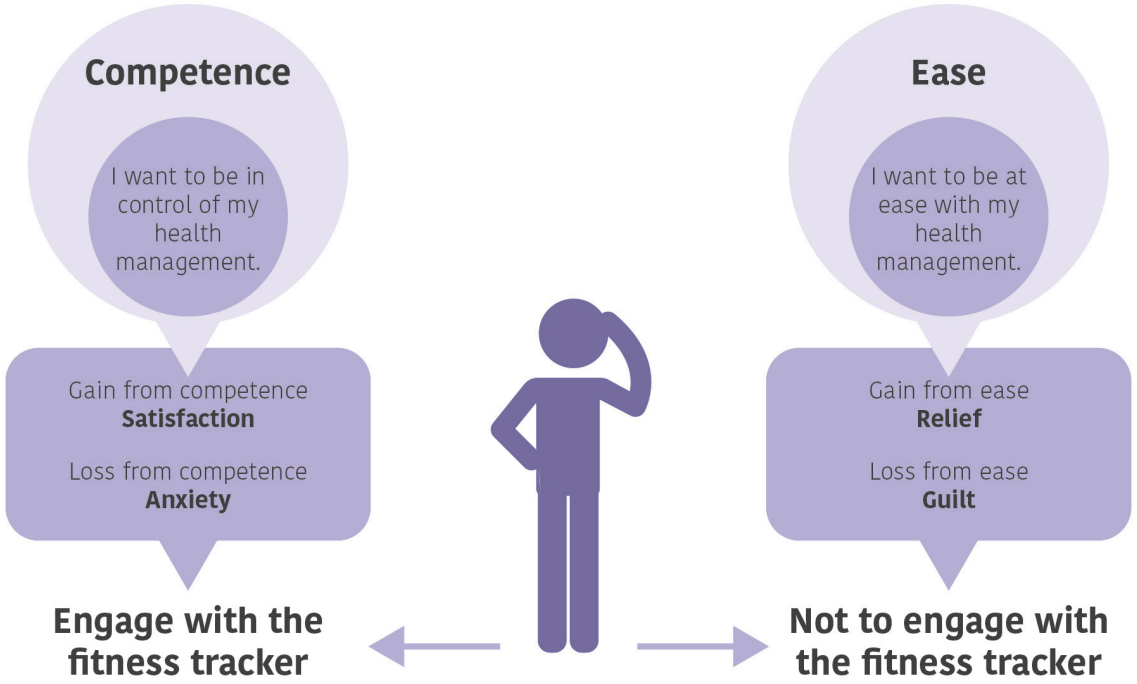


Figure 33 Most revelant dilemma found in Research.

2.2.6. Conclusions of the user research

The main conclusions of the research have been structured by the research questions defined at the begging of the section as follows:

A. Which are the pillars for the target group to achieve a healthy life?

It has been found that for the user, living a healthy life means to take care of himself through having healthy habits in three health aspects: Nutrition, fitness, and mind. These aspects are interdependent, and therefore the user can not feel that is living a healthy life if the three aspects are not tackled. Therefore, the redesign needs to tackle a more holistic health perspective in order to create a meaningful common ground with the user.

B. Why is it important for the target group to be healthy?

As previously mentioned, it has been found that for the user health means self-care. The importance of these activities relies on the positive energy that they bring to the user's life. When the user takes care of himself, these positive energies become a means to balance out the stress of everyday life. However, for these activities to create positive energy on the user, they have to be meaningful and joyful for the individual, and therefore personal.

Therefore, the redesign needs to enable the user to choose personally meaningful activities that he can relate to self-care.

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Therefore, the redesign needs to enable the user to choose personally meaningful activities that he can relate to self-care.

C. What is the meaning that this technology has in the life of the fitness tracker user?

The research has shown that for the target group, the fitness tracker enables them to make goals tangible and to keep an overview of their health behavior through time. However, the data is too factual to create an emotional effect on the user. This characteristic also causes a lack of engagement.

Regarding the data, the main interest of the user is in the overviews, since they allow to see if the user is being healthy enough. For this reason, visuals have a special value for the user since they are perceived to hold more meaning than the numbers displayed because they facilitate overviews.

Therefore, keeping these overviews and visual communication but bringing a personal meaning is key to develop emotional meaning and therefor meaningful conversations user-data.

D. On which interactions the fitness trackers users have negative experiences that affect their wellbeing or health management?

Five challenge areas have ben defined in response to interactions that create negative experiences. This challenge areas have been shown to be critic for user engagement and wellbeing. They are meaningless/impersonal goals, lack of balance, trainer tone of voice, goal-driven experience and perceived lack of self-control. To tackle these challenges is needed to:

-Give the user a more proactive voice and empowering role in the experience where he can feel the ownership of his actions instead of being continuously guided

-Move from an experience that focuses on the achievement to one that is more aligned to a real process of behavioral adoptions, which implies ups and downs in the process.

-Not only motivate the user when they reach the goals, but also support them when they are not doing well. This is a key element for the engagement with the device.

E. Which dilemmas do the fitness tracker users experience when interacting with the device that affect their wellbeing and motivation for health management?

"I want to be in control of my health management" vs "I want to feel at ease with my health management".

This dilemma depicts a key conceptual challenge for creating an engaging experience. For an engaging experience, fitness trackers have to communicate ease. To achieve that, this project rather than focusing on competicion and achievement as an engagement strategy, should focus on self-care and balance in order to bring ease to the experience.

The need to define user empowerment

In addition to the research questions, it has been found that the definition of user empowerment is key give a role of the user in the fitness tracker experience, and therefore in the interaction in order to enable meaningful conversations.

It has been concluded that fitness tracker technology can't empower the user to build a healthier life by giving only physical quantitative data. Since building a healthier life requires not only doing new activities, but a personal change on beliefs, character, and identity (such as developing more self-control, or caring about food ingredients) it requires also personal growth since is a transformative experience.

Therefore, fitness trackers can facilitate an empowering experience when supports the user in self-growth by enabling the individual to take an active role in self-awareness from not only a physical but also a psychological perspective, since both take part in adopting a healthier behavior.

Finally, for analyzing if an experience is empowering it can be measured by what it leaves when the intervention disappears (when the user is not using the device, or when the habit is adopted), being an empowering intervention a transformative experience (increasing self-awareness).

2.3. Insights for a new approach for fitness tracker experience.

Based on the analysis and findings obtained in the Literature Research and in the User Research, a new approach to fitness the tracker experience will be proposed and described.

In order to give a coherent argumentation of the new approach, firstly the insights from Literature Review and the findings from User Research will be recapitulated. Moreover, the outcomes from these two sections will be aligned in order to gain a holistic understanding of the routes of the current approach to the fitness tracker experience and how is affecting the user in terms of negative emotions, engagement, and wellbeing.

Secondly, the new frame is going to be introduced, argued and compared with the previous one.

2.3.1. Alignment of the challenge areas with the literature review.

When describing the Challenge Areas found through the experiences reported by the participants, is possible to look at the Literature Research and see how the approach of fitness trackers have a tangible influence on the user experience, as illustrated in Figure 34.

At the end of each explanation, there is a short conclusion that serves as a connection and introduction to the next section, where the new approach proposed for the Experience of fitness tracker is defined.

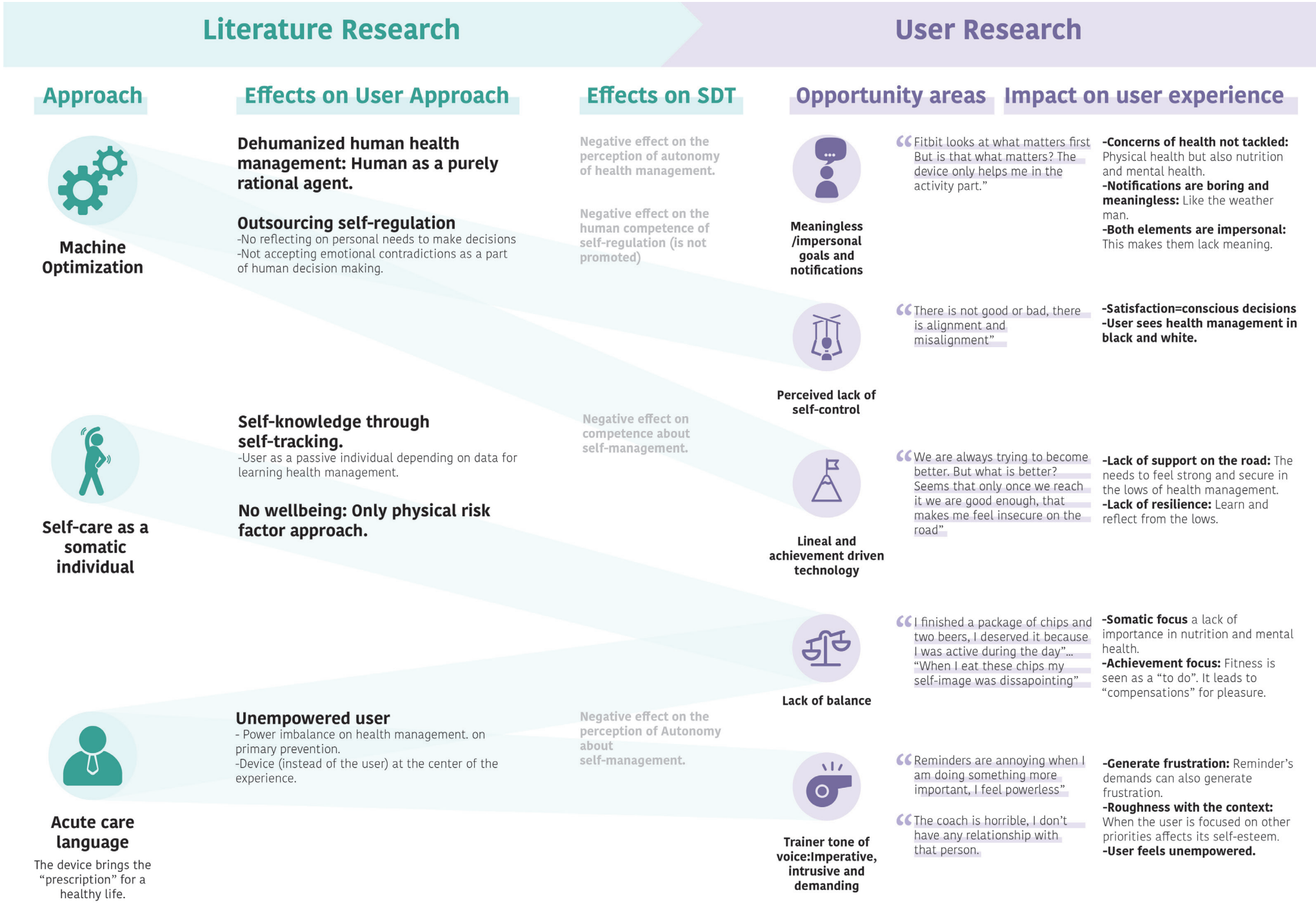

Figure 34 Alignment of Literature review findings with Research Findings.

The machine optimization approach

In the Figure 34 Is described how this approach derives in the “lack of meaning” of the goals given by the device and in the “personal misalignment” experienced by the users.

First, this machine driven experiences sees users as machines and therefore as purely rational agents that seek the goals (imputs) given by the system (Steps for example). However, the concerns of the user are not tackled. As the quote referred in the Figure explains “Fitbit looks at what matters first... but is that what matters? The device only helps me in the activity part”. Since the goal of the device is to optimize the physical health of the user (“what matters first”) this machine optimization approach ignores the emotions and needs of the user.

In conclusion this machine driven approach has an effect on an meaningless and impersonal experience for the user. The experience describe by this product can be compared to a “machine” experience, the users exemplify this by comparing the experience with the weather man, who looks at the facts but ignores context, emotion and in conclusion, the humanity of the user.

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Finally, the expectations of a machine are to follow a linear process. However, when a human is adopting new habits, ups and downs are expected since their brains have to rewire to behave in a different way. In conclusion, requires human growth.

The fitness tracker approach focuses on the achievement, but not on the road to adopt the behavior, that leads to a perception of lack of support from the user. Moreover, a resilient mindset that embraces the lows in the way and supports the users to learn from it has been found in user research to promote positive experience and engagement of the user with health management.

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Self care as a somatic individual

The second approach of the technology which impact has been reported in the User Research described by the participants is: “Self-care is a somatic individual”. This concept was described in the Literature Research phase as self-care filtered through the language of biomedicine and therefore directly linked with taking care of the body, leaving apart other aspects of health such as physiological and social wellbeing, as the WHO highlights.

This approach together with the importance of tracking for understanding health (physical health) was discussed in the Literature Research to affect the empowerment and the wellbeing of the user. The empowerment was discussed to be affected by the technology dependence that would originate in the user since the individual could only learn from his health through tracking. Moreover, could be affected since the device doesn’t follow a complete definition of health but a risk factor management approach.

The impact of the “Self-care as a somatic individual” in the participant is seen through the Challenge Area of “Lack of balance” (Figure 35)

The fact that the device is focused mainly on the physical aspect of health creates a lack of balance in the participant health management. Since the device is a continuous reminder of the physical health, this causes the participant has in his consciousness his fitness giving less important to mental or nutritional health. For this reason, the user will make more unhealthy behaviors based on impulsive decisions

Moreover, this focus on the achievement mentioned before also contributes to a lack of balance in health management. Every time the participant reaches a goal, he will want to compensate it, usually by unhealthy snacks (for more details see the findings from the Analysis that can be found online at https://bit.ly/2ZIeR58.)

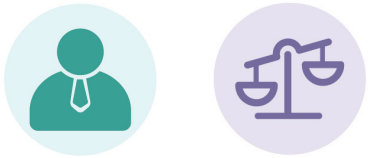
As described in user research, health rather than be perceived as self-care is perceived as another obligation (for example, for this reason during stressful periods the engagement with the device decreases.

In conclusion, health is perceived as an obligation to be reached and rewarded, but not a path to a wellness life.

Acute-care language

In the Literature research it was argued that this acute care language had a disempowering effect on the user experience for two reasons. On one hand, because the device would have the “prescription” that the user needed to follow to be healthy, acting as an expert, which is opposite to the role of the user expected from primary prevention, where the user is proactively self-promoting his health. On the other hand, the device, and not the user, is at the center of the experience, which would also lead to a disempowerment of the user.

The effects of this “Acute care language” have been reported and are reflected in User Research in the challenge areas “Lack of balance” and “Trainer tone of voice”



The devices follows a “prescription” aaproach that the user needs to follow for being healthy, there is not a deep proactiveness and involvement from the user on defining and self-promoting his health. This leads to make some decisions unaligned with a coherent healthy life. This given prescription creates a superficial motivation towards living a healthy life but not intrinsic intention to define their healthy life. This happens due to the lack personal meaning of the experience, since the user is not involved in the construction of his own experience , which means the definition of his healthy life based on the three pillars found: Nutrition, fitness and mental health.

Finally, the users described these three pillars as sources of positive energy, so health management for the users is part of personal care or self-growth. Taking this approach to the experience means to see health as managing life (self-care)—work (external responsibilities) balance.

In conclusion, health seen as a prescription to-do to follow contradicts the meaning of health for the user, which is finding life balance through personally meaningful healthy activities of self-care.

Regarding the Challenge Area “Trainer tone of voice” (Imperative, intrusive and demanding), it seems like a direct translation of the Acute care language found in Literature Research. The user often perceives the experience as a trainer that intrudes your context looking at what matters for him, which is the user’s fitness performance. But the imperativeness and intrusiveness of the device often roughness the user context (for example receiving performance notifications in a stressful day or during a meeting), this shows how the technology, and not the user is at the center of the experience (as found in research). Moreover, the perceived demands from the device can have generated frustration and affect self-esteem in the user.

Is important to note that risk factors approach are key to ensure an effective primary prevention intervention. What is discussed here is the healthcare language that has been taken directly from healthcare context and applied as a tone of voice in the experience of the fitness trackers and therefore taken from the hospital to the user’s everyday lives.

In conlusion, it seems that the experience is built around this “prescription” of health and the user is there to follow. A more engaging a meaningful approach would be to create an experience around building a wellness life for the participant where he would be a designer of his own health as introduced by Bubbery et al., (Dubberly et al., 2010) and therefore at the center of the experience.

If instead of bringing a healthcare voice, the tone of voice approach would be designed from the user needs and preferences and characteristics, that could lead to a more satisfactory experience and a more meaningful communication with the user that will foster wellness and healthy behaviors.

2.3.2. User Empowerment on fitness tracker experience: supporting transformative experiences.

Introduction

In both the Literature review and the User Research has been found that the current experience apprach is disempowering for the user of the fitness tracker.

For that reason, it has been considered two define what empowerment could mean in this context. Having defined what user empowerment means for the fitness tracker experience can give a clar role to the user on the experience, and therefore enable meaningful conversations user-data.

Empowerment was defined by the World Bank in 2002 as “increasing the capacity of individuals and groups to make choices and transform those choices into effective actions and outcomes.” In the case of fitness trackers, we could device to make “healthier choices” being the outcome actions that move us towards the new healthier habit.

In this section will be discussed why physical data is not sufficient input to empower the user to engage in the new behaviour, but a focus on user’s physiology for increasing self awareness is required in order to create an empowering experience.

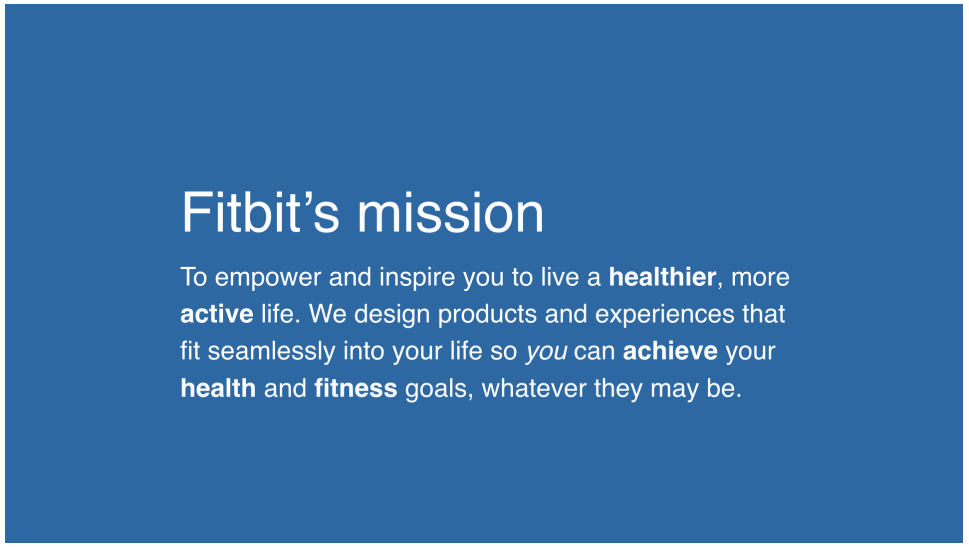


Figure 35 Fitbit’s mission highlighting user empowerment.

Current disempowerment

As explained in the introduction of the project the shift from treating to prevent illnesses has brought a change in health care, where the individuals are in change of self-promoting their health to prevent chronic diseases. This self-promotion requires individuals to work on adopting new healthier behaviors.

Fitness trackers are the business answer to that need, aiming to empower the user and inspire him on his health management and health promotion (See Figure 30) . However, this research has found that the experience disempowers the user for two main causes: The experience is device centered (based on device output) and based on physical information.

The device-centered experience was described when defining the characteristic “Acute care” tone of voice (or the coaching) that places the device at the center of the experience, which is based on outputs and guidelines, leaving the user in a passive role. Moreover, the focus on physical information was described when defining the characteristic of “Somatic care” makes the self-learning only based on self-tracking (body tracking), being the user depended on that quantitative information to define his health state.

Towards an empowering experience.

In Figure 36, Fitbit states that to improve yourself, you need to know yourself. The Fitbit approach to empower this self-knowledge is through physical information. However, for personal change or improvement (such as fitness improvement), not only a physical transformation, but a physiological transformation is required. Therefore not only qualitative data is needed to empower the user but also is needed to support physiological awareness.
This is explained with the concept of "Transformative experiences". Transformative experiences change our self-world (Gaggioli et al., 2016) which can result in profound and long lasting reestructuration of our worldview (Miller & C'de Baca, 2001). This type of experience fits in the project since prevention is not only doing a temporary activity but learning how to live healthier. For that transformation, the user not only needs to do an activity but change his lifestyle values. Aligned to that, transformative experiences are defined as an "a perception of the discontinuity between the present and the past self, in terms of beliefs, character, identity, and interpersonal relationships" (Gaggioli et al., 2016).

This change in self-world can't be empowered only by giving physical data. For empowering the user to adopt a healthier life, not only physical awareness is required, but also psychological. Therefore health improvement no is only seen as a physical improvement but as personal growth. Concluding, fitness trackers are empowering users to improve their health when focusing on self-growth, were not only physical data is required but is also needed to support physiological awareness.

Since empowerment is directly related to self-growth, it can be measured by what leaves on the user when the intervention disappears (personal transformation).

Figure 36 Fitbit advertisement.

In conclusion, fitness tracker technology can't empower the user to build a healthier life by giving only physical quantitative data. Since building a healthier life requires not only doing new activities, but a personal change on beliefs, character, and identity (such as developing more self-control, or caring about food ingredients) it requires also personal growth since is a transformative experience.

Therefore, fitness tracker creates an empowering experience when supports the user in self-growth by enabling the individual to take an active role in self-awareness from not only a physical but also a psychological perspective since both take part in adopting a healthier behavior.

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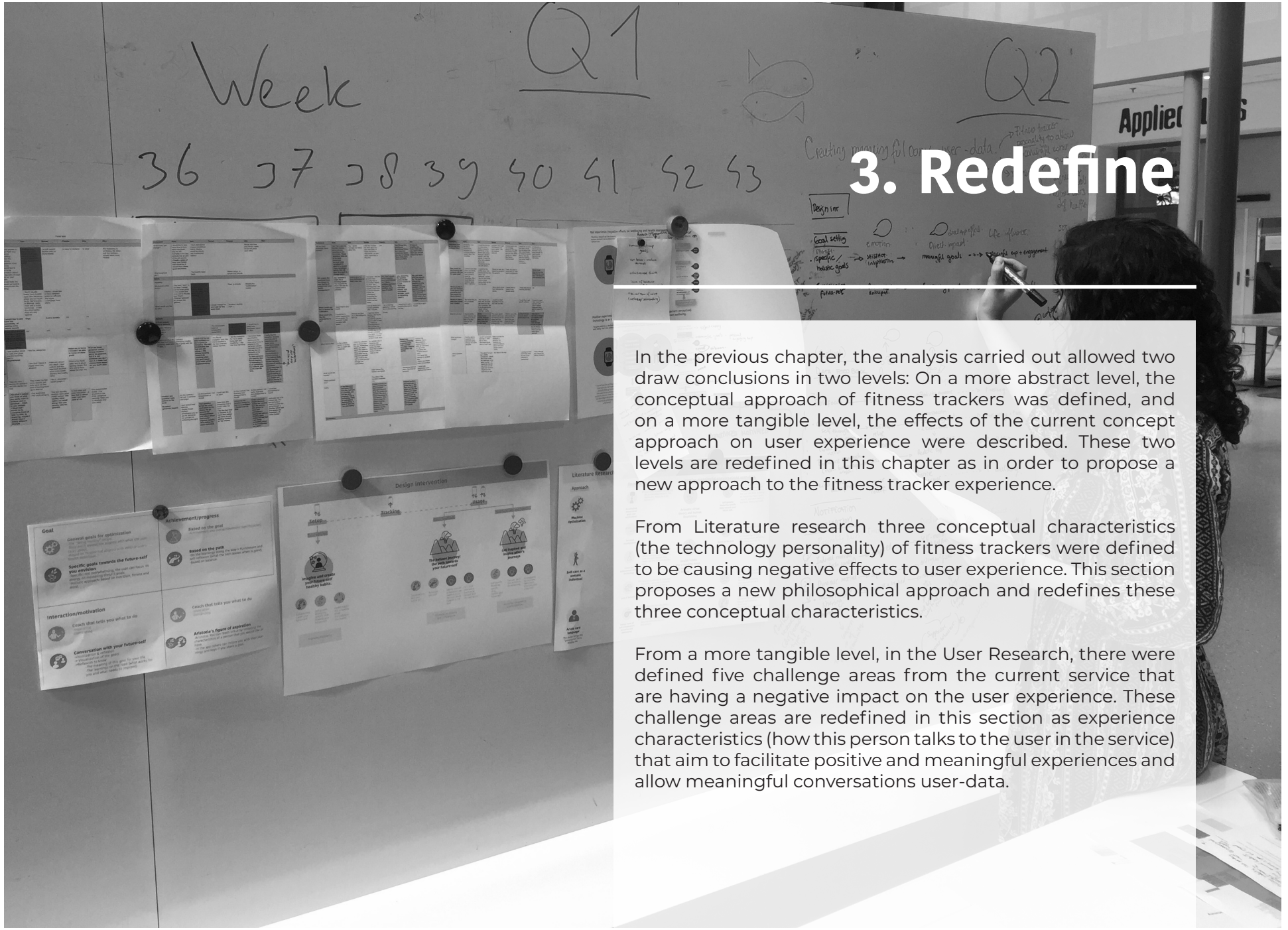

3. Redefine

In the previous chapter, the analysis carried out allowed two draw conclusions in two levels: On a more abstract level, the conceptual approach of fitness trackers was defined, and on a more tangible level, the effects of the current concept approach on user experience were described. These two levels are redefined in this chapter as in order to propose a new approach to the fitness tracker experience.

From Literature research three conceptual characteristics (the technology personality) of fitness trackers were defined to be causing negative effects to user experience. This section proposes a new philosophical approach and redefines these three conceptual characteristics.

From a more tangible level, in the User Research, there were defined five challenge areas from the current service that are having a negative impact on the user experience. These challenge areas are redefined in this section as experience characteristics (how this person talks to the user in the service) that aim to facilitate positive and meaningful experiences and allow meaningful conversations user-data.

3.1. Approach proposal to fitness tracker experience :How to create meaningful conversations user-data

3.1.1. Recap

The briefing of this project introduces that the industry of fitness trackers is technology-driven. The lack of focus on the user is evidenced by a generalized way of providing information and experiences (Ellis & Piwek, 2019), which leads to a non-meaningful experience for the user.

The briefing also raises that fitness trackers want to represent the user's wellbeing, but only represents the physical state of the individual, failing in communicating the whole picture of the user. This lack of identity regarding the data results in meaningless information and in an easy-to-be forgotten device, which affects the user's engagement.

However, during the research, it was found that the effects of this "meaningless information" not only affects the engagement of the user with the technology (and therefore with the adoption of a healthy lifestyle) but also can have a negative effect on the user's wellbeing. The factual information can be perceived as cold and emotionless, generating negative personal experiences since in certain contexts such as in periods stress). Under this context the user can feel that the fitness tracker is another to-do list that he hasn't been able to perform, this leads to a personal concern of not feeling good enough.

The focus of this project has been to understand how the data, rather than general and superficial, can be meaningful for the user, creating a positive experience that can increase the engagement with the fitness tracker, leading to a long-term commitment in the adoption of healthier lifestyle decisions.

The analysis made through "Literature Research" and "User research" has provided an understanding of the why of this generalized approach and technology-driven experience. Moreover, there haven been identified and described five "Challenge areas" to develop in order to reach the goal of the briefing: Create meaningful conversations user-data.

From the analysis made, it has been found that the Technology-driven focus of this industry was originated in the "Machinery optimization approach" and the focus on "Somatic Individuality for self care" (see "Literature Research" column in the Figure 34, this means that the individual self-care is assessed by his performance in fitness. In specific, in the User Research, there were reported five elements that were linked to this approach and were affecting individuals wellbeing, engagement, and creating a meaningless experience for the user.

These elements were called "challenge areas" (see "Challenge areas" column in Figure 34. Following, the challenge areas and the insights for the project are described.

Insights from Challenge areas:

Meaningless and impersonal goals / notifications

The goals are not aligned to what matters for the user. Offering the user a more holistic and personal approach to goal setting would increase the experience meaning.

Perceived lack of control: Since there is not a personal involvement: The user feels that his satisfaction his based on the results of self-monitoring. However, the user reported to have a satisfactory experience not when doing something good or bad regarding the criteria of the device, but his satisfaction was defined by making conscious decisions that are aligned to what matters for them. Supporting the user to be aware of his own excuses for health management can not only empower the user but also make the experience more meaningful.

Lineal and achievement-driven technology

The current experience is based on achieved/ not achieved. The user feels powerless and doesn't feel supported in low moments. These personal experiences harm engagement with technology and the individual's self-steem.

However, embracing and supporting the low points in the experience can increase the user's engagement as well as focusing on the process instead on the achievement.

Lack of balance

Fitness trackers only look at fitness. But that is not aligned with the user's value of health. For the user, taking care of himself through fitness is as important as taking care of himself by keeping a healthy mind and healthy nutrition. Moreover, the current focus on fitness harms the healthy balance of the user. The reason is that the device makes fitness goals tangible,

so fitness gains priority in the user's mind over other health aspects. This causes the user to neglect and downplay to other health aspects such as mind or nutrition. It has found in research that users often compensate for fitness achievements by unhealthy nutrition choices. Giving a more holistic and balanced approach to health would not only bring benefits for user experience but also to the user's wellbeing.

Moreover, Literature Research showed a power imbalance in the current user-tracker conversation due to the ""acute care" tone of voice characteristic from the devices. (see "literature research" column in Figure 34). Comparing the "acute care" language with a conversation (the goal of the the project assignment), a conversation is the continuous interaction of inputs and outputs based on various elements, in this case, person-tracker.

However, this experience (as mentioned in the briefing) is technology-centered, in this experience the device brings a prescription for the user to achieve a healthy life, but the user is not involved in a conversation or negotiation with the technology.

Trainer tone of voice

This "acute care" tone of voice is reported in the User Research as a trainer that although is friendly, is also imperative, intrusive and demanding (these are all output elements). Which generates frustration in the user making him feel powerless, carrying a passive role in the interaction with the device.

3.1.2. Proposed approach.

The proposed alternative for the approach to the experience of fitness trackers aims to improve the experience in terms of positive experiences (increasing the wellbeing of the user and generating positive emotions) and creating a meaningful experience for the user. As defined in the briefing, is expected that positive and meaningful experiences will increase the engagement of the user with the device and therefore the engagement to the development of healthy habits.

First, the characteristics of the proposed approach are going to be defined and described. Moreover, in the description of the "Challenge Areas," it was frequently mentioned that the experience was disempowering for the user, for this reason, it has been considered important to introduce a definition of user empowerment for the alternative approach proposed.

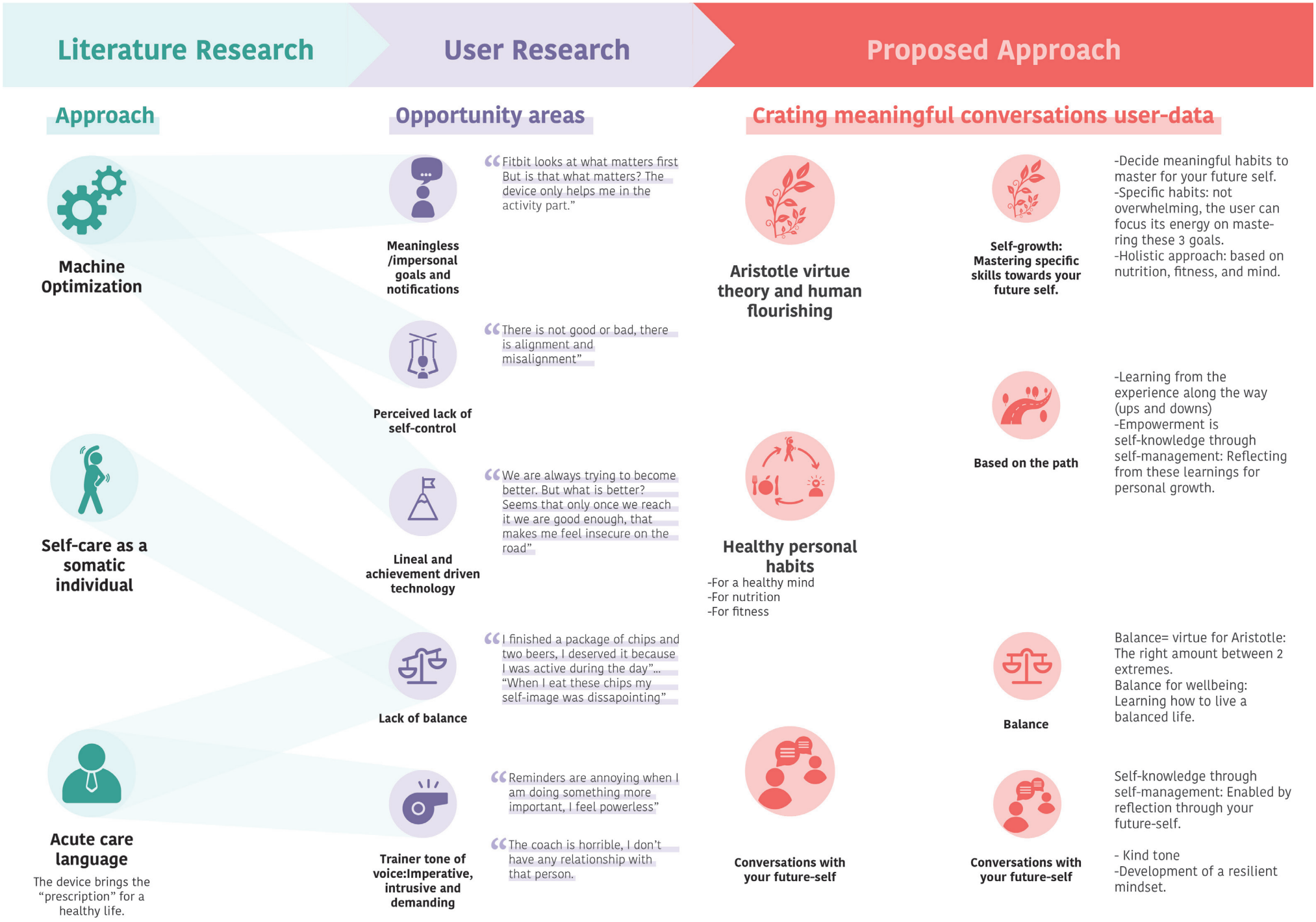

Figure 37 The proposed approach in comparison to the current approach.

Conceptual characteristics of the proposed approach

As depicted in the in the Figure 37, the conceptual approach proposed is based on Aristotle's theory of Virtue, and on the Health definition and concerns defined by the user in User Research.

Philosophy Approach: Aristotle Virtue theory and human flourishing

Without going into detail about the Aristotle 's Virtue theory (Nicomachean Ethics, 1999) the key elements of this theory that have driven and inspired this approach are going to be explained. The key point of the Virtue Theory that is introduced in this section are: A live well lived, Dynamic goals defined for mastering yourself, A way of living: learning new skills through the experiences on the journey and Virtue is a balance.

These aspects of the Virtue Theory have been the inspiration for the "Characteristics-key elements" (introduced after this section) that explains the components that the proposed experience alternative will have to tackle the challenge areas found. (Aristotle & Virtue Theory: Crash Course Philosophy #38, 2016).

A live well lived for Aristotle

In the "Literature Research" section was introduced the how in modernity, the philosopher Berson (Berson, 2015) defined that in this period of society, a good life started being defined by tracking and coding bodies for monitoring, assessing and modulating them.

On the other hand, for Aristotle, a live well lived (called eudaemonia) is human flourishing and is mastered through Virtue. Virtue is excellence, is mastering the art of being a good person.

Dynamic goals defined for mastering yourself

Here is important for the project the concept of "mastering", since indicates something continuous. For Aristotle living a eudaimonic life means that you are never done improving. Opposite to the goal-driven approach of fitness tracker, for Aristotle virtuous humans are all the time setting new goals and developing "new muscles" of their character. Moreover, these goals are personal and aligned with individual flourishing.

A way of living: Learning new skills through the experiences on the journey

Another important element of a eudaemonistic life is that facing disappointment and failure is part of the process to become virtuous. Virtue is a skill, a way of living that can only be learned through experience. Virtue for Aristotle is a knowledge called practical wisdom. The virtue theory embraces the journey and the lows as a part of human flourishing, something that is lacking in fitness tracker experience.

Similar to being virtuous, being healthy is also a way of living. It was noted during user research how for the users of fitness trackers, the steps made will become something to be reached and rewarded by an unhealthy action (for example an unhealthy snack), but the goals were not perceived as the development of new skills in a path for learning how to live a healthier life. Bringing this broader view to fitness tracker experience can increase the meaning of the user experience.

Virtue is balance and practical wisdom

For Aristotle virtue is the right amount between two extremes (deficiency and excess), this "right amount" point is virtue and is called the golden mean. For example, in the case of self-control, one extreme could be anorexia and the opposite obesity. Although it sounds extremes, during research all the users expressed several degrees of extremes, and only one was mastering self-control to understand when to have an unhealthy snack and when to have self-control.

Moreover, virtue is developed through experience and is about building character (of knowing what to do). This is important for the project since in research was found that the participants experienced frequently an impulsive decision-making, which lead to emotions of guilt and self-distrust about their health management. The proactive role of developing character can be applied in the project for self-management. Therefore, the users can learn from their mistakes and developing the "character" to self manage their health in any circumstance. For applying this approach, is needed from the technology to provide opportunities for self-reflexion during the journey. A user who develops this practical wisdom about his health management becomes more Autonomous and increases his Capabilities, that were two of the pillars of Self Determination Theory for motivation and engagement in activities.

Moreover, this envisioned user is more aligned with the proactive and autonomous role that primary prevention expects from the individual.

Health approach

As was presented in the Research findings, the participants described that to live a healthy life, three categories need to be in their achievements. Nutrition, Fitness and mental health.

Moreover, these categories were interdependent, therefore for a satisfactory healthy life, the goals related to these three categories would need to be promoted.

Finally, this approach to health is more aligned with the definition of health given by the WHO.

Language approach

The language approach has been defined to give a proactive role to the user in the conversation and to ensure the user's empowerment. It has been defined (section: "Insights for a new approach for fitness tracker experience.") that empowerment means to approach the experience as a transformative experience, where the user not only does a new activity but builds a healthier lifestyle. For that, the user needs to transform himself and acquire new values, thoughts, etc. This transformation requires self-growth and can be supported by psychological self-awareness. Therefore, the approach defined enables the user to have a proactive role by reflecting with his future-self through the process of transformation towards a healthier-self.

"Challenge areas" alternative approach

The proposed approach to the fitness tracker experience tackle the "Challenge Areas" found in User Research. The proposed approach is based on Aristotle's Virtue Theory o, on the definition of health of the WHO and the meaning of health of the user. Moreover, the language has been approached by conversations with a future-healthier-self and in specific, the tone of voice of the interaction has been based on the Buddhist concept of self-kindness for creating emotional resilience.

Self-growth: Mastering specific skills towards your future-self.

In this approach, a life well lived means human flourishing. Human flourishing brings personal (emotional) meaning to the experience since beyond doing an activity, it implies to build a healthier life.

The user will envision and define his flourishing by choosing specific habits that he wants to master for his future-self. The habits will be related to three categories: Nutrition, healthy mind and fitness.

The goal-setting and mastering will be dynamic since we are never done flourishing. Therefore once one goal is reached the user can choose a new goal to work on.

This characteristic is closely connected to the characteristic of "Conversations with your future-self" and therefore they are going to be connected and detailed when the "Conversations with your future-self" will be introduced.

Self-growth: Mastering specific skills towards your future-self.

In these characteristics, the main shift is that there is not a linear path expected, but ups and downs that are taken as a natural part of the process. This characteristic pretends to promote a resilient mindset by seeing a new habit as a new skill gained, as Aristotle introduces in the Virtue theory. These skills are mastered through experience

A new habit is not only physical performance but also requires personal growth. Therefore promoting a resilient mindset means to learn from ups and downs in the path by self-reflection. The data from fitness trackers can become a platform for self-reflexion, since they represent when you are doing better or worse at managing your health, and therefore when you are having lows and ups in the path towards your future self.

Supports the user, instead of only factual data a source of self-reflection empowers the user since promotes self-knowledge not only by self-tracing but also by self-management. Instead of only staying feeling frustrated by the factual data, reflecting on it can help to see that something can be done to improve his self-management. This means to reflect on what the user needs to improve as a person to gain the new skill and reach his future self, to flourish.

For example, maybe you want to adopt the habit of running weekly but for you are not being able

to do it because you are not being efficient at time management, or because every day that you are grumpy you don't feel like going. As a result your data will reflect a low in the journey, but reflect on these habits can help you to build a resilient mindset that takes you out from the emotion of frustration (I performed or not) to see it as a learning opportunity, this focus can connect the user with a more meaningful goal and therefore motivation, the path of personal growth towards the future self you envision.

Self-growth: Mastering specific skills towards your future-self.

This new approach tackles balance in two ways: Balance in health and balance in achievements.

Balance in health refers to take a more holistic approach of health, giving equal importance to fitness-related goals than to mind-related or nutrition-related goals.

Balance in achievement refers to the importance that the user gives to overviews over a number of daily achievements. If the focus is on building a healthier life and therefore on the path, the user should have an overview of his behavior over time. Moreover, this focus on the progress overview enables the user to have ups and downs in the way, and still positive feedback about his health management. Finally, focusing on this overview and the balance on the journey aims to facilitate resilient experiences, since a negative day can be balanced out through the time.

Conversations with your future-self.

Rather than feeling the surveillance of an external agent (as was descried by participants from their experience with fitness trackers), creating a meaningful convertation with these devices means that the user has is a proactive part of the experience and the data empowers the user by supporting the personal growth needed to build the new habit (as mentioned in the "Focus on the path" characteristic). The user gets a voice in this conversation by visualizing and interacting with his future-self. Moreover, the tone of voice of the interactions arebased on sel-kindness, since it has been found to lead to wellbeing and emotional resilience,

Visualization of your future self
Enabling the user to visualize his healthier-self will promote to start behaving towards the direction of your goals.

Several studies have shown that if an individual visualizes himself practicing a skill (or habit) visualization is as effective as real practice would be to develop this skill (Schacter et al., 2012). The reason is that when visualizing, same regions of the brain are stimulated as when we perform it, and same neural networks are created.

Moreover, visualizing an action communicates to the mind what to focus on (Schacter et al., 2012), There's a biological explanation behind this phenomenon, called the reticular activating system. This characteristic is important, since in User Research, the users reported that goals that are too broad are overwhelming. For example one of the goals of the Fitbit is to keep a healthy diet, which sounded too broad and overwhelming for the users. Maybe is hard for the user to visualize what to focus on when the goal is as broad as "healthy diet" making it overwhelming. Therefore, visualizing your future-self habits, together with choosing specific goals can support the user to focus his mind on this specific goal (for example, instead of "having a heathy diet", "having healthy snacks" could be a more specific and easy to visualize goal).

Self-reflexion with you future self: creates conversations user-data and allows resilient mindset

"Focusing on what hurts will cause you suffering, focusing on the learning will allow you to grow" -Walter Riso.

Allowing "self reflexion" with your future self during the experience promotes a intimate and meaningful experience user-tracker.

By allowing self-reflexion, the device becomes less controlling in the interactions in comparison with the "trainer tone of voice" and the user gets proactive role in the experience. Instead of telling the user what to do, the tracker asks questions to provoke the user to reflect on his behaviour. The individual can participate in the interaction by thinking by himself what is there to improve or do better next time.

This approach creates a more personalized experience, since each person will have different insights. Is important to know that this point was inspired in user research, since during the interviews it was noted that the users were very creative and excited by in finding new alternatives of managing

their goals, however, this “talent” was not being enabled by the technology by sparking reflexion. In conclusion, the device becomes an enabler of personal reflection for self growth, which creates a more intimate and therefore meaningful experience than a external coach. Moreover, since avoids suffering by turning the low moments into learnings, the experience of the user will be positive for his wellbeing.

Kind tone

Finally, conversations with your future-self from a kind tone of voice has been found to have a positive effect on the user and his wellbeing.

Self-kindness derives from the Buddhist concept of self-compassion, and refers to acting in kind an understanding ways towards ourselves. For example, instead of being critical, as was reported in user Research with quotes as the following “I felt I fool myself” -Le, ... “I felt I can’t do it”... “I feel absolutely guilty and dirty... Why did I do it?”-M, with self kindness our inner voice is supportive and warm, bringing a growth mindset.

It has been researched (Neff-2009) that self-compassion has several positive consequences. For this project is interesting to highlight the benefits that self-compassion and self-kindness brings to wellbeing, which include higher life satisfaction, emotional intelligence, wisdom, happiness and optimisms. Moreover, it is also associated with less self-criticism, anxiety, and fear of failure (Neff, 2011),among others.

Self-compassion and self-kindness leads to emotional resilience, and therefore promoting and designing from this tone of voice for the fitness tracker experience can lead to a more satisfactory experience for the user and facilitate the long-term engagement. Finally, a kind tone of voice will promote personal growth.

4. Design

The previous chapter proposes a new approach to the fitness tracker experience in which the personality of the device is redefined as well as the experience characteristics. In this chapter this new approach is translated into a design proposal that aims to create meaningful conversations user-tracker and have a positive effect on the user's wellbeing and engagement.

Previous to the final design, two ideations iterations were carried out. The first one was done through a creative session that aimed to zoom out from the assignment scope and obtain as many ideas as possible as well as insights for the design called "golden rules". In the second iteration, the design assignment was brought back to converge from the first ideation process and choose a selection of ideas to apply to the design proposal for the service. Finally, the chapter presents and details the design intervention that tackles the assignment of the project, and that is based on the proposed experience approach.

4.1. Creative session

4.1.1. Previous steps

Before describing the creative session, it is important to state the values and key words that were obtained from the Proposed Approach, that enabled to zoom out from the design assignment to generate ideas from a broader perspective, but that could inspire in a later stage the generation of specific solution for redesigning the experience of fitness trackers. For this purpose there were defined keywords, key values and How-tos.

Keywords
The keywords defined for the idea generation were: Awareness, reflexion, Balance, Tangible and Dynamic.

Key values
The keywords defined for the idea generation were: Resilience, Kindness, Personal growth, Self esteem, Responsibility.

How-tos
The How-tos were obtained from the challenge areas found in the Analysis phase. Some of them are specific and other broader, this diversity allowed the designer to switch the focus, having a variety of focus to spark creativity in different ways. They are:

How to create stop-&-think moments in everyday life?

How to raise awareness about future-self health habits during everyday life in a non-intrusive way?

How to give feedback overview about the state of balance in everyday life?
How to communicate personal balance?

Design goal
Finally, a design goal was defined for a later stage in the ideation process. The design goal defined was:

Encourage the user to build health & wellbeing habits by enabling reflexion to raise awareness about his health management during the day

4.1.2. Creative session

Introduction

Goal of the session

The goal of the creative session was to broaden the horizons of the solution space. Having as participants professionals of either the same and different backgrounds and who were not involved in the project will bring new and fresh perspectives to the solution area, allowing the researcher of the project to look at the design goal with a more open mind.

The second goal of this session was to understand and discuss what was valuable about the ideas generated and learn about key elements to take into account for designing. These key elements are called “Golden Rules”

Finally, as a general goal, it was enriching for the research to learn from the participant’s perspective and open up his mind about different perspectives that the project could have regarding the output of the participant.

Participants

There were two creative sessions conducted, the first one was a pilot session, although the results were as valuable as the second creative session.

Since the first session was a pilot sessions, consisted on three participants who’s background was in experience design and had experience with creative session. The goal of this target group was that they could give feedback to the researcher in order to improve the structure and management of the session.

The second session included seven participants. Two of then were from a non-design background, one participant was from a background in architecture and one participant had a background in art, there were both working in a project about emerging technologies. The rest of the participants had a background in design but from different perspectives such as behavior change or social design.

The session had two hours of duration and was organized in three main sections. Firstly the researcher will make an introduction to the structure of the session and the topic. Secondly there would be a first activity of brainstorming for diverging, and afterward, converge the results of the ideation into “golden rules” that the design should follow.

In the phase of the session, the design goal and values of the project would be introduced and the participants should come up with concepts combining the ideation of the first brainstorming activity or developing new ones. However, the definition of the “golden rules” generated a rich discussion and therefore it took longer than expected. In consequence, the second part of the session was not carried out. However, the values were discussed. This was a positive event since the main goal of the session was to broaden the solution space, and the brainstorming activity together with the considerations made in the discussion of the golden rules brought rich and creative directions.

Structure of the session

The session had two hours of duration and was organized in three main sections. Firstly the researcher will make an introduction to the structure of the session and the topic. Secondly there would be a first activity of brainstorming for diverging, and afterward, converge the results of the ideation into “golden rules” that the design should follow.

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Session

The session was structured as follows.

Section 1: Introduction

In this section, the first five minutes were focused on welcoming the participants and introducing the goal and structure of the session.

Afterward, there were 15 minutes to introduce each other and to make a general introduction to the project assignment. The goal was to enable the participant to empathize with the target group researched. The challenge areas were not detailed to keep an open solution space. Finally, some rules were given to ensure a structured session but also to encourage the participants to have a creative and intuitive mindset.

Section 2: Brainstorming and "golden rules".

Activity A. Brainstorming with how-tos' 6.3.5. Total of 10 minutes

This activity is aimed to stimulate creativity and generate a big number of ideas. In brief, consists of 6 participants that are required to write down 3 ideas on 5 minutes, when the time is done the participant passes the sheet of paper with his ideas to the next participant who can either build on the ideas of the previous participants or have new ones.

The brainstorm (Figure 38) structure was based on how-tos found. The goal of these how-tos was not not to apply directly a design solution but to discover different solutions spaces to be inspired to generate specific solutions in a later stage. The how to's have been defined in the section "4.1.1. Previous steps".

Activity B. Selection of favourites ideas: Total of 10 minutes.

All the sheets of paper with the ideas generated were placed on the table, and the participants were invited to, in silence, mark with green stickers his favorite ideas by following their intuition (Figure 38). One guideline for selection was "You can choose, for example, the ideas you would invest in, or you would like to develop further". Once done that, they were invited to write in a post-it why they though each idea was valuable.

Activity C. Discuss and convey golden rules

After knowing the problematic, the how to's and having though and chosen the most valuable ideas, the participants have got some learnings that are interesting to convey as "design guidelines" that the researcher can follow in further steps of the design process.

The participants were invited to discuss their leanings (Figure 40), and together elaborate a list of golden rules for going further in the ideation process.

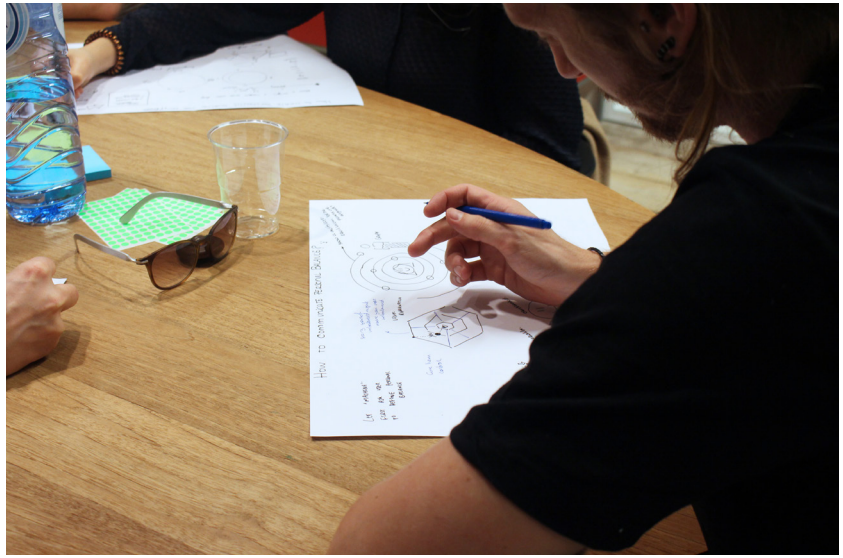


Figure 38 Activity A.

Figure 39 Activity B.

Figure 40 Activity C.

Outcomes

Introduction

From the ideas generated in the creative session, the researcher applied the design goal and then generated ideas based on the inspiration obtained from the activity with the participants. These ideas are summarized and categorized in the Figure 43. Moreover, some of the concept directions of the generative session were interesting to add directly to the matrix, so they can also be found in the figure.

The goal of the project is to create meaningful conversations user-data. Therefore the ideation has been categorized regarding three variable: The first variable are the "how to's" that they belong to (the how to's were introduced in the "Activity 1" of the previous section). The second variable is the degree of conversation product-user that the idea generates. The third variable is the type of meaning that the concept creates in the user. The meaning has been distinguished between intangible and tangible meaning, depending if the idea intentionally provokes personal reflection or not. These categories are going to be defined, explained, and supported with examples in this section.

Finally, in the session there were some "golden rules" defined by the participants to take into consideration for the next design iterations. This golden rules are described in Figure 43 at the end of the visual. In this section this rules will be introduced and described, making emphasis in how its application can add value to the next concepts.

Since the visualization of the Matrix was too big for the report, the details of the golden rules are available online in the following link.

https://bit.ly/2IvOTDA or by scaning the following QR code.

Idea categorization

To categorize the ideas and ensure to make them aligned to the research findings, 3 elements structured the matrix:

-How-tos

-Tangible/intangible meaning
Solutions that created tangible meaning (purple rows), and solutions that created intangible meaning (green rows).

The concept of tangible/intangible meaning was obtained from an interview with the design for meaning expert Mafalda Casais. Is important to make this differentiation, since currently fitness trackers are based on activities (tangible or functional meaning), but lacks personal meaning for the user (intangible psychological meaning). Intangible-meaning solutions are the ones that intentionally trigger the user to reflect on the meaning that a specific element (object, activity, etc) has for his life.

-Level of control on the interaction
For each meaning, it was differentiated the level of control that the user had over the interaction to understand if the solution could enable a conversation. Currently, the conversation user-tracker is blocked since the tracker has control over the experience, therefore a conversation is possible if the two agents are able to participate in the experience. These are the "Middle control" solutions . (See "Middle Control" in Figure 42).

For example, in the Figure 42 depicts a "control" solution. If the user writes a motivational quote in a posit and places it in his desk. In this solution, the user has full control of the experience and neither the posit or the quote written can react. Therefore is not possible to build a "conversational interaction", therefore this solution is a "control" solution.

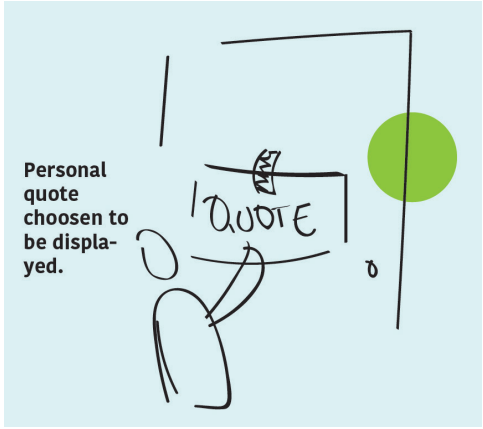
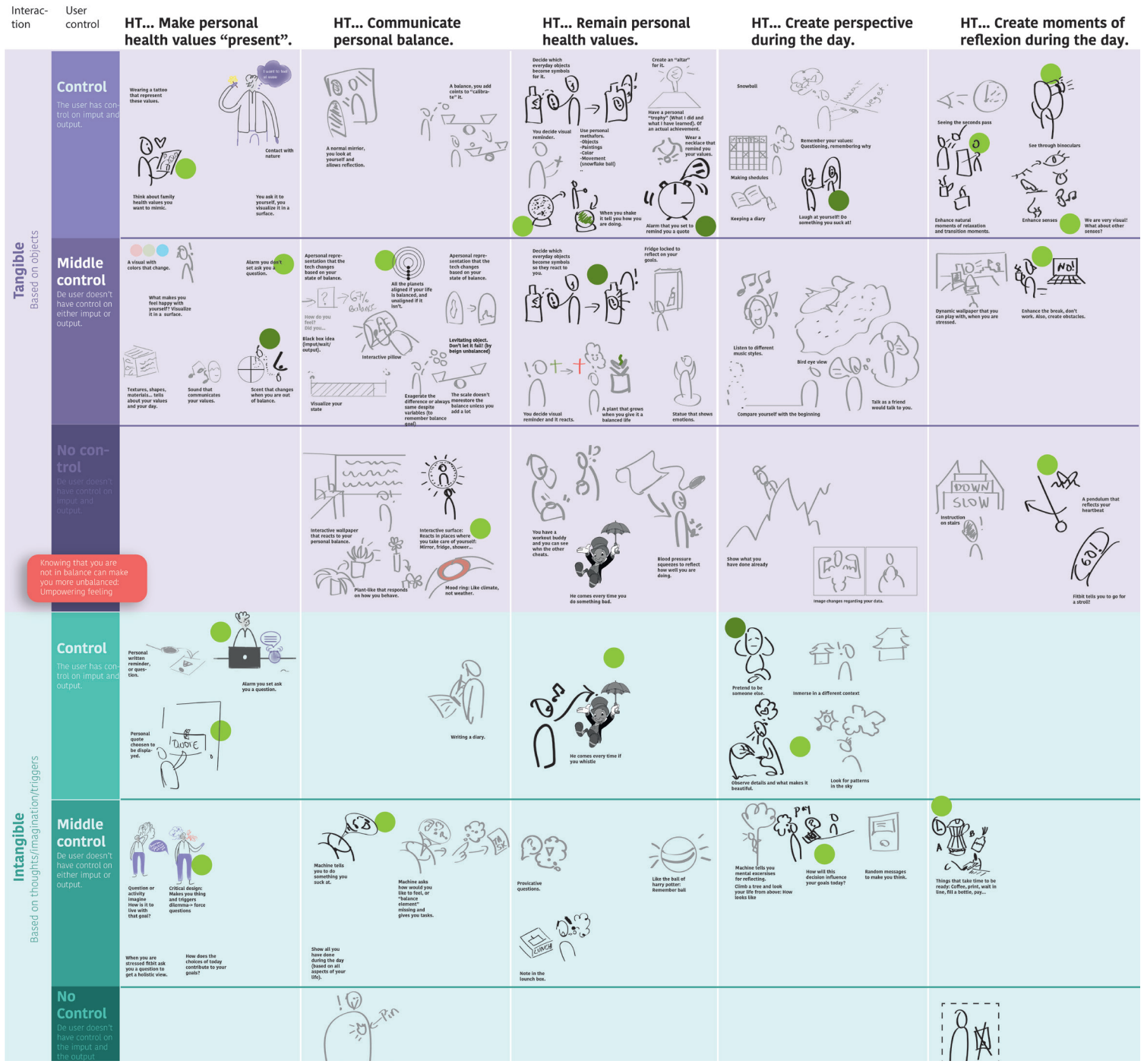


Figure 42 "Control" idea.



Favourite concepts in generative session based on : Kidness, source of inspiraation and user empowerment.

Key elements from concepts to apply to the How to's

Figure 43 Matrix of ideas.

On the contrary, the solutions grouped into the category “no control” were the solutions which its experience is based on the output of the product, and therefore no negotiation or input from the user could create a conversation user-machine. For example, the Figure 44 depicts one of the “No control” solutions. This idea is a plant that reacts to the user’s health state. If the user hasn’t achieved his goals the plant looks dried and lifeless., but the user can’t negotiate on this product input, which is similar to the current interaction.

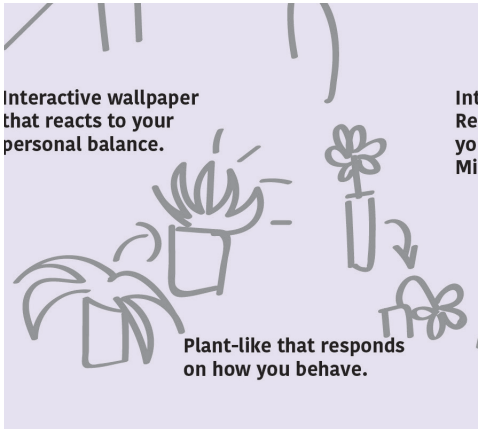


Figure 44 “No control” idea

Finally, the solution category that is more interesting for this project are the ones that create conversation, this solution space is called “Middle control” in Figure 43. This means that neither the user or the machine are passive agents, on the contrary, both generate input and output based on the other. In a conversation, both parties have a middle level of control and influence over the interaction but none full control, this is the reason for the name given for this cluster.

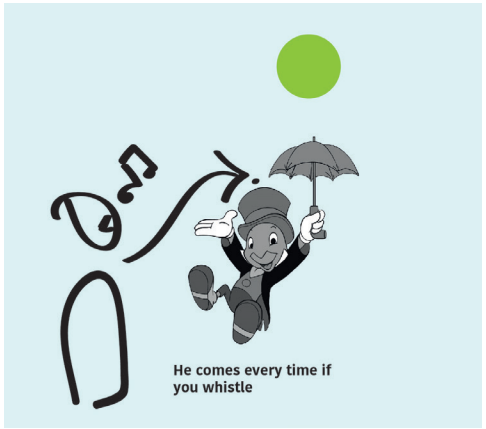


Figure 45 “Middle control” idea

One example of this category is the “Jimmy cricket” idea (SEE IMAGE BELOW), in the story of Pinocchio, the character will appear whenever Pinocchio would do something bad and will appear as his consciousness. This direct translation would be in the category of “No Control” since the user could not have any influence on the interaction, the cricket will appear any time the person is not doing well. For example, in the case of the Fitbit, there is a similar interaction, a character appears automatically to remind the user to do the steps.

However, in the idea proposed for the “Middle Control” category the cricket only appears to give advice when the user whistles for help. This idea was though for the moments that the user is having a tough time keeping his goals, in these situations he can whistle for advice or motivation, and also react to the motivation (if he liked it or not), so the machine will learn with kind of motivations work for them. This idea generates a “conversational” experience user-machine, where both parties have a certain level of control and can react to the other.

The goal of this section was to introduce how the ideas generated by the participants of the session and by the researcher were categorized and organized. In the conceptualization phase, more details about the ideas that were chosen for generating concepts will be explained.

Golden rules

From the brainstorming activity, all the ideas were gathered and the participants choose they favorite ones. Afterwards, they explained and wrote down the reason why they found the ideas chosen valuable. This introspection instigated a discussion about the key elements called “golden rules” that should be taken into account when designing the final solution.

If a trigger is visible or the user all the time the effect will be short-term. Is better to create interventions that are surprising and/or occasional to make it exciting and new.

Analyzing the ideas, it was found that design interventions that are sporadic or unexpected (and generating possitive emotions) would have a more sustained impact on the user. For example, if the quote that is placed in the wall disappears and is only shown when the user is not in balance, the quote could have a bigger impact on the user than if it is always visible.

For a kind experience: Don’t be too serious about it! and use metaphors.

The factual data can create a negative impact on user experience. Humor can be a creative way of approaching feedback since the user can laugh about himself and being aware of his performance without feeling forced to do it. Humor can also associate health (especially prevention) with something fun, instead of something serious and risky. Finally, they also pointed out that when you laugh about yourself you are more likely to try again.

The goals should be personally relevant and choose by the user

The participants though as users, that the more personal the goals would be, the more committed they would feel to work on them and the more engaged they would be with building a healthy habit. On the other hand a list of given goals would feel forced and impersonal (as was also found in research).

The user can’t feel pushed to do something: Try inspiring instead of demanding interactions

The participants of the session discussed that if you feel forced to do something you are less likely to do it, and also can create a lack of engagement. This is the case when the interaction is very direct, in this case, the user feels guided rather than autonomous. The interesting thing is that sometimes the user can feel forced to do something but the interaction did not intend that demand. So the feedback of the user about the effect of the interaction is crucial to ensure that a kind experience is communicated.

Seeing yourself imbalanced can make it worst motivation wise

Many ideas were based on communicating the personal stage such as the plant that reacts with your health performance. However, the participants reflected on the fact that if the user sees that he is not having a balanced day or is not keeping his goals, that can create a lot of demotivation. Therefore, even numbers or objective information that represents low performance can be objective from a machine point of view, but in the user is subjective, and generates demotivation. In conclusion, when the information presented is negative (even if is objective information) the user would need to be motivated somehow.

4.2. Design iteration: goal-setting

Test and online survey

This section will introduce and detail the design intervention for redesigning the experience of fitness trackers. Before introducing the concept, a design iteration was done to understand better the "Goal setting process" and test some assumptions. Therefore before introducing the design intervention, this design iteration is going to be briefly introduced and the outcomes will be described. Afterward, design intervention will be detailed.

Design iteration "Goal setting"

This iteration consisted of two parts. On one hand the participants were given a concept to experience it for a week and afterward an interview was conducted to get the participant's feedback, On the other hand, an online survey was conducted to validate some research findings and also to understand which kind of goals the target group would like to set for living a healthier life.

Concept experienced by participants

Introduction

This intervention served to explore the "goal setting" from the user perspective. The aim was to understand if setting personal goals had a possitive influence on the experience, and how many possibilities of goals would be optimal to give to the user to bring a positive experience since there is the risk that too many options can make it overwhelming. Finally, the interviews also served for learning unexpected findings of "goal setting" that could be applied to the final intervention.

Introduction

Activity -Part A

The e participants were given a set of stickers with happy faces, sad faces, an circles with a space to write something on it . The participants were asked to define 3 goals for their health that they would like to achieve and assign one of these stickers to each of the goals. The goal of this assignment was to understand if, in the case of choosing, the participants prefer something given (like the faces) or to personalize their experience adding their own motivational quotes for example.

Activity -Part B

The participants were invited to use the stickers pasting them in a place that they will see when working on their goal. For example, one participant placed the sticker in a notebook since her goal for a healthy mind was to "write in her diary", another participant stuck it in the entrance door since her goal was to "go for a walk after work", and another participant pasted the sticker in his walled since his goal was to "not having unhealthy snacks". This activity followed the objective of understanding how this level of freedom would influence the experience (either positively or negatively) and if would have any value that the goals would be connected to objects.

Learnings

Among all the insights gained through this experience, this section will describe the key learnings that were applied in the final design intervention

1. Specific and personal goals based on the categories "fitness, healthy mind and nutrition" have a positive impact on the experience for the following reasons

-Doesn't feel overwhelming: They can put their focus on working on a very specific habit."I feel good that I got the opportunity to prioritize a goal. Feels good to focus on that, otherwise is overwhelming" (Participant At).
-The categories of "healthy mind, nutrition and fitness" help to make it specific since narrow them down.
-Being able to choose specific goals to work on personalizes the experience and makes the goals more meaningful for the user, that also increases the user's commitment to the goals set. "I choose goals aligned to my personality"(Participant M).

2. Frame the goals in positive: For example "I want to have healthy snacks" instead of "I don't want to eat unhealthy snacks". This framing brings two benefits.

-Framing the goals in positive avoids the feeling of extra punishment. "I don't want to have unhealthy snacks" make the participant feel bad about what he is depriving of.
-Framing the goals in positive focuses the user's mind on the healthy habit, instead on the unhealthy one.

3. The feedback needs to be proactive and support the user in the low points.

When the feedback is passive in the lows (when you didn't keep up your goals) feels like an extra punishment for the user "I did feel that I was disappointing the sticker when I was not doing the activity".... "reminds you what you are not doing, felt frustrated (Participant P). This insight

aligns with User research.

4. Positive effect of a non-intrusive buddy.

The characters on the stickers felt like a buddy in a non-intrusive way (for example, a coach would be intrusive, because is guiding the user through communicating reminders and tasks constantly). “The happy sticker next to bed feels like company in a non-intrusive way” Participant Ma.

Survey

An online survey named “a meaningful life” was conducted. The survey was focused on understanding which was the keys for a healthy life regarding the participants. Moreover, the survey also served to the purpose of validating if these concerns followed the structure found in Research about the 3 categories of health concerns: healthy mind, fitness, and nutrition. (For more details about the survey see Appendix 4).

The survey was anonymous and 39 people participated in it. From their an
swers, it was possible to obtain the following learnings.

Learnings

1. Most of the participants (65%) mentioned three aspects of the key pillars found in research as key elements for a healthy life .

None of them focused only on fitness, and all focused at least in two of the three pillars (mind, body and nutrition). As examples of these keys described, a participant mentioned that for a healthy life, it was key “Strength, (good) nutrition and happiness”.

2. The meaning of health for participants is that is a source of energy with two effects: One to recharge and the other to experience joy and happiness.

Several participants noted these aspects as the meaning of health for them, one participant reported that the three key goals (based on the health pillars from User Research) “charges me to perform during the day”

3. The meaning of health has a direct relation to work/life balance for the participants. Health is related to self-care (not to performance).

This insight also aligns with the User Research findings. For the participants, health is not related to performance but self-care and wellbeing. The word “balance” was often specified in the survey. For many participants, doing things for keeping a healthy mind and a fit and well-nourished body will bring them joy and energy balancing their life from stress (and work in specific).

To the question, a participant mentioned that for him was important to have enough sleep, do regular exercise, eat low in fat and salt, and being close to nature because then he will have the energy to work and keep a balance from work life. Another participant expressed that his goals of health were important since “They keep me away from work”

Conclusions

This survey validated the insights found on User Research, were the meaning of health for the participant is builded on three concerns: nutrition, mind and fitness.

Learned that health is more related to self-care and joy than performance Probably this is the reason why in research the approach of the risk factor management that focuses health in a to-do list and performance had a strong negative effect on the experience of the participants. If I could describe a final definition of health from the participant’s perspective would be:

Health is the self care that recharges the individual through three main sources of positive energy (mind, fitness and nutrition) bringing wellbeing and balancing out the individual from the “stress life” (for example work). Since is a source of positive energy for the individual, the health habits have to be defined and selected by the person in order to have the optimal effect on his wellbeing.

4.3. Design itervention

4.3.1. Design introduction

The design intervention narrates the story of a user that envisions three habits that his future-self will have, and starts the journey towards his future healthier self.

The data tracked by the fitness tracker will become the journey that the user will experience. The journey progresses when the balloon moves forward, the progress is possible if the user is keeping balance by working on his healths habits envisioned. The device will track these goals and translate them into the wind in the app, which propels the balloon to move forward (see Figure 46).

The balloon will reach the future self once have collected ten elements from his journey towards his future-self. The collectibles will appear during the journey when the user will have ups (keeping a balance in the habits envisioned) and downs (not working on his habits) in the usage (visualized in the top right corner of the smartphone app in Figure 46).

When the participant experiences two or more imbalanced days, the balloon will not have wind to propels it to fly and will stand in the floor. In this situation, a key will appear (visualized in the land of the smartphone app in Figure 46). On the contrary, after several days in balance, the participant will be able to visit a new mountain and collect a flag.

These collectables only can be caught if the user wants to answer to a question that the service will display (as shown in the smartphone app in Figure 46). The questions will enable the individual to either reflect on how to grow to improve in his habits (during imbalanced periods) or discover what is he doing better or what is influencing to keep a balanced life.

Finally, the user can share his experience or learn from other's experiences by having unexpected visitors through his journey that has envisioned the same habit for their future selves. People with the same habits will be able to learn from each other's journey by exchanging the insights learned through the questions displayed. (see the smartwatch app in Figure 46).

The following page details the design intervention and its connection with the Approach proposed in the previous chapter.

Figure 46 Design solution. App main screen and smart watch notifications.

4.3.2. Design description

In order to explain the design intervention in detail, the structure of Figure 47 will be followed, and supported by storyboards to guide the explanation through the usage. The design intervention will be explained following the three concepts that construct the app. These three concepts have been designed to tackle the three problematic areas found in User Research, which were Goal setting, Data feedback, and Notifications for motivation.

A. Goal setting (service setup): Design intervention "Imagine and create your future-self healthy habits".
B. Data feedback (service usage): Design intervention "The balloon journey, the path towards your future-self."
C. Notifications-motivation (service usage): Design intervention "Get inspired and inspire other's journeys".

For detailed information about the app structure and the interactions, see Appendix 5.

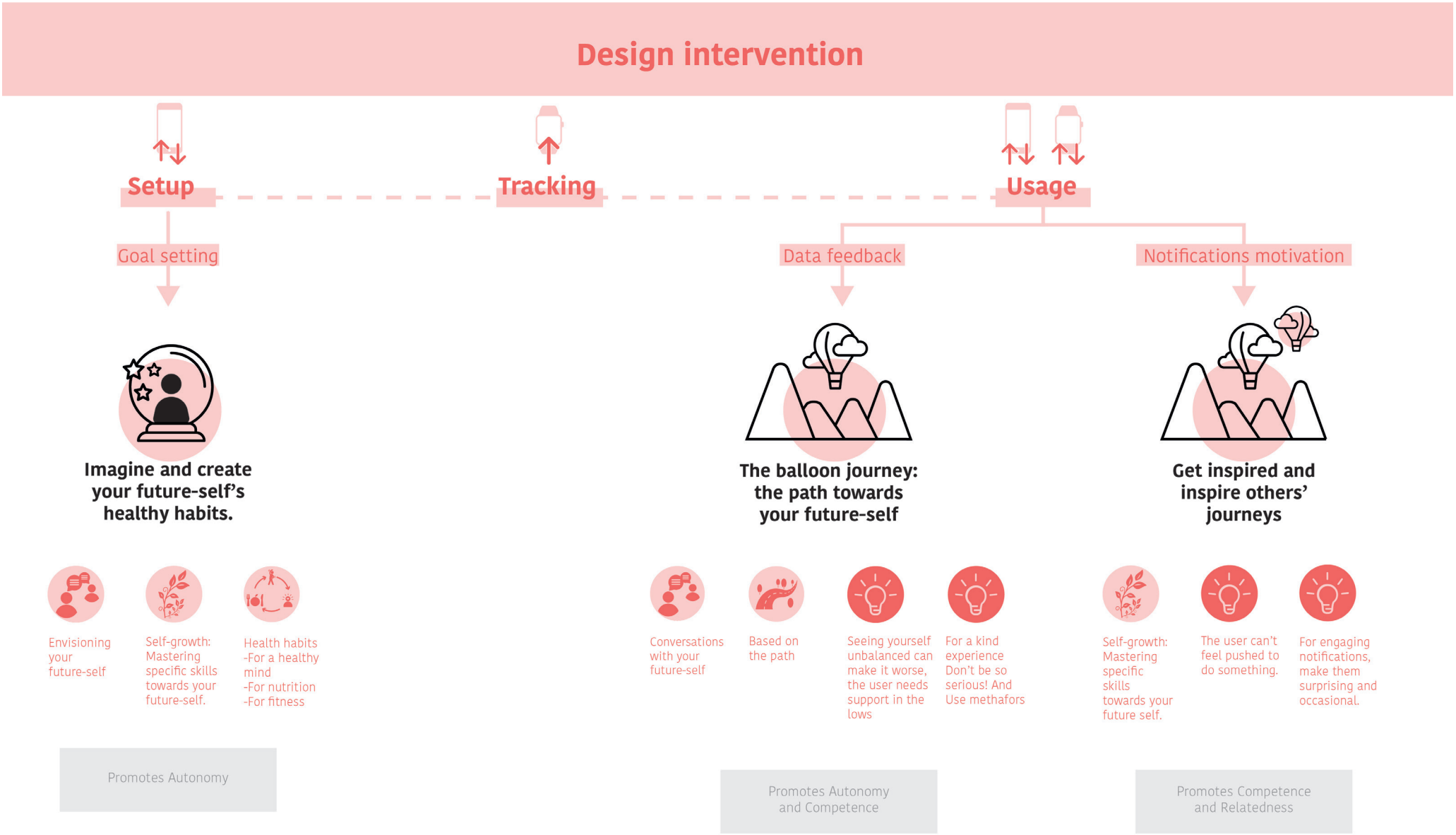


Figure 47 Overview of the concepts of the design intervention, the insights applied and its effect on the SDT.

Storyboard

Figure 48 describes the setup of the service stepwise, where the concept "Imagine and create your future-self habits" has been implemented. For setting up the service, the user can start by designing his character by selecting its physical attributes. Afterward, the user can introduce his personal data (such as weight or height). Finally, the user can imagine which healthy habits his future-self will have by choosing three habits, one for each category (healthy mind, fitness, and nutrition).

The user not only can select a habit that his future-self will have, but also the frequency. Moreover, the service recommends a frequency for each goal to inspire the user. For example for the healthy mind habit of reading, the service recommends to the user 30 minutes a day. In the section "Concept development details" will be described the habits for each category as well as the frequency recommended.

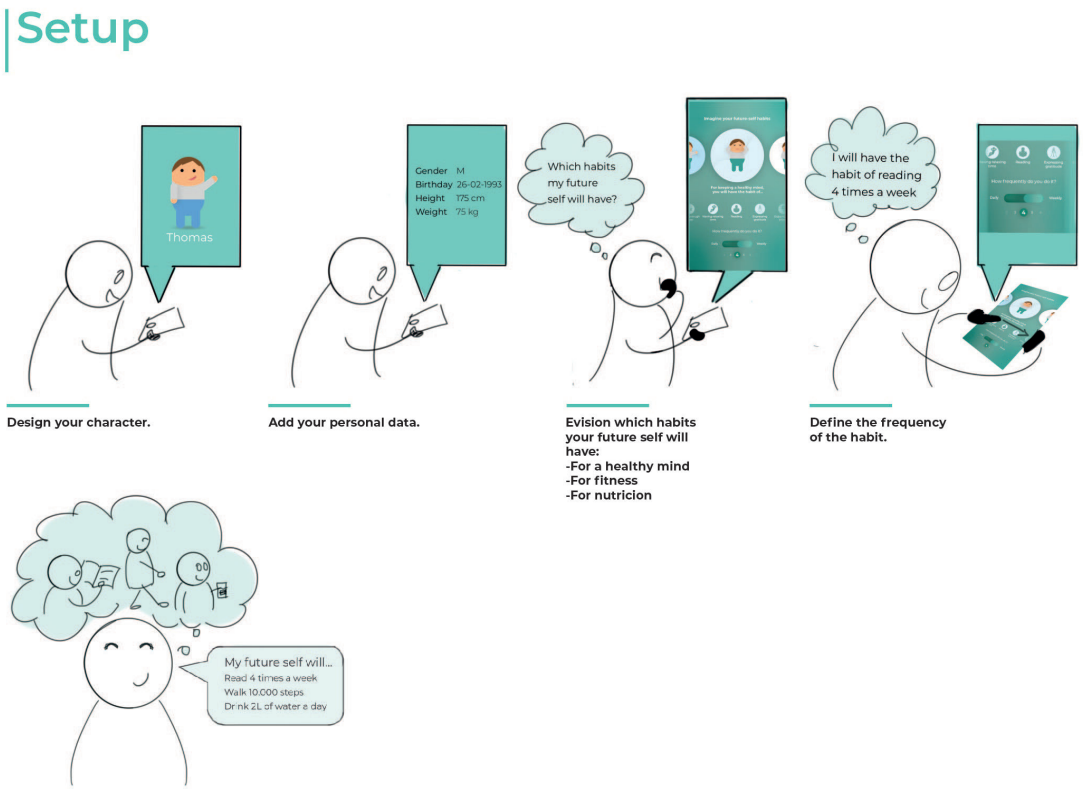


Figure 48 Storyboard of the process of goal setting.

Concept ingredients

Health pillars of the user

The approach of the service embraces a more holistic approach of health that aligns not only with the WHO but also with the user's concerns.

In the section *4.2 Design iteration: goal setting* participants described that these categories helped them to narrow down the goals and choose something aligned to their personalities. This holistic has a big value for engagement and meaning, since health is described from users as a source of positive energy to recharge (self-care) from work life, and this is only possible to achieve through meaningful personal goals which approximate health to self-care, being self-care these three pillars.

Self-growth: mastering specific skills

Defining a future-self not only means to have a healthier everyday life, but to have an aspiration of self-growth to become a healthier self. Therefore the experience not only has the tangible meaning of activity but focusing on building a future-self gives the app an extra level of intangible meaning, which transforms the activity to a means towards a higher life impact (self-growth). This can have a positive effect, not only in meaning but also in engagement, since the experience becomes more intimate, is not only doing the activity or not, is working or not towards the future-self envisioned.

Visualize your future-self

The fact of framing the goal setting as "the habits you will have" can bring positive effects to the user experience. As described in the "proposed approach", visualizing an action communicates to the brain what to focus on, and therefore visualizing your future-self habits can increase the engagement of the user in the adoption of the new habit.

This characteristic of visualization is also supported by offering the user very specific goals. Specific goals were reported by the users in the "Goal-setting" iteration to be less overwhelming and therefore allowing them to focus better on the desired behavior. For example, an overwhelming goal would be to have a healthy diet (as Fitbit sets), while a specific goal can be to eat five portions of fruits and vegetables a day. This last one is easier to visualize and therefore easier for the user to develop strategies to achieve it (for example, bringing fruit from home to snack).

Moreover, the future-self is to build mastering specific skills (future-self habits) that the user chooses based on the relevance that has for him. When the user reaches his future-self, new habits can be envisioned to master and continue improving. This dynamism in goals gives the service a longer feeling of novelty.

Concept details

Goals

In the online survey introduced in the section *4.2 Design iteration: goal setting,* 39 participants gave their feedback. The goals that they reported to be key for their health were collected, these goals together with the ones reported in User Research were gathered to create a list of specific and relevant goals of the user. Figure 48 depicts the collection of habits offered by the service per category (healthy mind, nutrition and fitness), the goals together with the frequency suggested can be found in Appendix 6.

Positive goals

The goals have been framed positively, for example, “having healthy snacks” instead of “avoiding unhealthy snacks”. This goal framing came from the learnings of the “Test to explore goal setting”, were the participants described that negative goals would provoke frustration, since is focused on what they could not do, instead of the creation of the new habit.

Frequency recommendation sources.

To make the setup easier for the user, each goal has a frequency suggested. These suggestions are obtained from research evidence, most of them are based on WHO guidelines, and others from research institutions, for example, the recommendation of 30 minutes of reading a day is given by the University of Michigan’s yearly Health and Retirement Study.

Figure 49 Goal setting screens: Overview of the habits offered by the app.

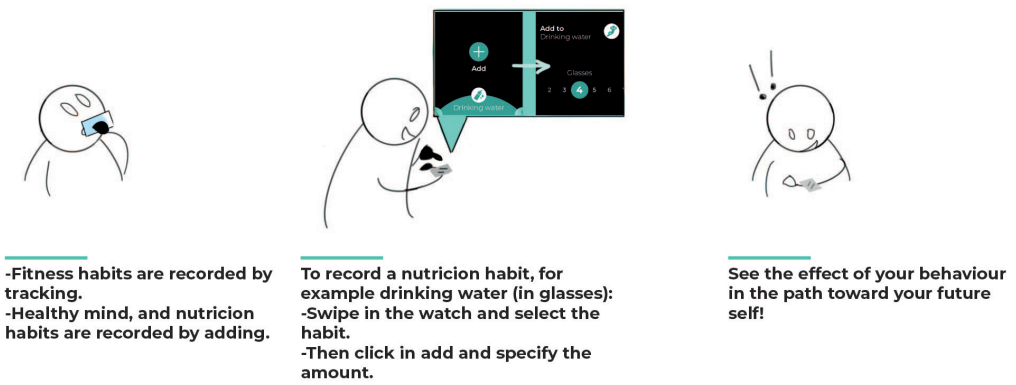


Figure 50 Storyboard of the process of goal tracking.

Data feedback

Storyboard

Before detailing this design element of the service, is important to introduce how the data regarding the user habits is gathered. When the user sets his future-self habits, the system needs to track his behavior to provide data feedback (See Figure 49 “Tracking”).

Some of the habits can be tracked automatically (such as sleep or stairs). However, other habits need to be introduced manually by the user (portions of fruit or writing a diary). The design challenge in the tracking system was to provide a solution that will allow the user to track the manual habits easily, otherwise, it could affect the engagement.

n the User Research, the participants reported this challenge since Fitbit offers the option of adding “glasses of water” manually to track water consumption. The participants communicated that they didn’t track it because they should go every time to the app, scroll to the water icon, enter the screen and then click on adding water and choosing the amount. In conclusion, there were too many steps needed in a not always accessible platform (since sometimes they didn’t carry their phones).

The solution for this challenge is illustrated in Figure 49. To track a habit manually (for example drinking water), the user can access directly through his bracelet by swiping once to the second screen, selecting the habit (in this case, drinking water as shown in Figure 49 and adding the amount.

Introduction

The feedback from the habits tracking is visualized following the metaphor of a hot air balloon that is following the journey towards the user's future-self. The balloon can float (and therefore move forward) if the user works on the habits set (Figure 51). The three goals set by the user are translated into winds that propel the ballon to progress. However, when the user doesn't work on his habits, there is no wind to propel the ballon and therefore it stands in the ground (Figure 52). Moreover, the user can also have imbalance by doing too much and too little, these extreme behaviors will provoke the balloon to rise too high and shake (Figure 54).

In these situations of balance (Figure 55) and imbalance, (Figure 52) the user will pick collectibles that represent his learnings on the journey. After collecting 10 elements, the user would have reached his future-self. The collectibles are questions given by the service, if the user answers to them, he can save the collectible in his journey (See the collectibles saved in the top right of Figure 53). These questions have been formulated to support the user in the low points by developing a resilient mindset reflecting on how he can manage better his future-self habits.

A detailed explanation of how the collectibles are picked is developed through the context of an imbalanced day in the Storyboard of the following page (Figure 56).

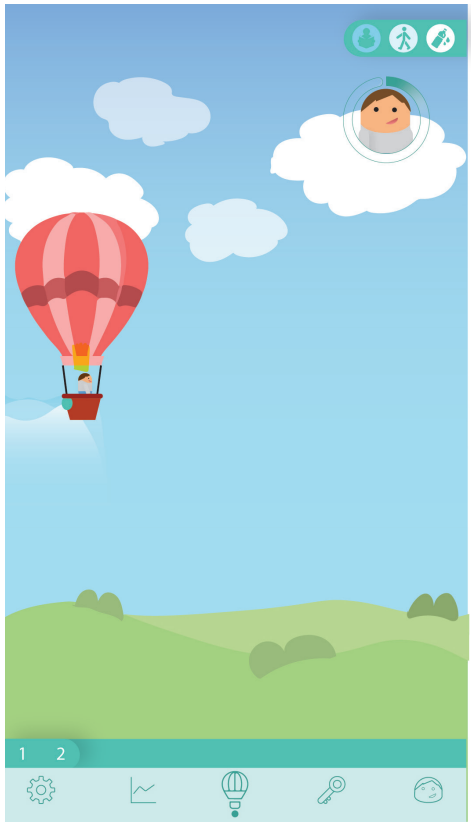


Figure 51 App: balloon flying in a balanced day

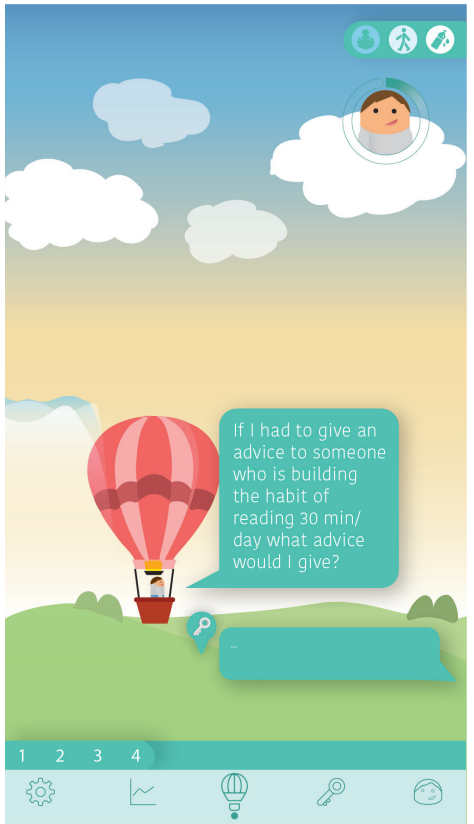


Figure 52 App: balloon standing in an imbalanced period. Support in the low points: Clicking the key collectible a "what" question pops ups.

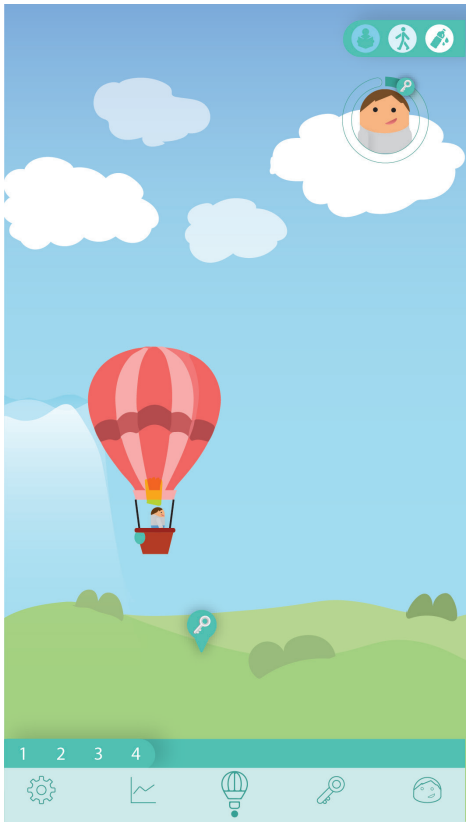


Figure 53 App: balloon propelled after answering the question.

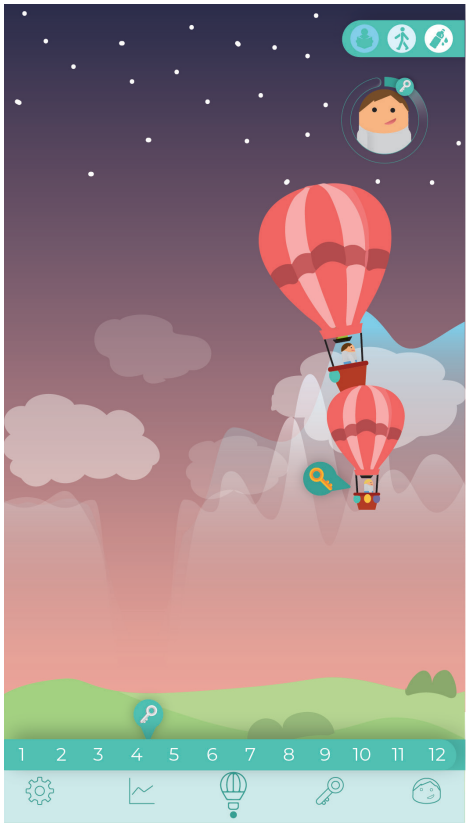


Figure 54 App: A different example of imbalance, and a visitor passing by.

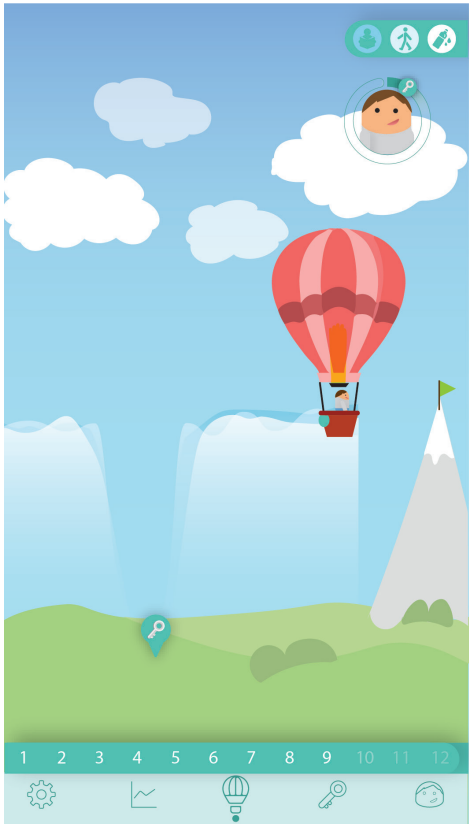


Figure 55 App: Support in the high points. Envisioning a flag collectible.

Storyboard

Instead of setting goals to reach, the user has already started to envision his future self. In this journey this future-self talks with the user to empower him in the low points and facilitate this transformation when the user has an imbalanced day.

The questions are not mandatory to answer, the balloon can continue floating when the user works on his habits. However, answering to the questions can motivate the user to self-reflect and help him understand which aspects of his behaviors are blocking his transformation. These questions aim to transform the negative emotions of low points in the journey into a personal learning opportunity. These questions are “What” questions, which have been found to resilience and self-awareness (detailed information about what questions are given in the section “concept details”.

Moreover, after answering the question the balloon will lift again, which would give to the user a moment of satisfaction and relieve.

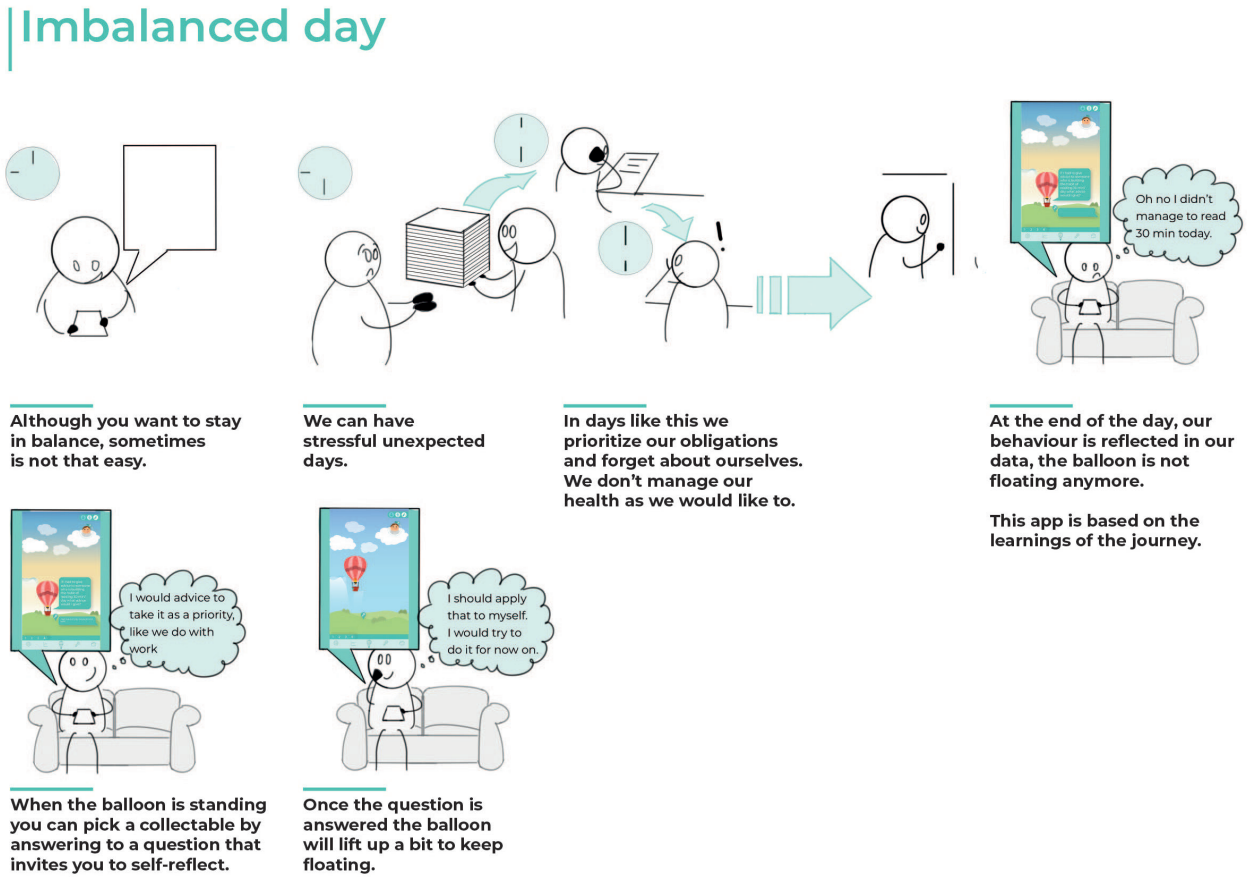


Figure 56 Storyboard of app usage in the context of an imbalanced day.

Concept ingredients

Conversations with your future-self

Instead of having an external agent (such as a coach) communicating a to do, talking to your future self in a kind tone can make the experience more personal and resilient.

When the user visualizes his future self, is already developing the habit and focusing his mind on it. Instead of being something to achieve, is something that has already been achieved. Therefore the conversations with his future-self give the user a proactive role and serve as self-awareness to understand which behaviors are blocking himself on his path.

The fact of envisioning your future-self reaching the habits promotes competence about building a healthier life, while conversations with your future-self promote autonomy during the experience and empower the user about his health management.

Based on the path

In this concept, the goals are framed as paths towards a healthier self. Framing activities as paths towards a healthier life give personal and intangible meaning to the experience.

The data generated by tracking your habits become your path and is expected to have ups and downs in the journey, which are accepted and supported by the experience.

Seeing yourself imbalanced can make it worst motivation wise

Regarding the data as the path, it was noticed in the generative session that seeing yourself unbalanced can be demotivating. To create a positive experience, after the user answers to a question the balloon lifts and floats until the next day, motivating the user to keep working on the journey.

For a kind experience: Don't be too serious about it! and use metaphors.

Finally, another insight gained in the generative session was to use metaphors to create a more kind of experience. Creating a kind experience promotes emotional resilience, and therefore creates a positive mindset that increases the engagement on the creation of the new habits. In the session was noted that an experience mainly based on objective data can generate a serious environment that doesn't invite the user to engage with the data.

For this project, the metaphor of the hot air balloon journey was created to represent the user's data.

Concept details

Is important to explain the type of questions that the user will encounter in the journey since they have been evaluated to ensure a positive and resilient experience.

Asking what instead of why
The way of formulating the questions seems to affect the emotions generated during self-reflection. The way of formulating the question can mean the difference between victimhood and growth, regarding the psychologist Tasha Eurich. To keep a positive mindset in the path of self-reflection, asking "What" questions can have more benefits for subjective wellbeing than asking "Why". "Why" questions can highlight our limitations and stir up negative emotions, while "what" questions help keep us curious and positive about the future (Eurich, 2017). For example, instead of asking "Why I didn't reach my goals today" formulate it as "What can I learn from today to manage better my health in the following days?"

The conversational new approach of the thesis is to shift from an external coach that gives you the recipe of health, to envisioning a future-self which whom the individual reflects during the path of the development of the new habits. The new approach focused on conversations with the future-self is aligned with the advantages that "What" questions bring to self-reflexion, therefore the questions.

For this project, the questions formulated are based on "what" such as "What could I do to make this habit fit better in your life?" or "What inspired your future-self to build the habit of reading 30min/day?". Moreover, other questions asked are not based on "what" but are focused on the future, such as "Imagine that your future self can tell you something now: Write the words you need to hear." To see a detailed list of the questions that the user can encounter in the journey, see Appendix 7.

Data visualization
About how data is translated into the data visualization, in this case, is by percentages (See figure 57).

The balloon floats when the user is keeping his habits around 100% of the frequency set (for example, reading 30 minutes a day).
The balloon will be next to the floor when the data user will be doing less than 30% of his habits for more than two consecutive days.
The balloon will shake and flights high when the user will do more than 150% of the frequency set for more than 3 days. Another reason can be that the user either do too much or too little for several days (over 150% or under 30%) meaning that the habits are not integrated into his life.

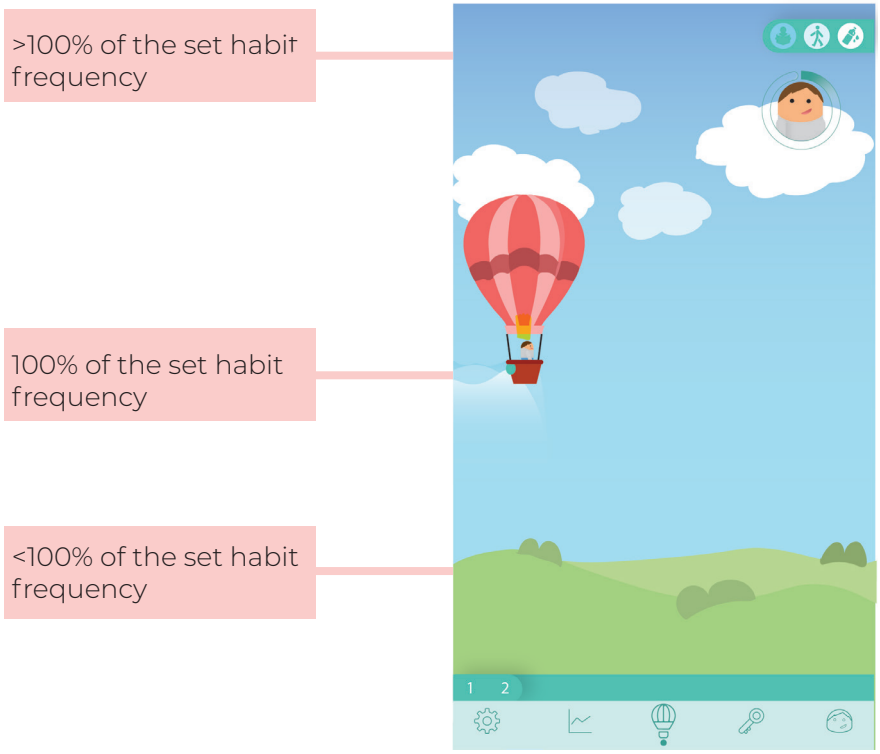


Figure 57 Detailed information about the data visualization

Storyboard

Figure X describes the notification experience designed for the fitness tracker. This intervention allows the users to feel accompanied and inspired in their journey. Since the app concept has shifted from focusing on the achievement to focus on the path, the motivation strategy shifts from achievement competition (who is best) to learning sharing (sharing the process experiences)

When the user walks next to another user who has the same habit for his future self, the device share with each other the insights gained during the process. The user who receives them can choose to take them into account and find a new way of building his habit. For example "keeping the water bottle visible on the desk to drink more water".

These notifications are anonymous, and the balloon is the main focus of attention. In this way, the user feels the company without compromising the user's privacy.

Notification and goal reminder

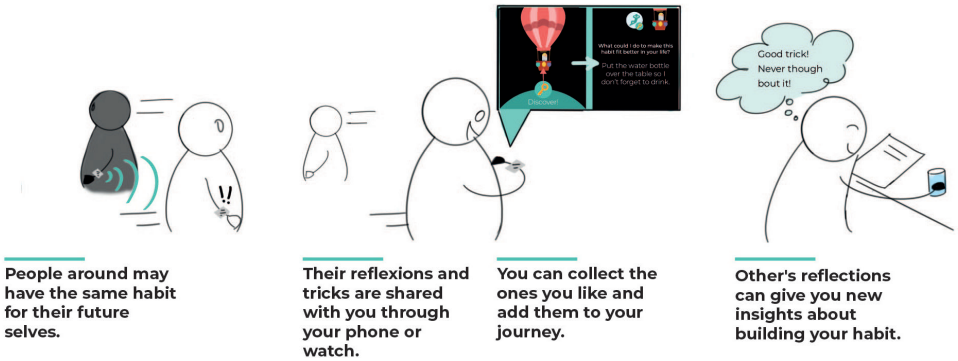


Figure 58 Storyboard of the inspiring notifications contextualized.

Concept ingredients

Self-growth: Aristotle's Virtue Theory

In the Virtue Theory, Aristotle describes that a skill can be mastered by imitating another person who has the skill you want to work on. This served as an inspiration to make the notifications into a social exchange of insights from users with the same habits. The introduction of this social element expects to make the user feel supported in the process (see Figure X), promoting Relatedness (one of the characteristics of SDT) and therefore is expected to contribute to increasing engagement.

Moreover, during the user interviews it was found that the participants enjoyed being creative in ways to keep their healthy habits, and that this creativeness was related to motivation. Therefore is expected that sharing these insights about how to keep their habit will increase the motivation in building their healthier selves.

The user can't feel pushed to do something: Try inspiring instead of demanding interactions

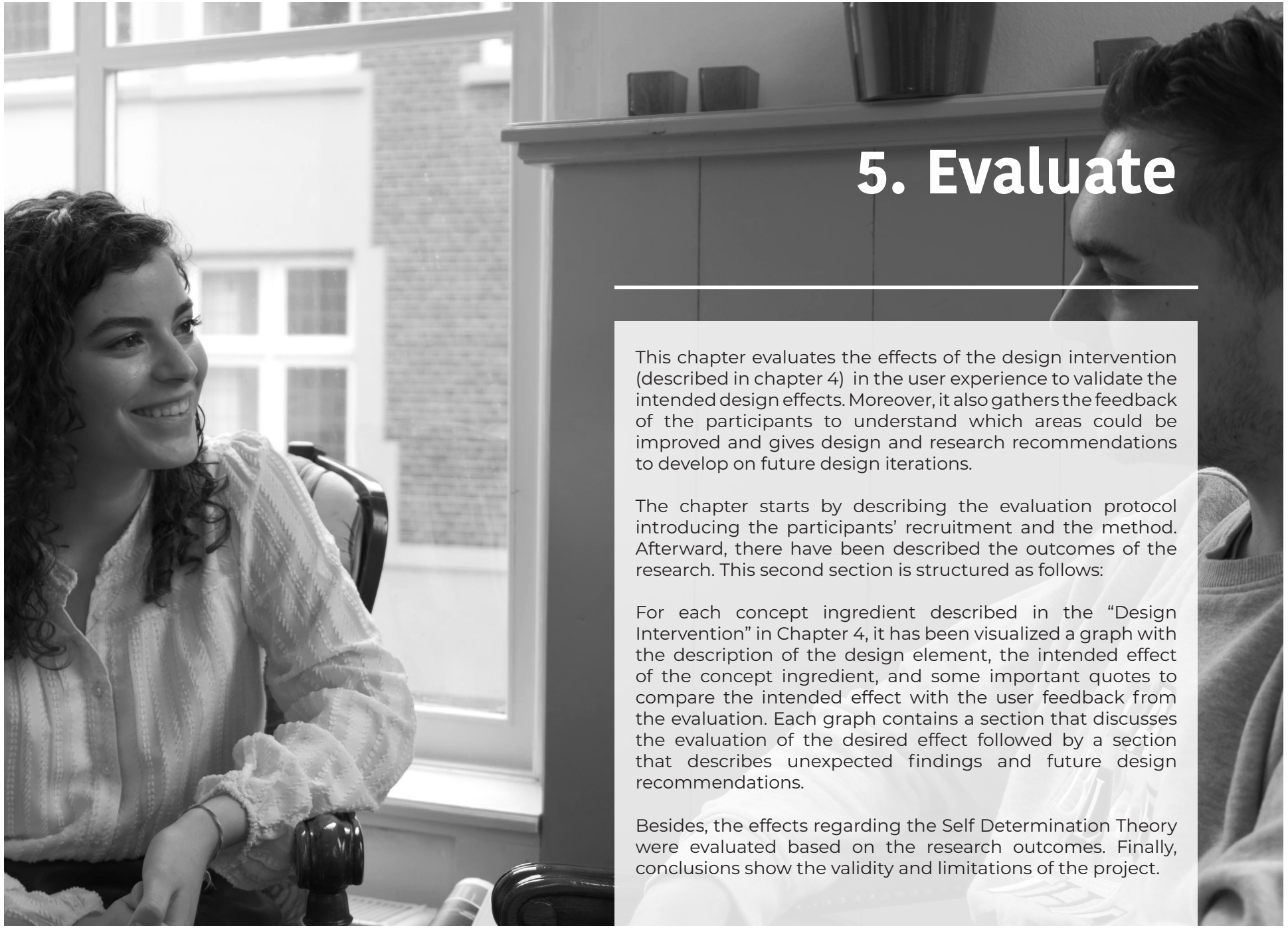
The challenge of motivating notifications was pointed out in the Generative session. Very often demanding notification can be perceived as negative from the user since they would feel forced to do it. Fitness trackers currently have a very direct way of motivating the user and remembering the goal. Therefore, for this design intervention a more indirect approach was explored where the user receives inspiration for people around and decides to implement it or not, but by receiving the notification has been already being reminded of his habit.

If a trigger is visible or the user all the time the effect will be short-term. Is better to create interventions that are surprising and/ or occasional to make it exciting and new.

A final important insight for this intervention is that notifications can be boring for the user. This was found in User Research and also was pointed out in the Generative sessions. To make engaging notifications, they should be stimulating.

In this intervention, the notification sent is always a surprise, since it depends on the habits of the users around. Moreover, the insight received will be always different.

Finally, this intervention, also humanizes the notifications, since is not sent me by a machine but is shared from another person who is going through a similar path. This characteristic expects to make the experience more meaningful for the user.



5. Evaluate

This chapter evaluates the effects of the design intervention (described in chapter 4) in the user experience to validate the intended design effects. Moreover, it also gathers the feedback of the participants to understand which areas could be improved and gives design and research recommendations to develop on future design iterations.

The chapter starts by describing the evaluation protocol introducing the participants' recruitment and the method. Afterward, there have been described the outcomes of the research. This second section is structured as follows:

For each concept ingredient described in the "Design Intervention" in Chapter 4, it has been visualized a graph with the description of the design element, the intended effect of the concept ingredient, and some important quotes to compare the intended effect with the user feedback from the evaluation. Each graph contains a section that discusses the evaluation of the desired effect followed by a section that describes unexpected findings and future design recommendations.

Besides, the effects regarding the Self Determination Theory were evaluated based on the research outcomes. Finally, conclusions show the validity and limitations of the project.

5.1. Introduction

Participants

For this evaluation 6 participants were recruited. All the participants were young healthy adults concerned about living and healthy life. They were from different nationalities: Turkey (2), Netherlands (2), Italy (1) and India(1).

Five out of six participants were users of fitness tracker, the sixth participants didn't use a device, but used apps to build healthy habits (such as Fabulous). Finally, in order to enrich the feedback, three of the participants were participating in the user research conducted for the project and three were new.

Each participant was scheduled for an individual session of about 1 hour.

Method

The evaluation of the design intervention had three aims. Firstly, to evaluate the direct impact that the design intervention had on the user. Secondly, evaluate the usability of the interface. Finally, gather feedback for improving the concept of usability and experience in future iterations. This section will focus on developing the first aim (personal impact), while the interaction and the feedback for improving future iteration will be developed in the section of "Recommendations".

In the session, each part of the service was evaluated individually (the goal setting, the data feedback, and the notifications/motivation). In order to immerse the participant in the user context, the facilitator showed to the user a storyboard for each of the sections. After immersing in the context, he was invited to interact with the app through paper prototype, some tasks were prepared to guide the user through the app usage. During this process, the participant was asked open questions in order to analyze the personal impact that the concept had on the user and his opinion about the design itself (aesthetics). One example of these questions is: "How do you see this?". Moreover, there were some open questions asked regarding the main characteristics of the design. For example, in the "goal setting," the user was asked, "What do you think about this way of setting your goals in comparison to the fitness tracker?". Finally, in each of the section, the participant was asked open questions to evaluate the elements that were more values, and if there were something that the participant would like to change from the concept. Examples of these questions are the following: "What did you like from this part of the app?" "What would you change". For more detailed information about the evaluation protocol and questions See appendix 8.

For analyzing the outcomes, the quotes of the participants were grouped per section and per each design element (for example, the section "goal setting" and the design characteristic "specific and personal goals"). The quotes of the participants for each element of the design were compared with the desired effect intended for each design element (for example, with the offering "personal specific goals" was intended to create "meaningful goals" for the user). Comparing the intended effects with the participants' feedback on each design element it could be evaluated if the intention was accomplished or if there were design characteristics that required further research. Moreover, the feedback of the user brought some unexpected findings that were annotated in each section.

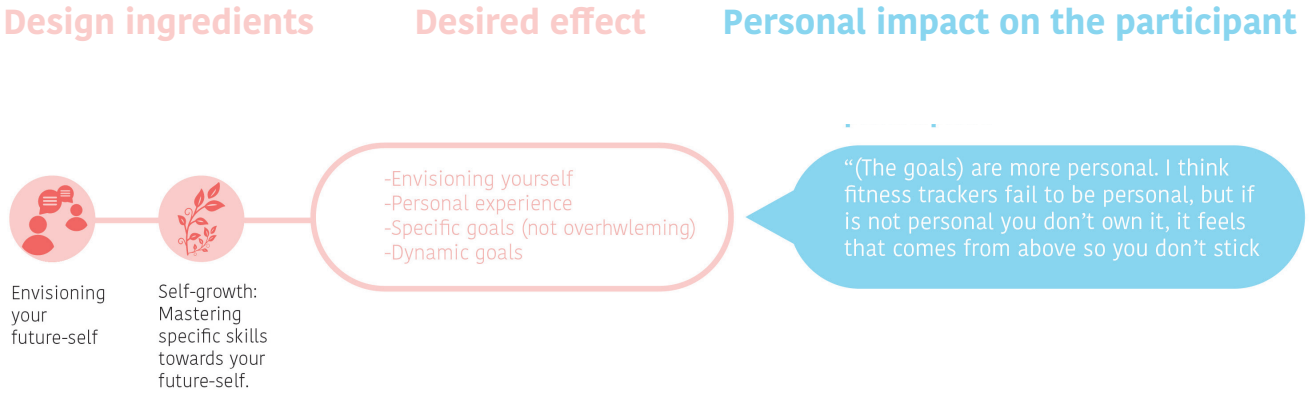
5.2. Concept evaluation

This section presents and discusses the evaluations of the design intervention. To evaluate if the design intentions were accomplished, it has been compared to the desired effect defined with the feedback given by the user from the open questions asked during the interviews. The evaluation has been structured per each concept of the app structure *(Goal setting: Imagine and create your future-self habits, Data feedback: The balloon journey, the path towards your future-self, notifications motivation: Get inspired and inspire other's journeys*). For each concept, the desired effect has been described, and if required, the design elements of the concept and its desired effects have been detailed. The accomplishment of the desired effect for each concept has been argued comparing it with the participants' feedback. Per each section, relevant quotes have been highlighted as well as a conclusion about the achievement of the desired effect as well as design elements that need future research. At the end of each section, unexpected finings has been described as well as directions for future design interactions.

Finally, it has been also evaluated the feedback of the participants about the self-determination theory (SDT). This theory has served along with the project to design for evaluate the interaction and design the new concept since the impact of the three human needs described in the SDT (autonomy, competence, and relatedness) serve as nutriment of individual wellbeing and foster the individual's motivation and engagement. For evaluating the participant's perception of these three needs in the design and its impact a survey has been carried out. The outcomes for the evaluation of the SDT are presented in this section after the Concept Evaluation.

For more details, the main participants statements through the different sections of the session are available online at https://bit.ly/30PUi8e

Imagine and create your future-self's healthy habits.



The objective of the concept for goal setting was to align the meaning of health for the user with the device, so focus on a holistic perspective and present it as self-care instead of achieving. Moreover, envisioning your future-self and define specific goals to work on would give a focus to the user's mind and create a meaningful and personal experience. The evaluation of the design elements of the design are presented as follows.

Design ingredients

These two design ingredients are evaluated together since they are closely related.

Envisioning your future-self was found to have a positive psychological effect on the user, seeing the goal as something that the user would feel capable of doing. Moreover, envisioning his future-self had the desired effect of creating a personal and meaningful experience on the user since the focus is on designing the personal wellbeing (For more details about the concept, see the Chapter: Design intervention, the section Imagine and create your future-self healthy habits)

Furthermore, the option of choosing specific goals that would be relevant for the user to build his future-self would not only make them more meaningful for the user but also enhance the envisioning effect, since specific habits are easier to envision (for example, eating 5 pieces of fruit is easier to envision than keeping a healthy habits) and therefore less overwhelming.

Finally, offering the user to pick three goals (one of each category) followed the intention of creating a dynamic experience over time, since after the user would reach his future-self it could define new goals and develop new healthy habits ultimately lately an engaging experience over time.

Evaluation of the desired effect

From the open questions, the participants spontaneously highlighted as positive features the personal experience that the goal setting created (Participant G). Moreover, one participant (Participant G) highlighted that in contrast to the fitness tracker that he experiences, these goals were personal came from yourself, which will make him "own them" and therefore stick to

them, while in the case of fitness trackers the goals seemed to come from above.

About the specific goals, this characteristic was spontaneously brought by the participants as something that would help them to focus (Participant C) on these goals whereas the categories would help them to structure their mind (Participant G).

Finally, the dynamism that the goal setting provide was noticed and expressed by the participants who shared that the goals offered were inspiring and flexible. Participant P expressed that she would like to complete all the goal offered little by little, so they would inspire her to have a very different lifestyle at the end.

Elements that need further research

The "future-self envisioning" needs to be enhanced in future iterations since currently seems that the three goals are separated, which didn't allow the participants to imagine his future-self in the goal setting. Several participants transmitted to expect a more immersive future-self experience. For example, by seeing how different habits connect (Participant G), or by creating a story about how this future-self would be if would have these habits (Participant P). Therefore, more research and ideation need to be done about how to create an experience that immerses the user in envisioning reaching the future-self habits set.

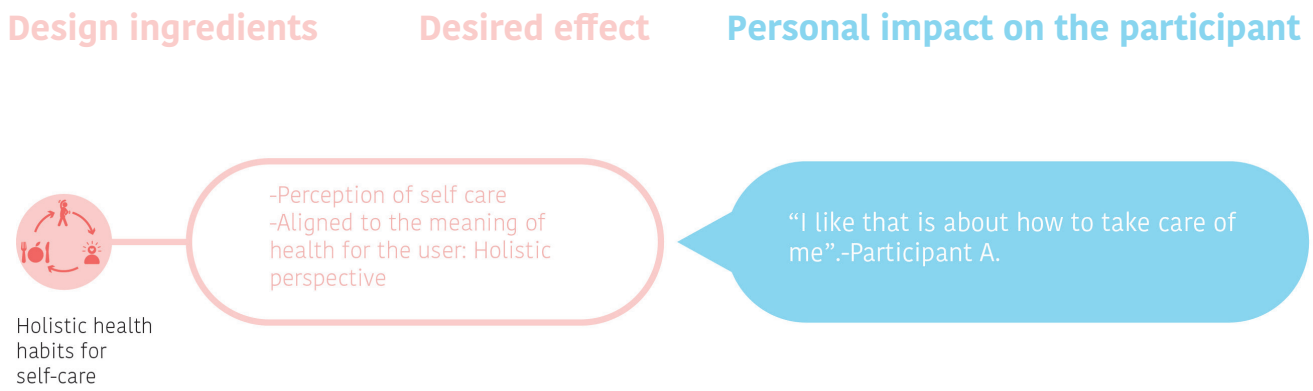
Regarding the specific habits, five out of six participants expressed that the habits offered aligned with their interests. However, two participants expressed their desire to have the possibility of adding personal goals. This concern should be tackled in future research since could add benefits to the experience in terms of personalization but also disadvantages.

The main concern with offering personal goals is the risk of making the goal setting experience overwhelming since currently the participants not only get offered specific goals but also suggestions about the frequency (for example, is suggested to read 30 minutes a day). Currently, the goal setting is valued to be clear and simple (participant C and participant G), therefore research and design iterations are required to understand how personalized goals could affect the goal-setting experience.

I like that the habits are more personal. I think fitness trackers fail to be personal, but if is not personal you don't own it, it feels that comes from above so you don't stick to it. **-Participant G**

(I would like to)"Create a story about how your future-self would be if it would have these goals" **-Participant P.**

Imagine and create your future-self's healthy habits.



Design ingredient

The approach to health of the experience wanted to be aligned to the meaning of health found in Research, for that purpose a set of specific goals (defined from the outcomes of surveys) were offered in the concept from three categories: healthy mind, nutrition and fitness. With this design element, it was expected to align the goals with the interest of the user creating a more meaningful experience. Moreover, the holistic approach intended to communicate the user that the experience seeks personal care instead of achievement, which also intended to increase the meaning of the experience in the user's life.

Evaluation of the desired effect

The holistic approach was spontaneously highlighted by the participants (participants D, participant T, participant G, and participant C and participant A), especially the healthy mind habits were very valued for the users, as one participant said: *Fitbit only shows she steps I have walked, but this approach touches upon more health aspects like healthy mind... The healthy mind habits are small things that you usually take for granted.*-T

It was also perceived the self-care approach, as participant C expressed: *I like that is about how I can take care of me.*

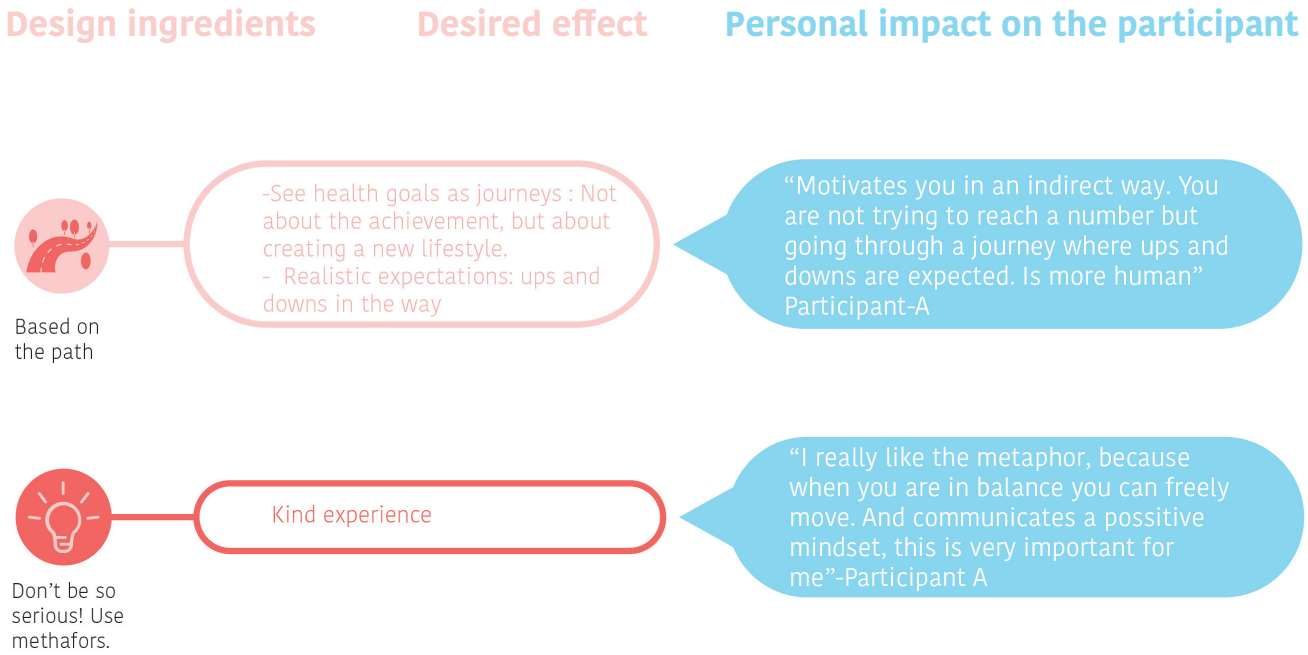
In the process of choosing the goal, one participant mentions to expect a basket for saving her favorite goals (Participant P). That inspired the future recommendation of exploring the idea of creating a future-self based on several goals, and then start building it by choosing three goals, then three more, etc.

I like that is about how I can take care of me (Participant C)

Unexpected finings and future design recommendations

One unexpected finding was that the goal-setting was more reflexive than expected *I like that it makes you think of what you really want to achieve, and is personal... Fitbit is very limited*. The participants took very seriously and personal to define their future-self goals. Probably for this reason they expected to have more time, as well as a more immersive experience. There are two design directions proposed to enhance this feature. One option is to extend the goal setting experience to the shopping experience, offering in the store a goal setting service where the customer could design and envision his future-self through experiences such as holograms or personal test that could tailor their health needs. A second option is to create an animated story as the goal setting experience, where once the character is designed, is getting new attributes given my his future self habits (for example if the user chooses the habit of “being grateful” the character becomes a very positive person).

The balloon journey: the path towards your future-self



Design ingredients

In research it was found that a goal driven experience created negative a effect on the user since was creating the expectation that the process of building a new lifestyle was linear. Therefore, when the user encountered problems in the way and this lineal path couldn't be reach, will create in the user the feeling guilty and not capable of reaching the goals, what would affect the user's motivation and engagement (See the Chapter "User Research"). As an alternative approach, the design solution framed goals as journeys with the desired effect of focusing on the process of building a new lifestyle and creating realistic expectations in the user, which means that in the process of building a new lifestyle (through new health habits) ups and downs are expected. Moreover, in the Creative session (see the *Analyze* chapter the section 2.2.5 *Data analysis and results*) one of the insights was to use metaphors with the intention of communicating a kind experience that could motivate the user to think positively.

Evaluation of the desired effect

All the participants spontaneously expressed the focus on the journey as a positive element for their experience with the app. It was also perceived as a motivating element. As a participant expressed: *In the Fitbit your start from 0 the next day, but here is a journey, you can see your progress, that is motivating. Fitbit,*

for example, is demotivating, it kind of tells you "You are failing". Moreover, one participant expressed that this focus on the path was more aligned to himself since he always motivated himself in the way but not with the achievement (Participant G). Therefore this experience is more aligned with the needs and concerns of the users.

In specific, the shift from a goal-driven experience that is focused on the achievement (current fitness tracker experience) to a journey of transformation experience that is focused on the habit formation (this approach) was expressed by one of the participants as something motivating. As the participant expressed: *Motivates you in an indirect way. You are not trying to reach a number but going through a journey where ups and downs are expected. Is more human*. -Participant A

Finally, the metaphor was also perceived by all the participants as a positive characteristic. Regarding the intention of creating a kind experience, one participant expressed that *The balloon feels better than the tracker because the tone of voice is positive*.-Participant A. In the creative session was noted that the quantified-self had a serious tone of voice that could contribute to negative experiences. For the target group of this research, the metaphors were perceived as enablers of a positive tone of voice, contributing to positive experiences and therefore to the user's wellbeing.

Unexpected finings and future design recommendations

The metaphor element brought several unexpected findings that allowed to uncover several valuable elements for the user:
All the participants perceived the simplicity of the screen as a positive element. Apparently, **what the user needs for a first screen is to be able to check how they are doing without going into numbers**. As these participants expressed:

-You can immediately see how you are doing, which is what we all want I think.-Participant D

-Is a simple way of showing your progress without going into data, I think that is better. I know if I am on track or not.- Participant T.

-Is an extra later to the quantified self. Gives you an overall feeling of how you are doing in a simple way, without having to go into numbers.-Participant P.

The metaphor is a motivation itself: Although it was not the intention, some participants expressed the metaphor to be motivation itself, since would feel like a game. That can be seen in the following quotes.

-Fitness trackers are very controlling, but this interaction, although it doesn't push you is also not passive. For me is more motivating for two reasons. One, I want to keep the balloon floating. Second, the questions make me evaluate my day motivating me more.-Participant T

-Is like a Mario game! Is moving and is a path with obstacles. -Participant P

Metaphor interpretation makes the experience personal and meaningful
Different participants gave a different interpretation of the metaphor regarding what was meaningful for them regarding feeling healthy. One participant said that health was about *For me is about being light and breathing*-Participant C, which would resonate with the metaphor, while for other participants the metaphor was meaningful *because when you are in balance you can freely move*. Participant A

In the Fitbit your start from 0 the next day, but here is a journey, you can see your progress, that is motivating. Fitbit ,for example, is demotivating, it kind of tells you "you are failing"-Participant P

The balloon journey: the path towards your future-self

***(answering the question) Makes it tangible. You know it but until you don't write it down you are not conscious about it.*-Participant A**

Design ingredients

The intention of talking with your future self instead of the coach-driven experience was to reduce the control that the current devices have over the user, and transform the technology into an enabler for the user to reflect and increase self-awareness. This new role of the technology had the intention of giving a proactive role to the user in the experience, enabling him to participate and therefore enabling meaningful conversations user-data.

The technology enables a proactive role to the user by allowing conversations with his future-self through "What" questions that would allow the user to self-reflect and learn from the unbalanced days (the lows in the journey). The "What" questions has been shown to promote wellbeing by enabling a resilient mindset, since are focused on keeping a positive mindset about the future For example, instead of asking *Why I didn't reach my goals today" formulate it as "What can I learn from today to manage better my health in the following days?.*

Moreover, these reflective questions had the intention of empowering the user by making him self-aware of his behavior so he can transform his life towards the desired habit. Finally, the fact of making lows in the journey into self-reflection had the intention of promoting a resilient mindset, turning negative emotions for not reaching the goal into positive ones because of the learnings acquired.

Evaluation of the desired effect

Empowerment
In the project, empowerment was enabling transformative experiences by allowing the individual to take an active role on self-awareness, so the user could understand his behavior and what could be blocking him from building a healthy habit.

It was also defined that empowerment could be measured by what the technology leaves when the intervention disappears. In the case of this evaluation, the participant was asked if they learned something about themselves after answering the question (if they were more self-aware). All the participants said that they did learn and that these questions helped them to be more conscious of their behavior.

***(answering the question) Makes me motivated, relieved and empowered because I could do something about it.*-Participant G**

Resilient mindset
Figure 59 compares the personal impact of the current experience with the design intervention. Answering these questions supported resilience in all the participants. The Cambridge dictionary defines resilience as the ability to be happy, successful, etc. again after something difficult or bad has happened. When the participant was asked about the emotions when seeing the balloon in the land (similar experience to the current fitness

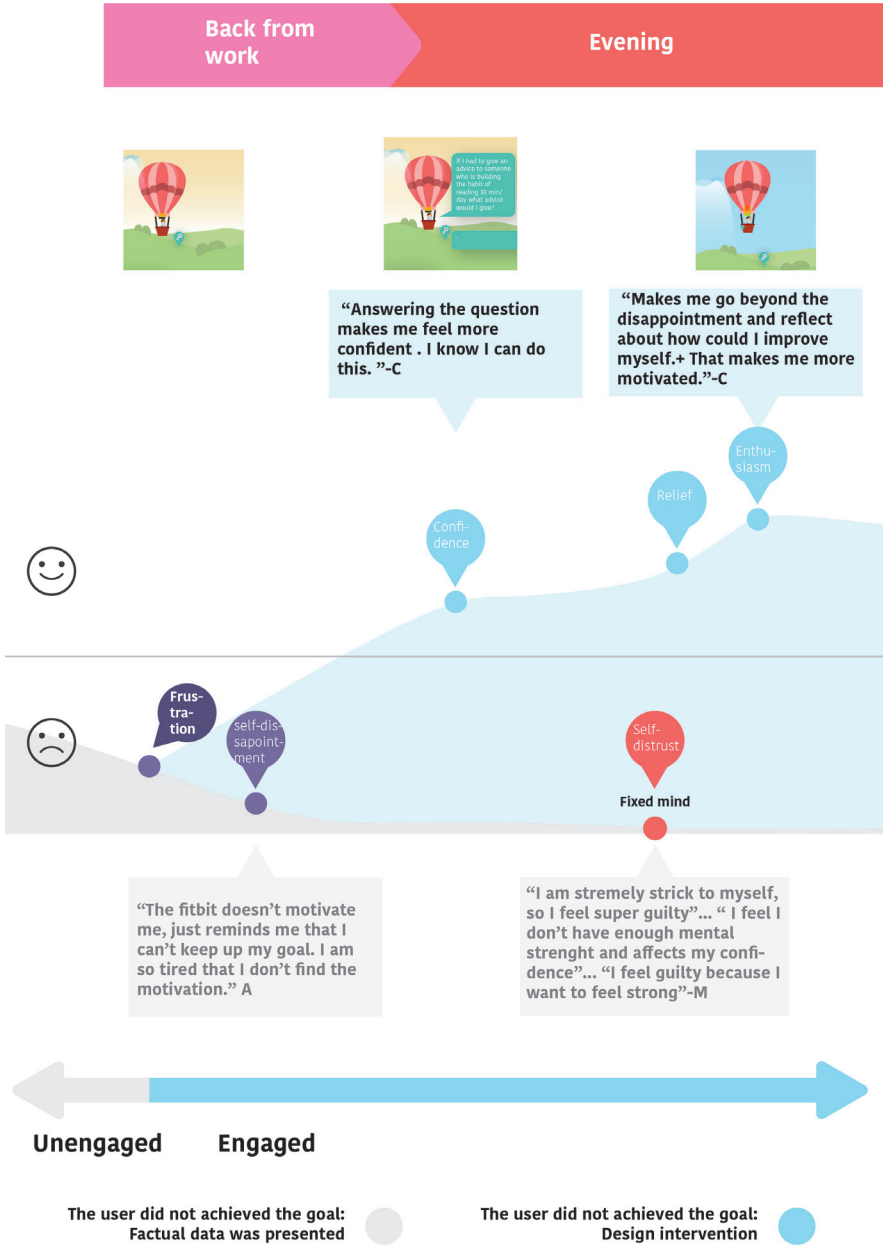


Figure 59 Evaluation of the personal impact of supporting and empowering the user in the low points through what questions in comparison to the previous experience.

trackers) their emotions were similar to the emotions described in user research (frustrated, guilty or disappointed). This is aligned with the insight from both user research and the generative session that pointed that showing to the user that he couldn't reach the goal (even if it is shown objectively) create a subjective experience that the user perceives as an extra punishment. This experience generates a lack of engagement with the device (See figure 59). Therefore, asking "What" questions had the intention of generating positive emotions by going beyond the frustration and focusing on reflecting on the learning that the imbalance day could bring to future similar days.

All the participants experienced positive emotions after reading the questions, the blue graph of Figure 59 depicts the experience. The participants communicated that answering the questions made them feel confident since they found that they could do something about it. This confidence generated emotions of relaxation and relief. Finally, the experience generated engagement and motivation on the user. As one participant expressed: *(the question) Makes me go beyond the disappointment and reflect about how could I improve myself. That makes me more motivated.* -Participant DG

Is important to note that the context was imagined by the participants by recalling a similar day to the storyboards and imagining the emotions and the experience effect. The effectiveness of this evaluation method is supported by the research that shows that visualizing to practice a behavior is as effective as real life (Schacter et al., 2012). However, it is recommended to support these findings with an evaluation of the real scenario of usage.

Enabling conversations user-data

As has been defined in "Empowerment" this experience had the intention of giving a proactive role of the user in the experience. In research was found that technology was too controlling, and therefore the interactions were machine centered (based on machine output), which didn't allow space the user to participate in the experience. The "What" questions had the intention of making the interaction less controlled by the user and transforming it into an enabler for reflection. This intervention had the ultimate goal of enabling a conversation user-data that will empower the user (creating a meaningful experience by this empowerment).

Not only the experience enabled all the participants to be more self-aware. But also the participants spontaneously highlighted this conversation element, although it was something that was not mentioned by the facilitator of the evaluation session. As participant G expressed: It makes you capable of having a conversation with yourself, provides a tool for strengthen will power. Finally, the importance of the proactive role of the user for creating meaningful conversations user-data is highlighted by the statements of one participant who expressed: Fitness trackers set meaningless goals. But in this app, not only the goals but also the reflections come from yourself, so enables you to have an honest conversation with yourself to stop betraying your own goals. -Participant G

Therefore, for the participants that evaluated the concept, it can be concluded that the experience gave a proactive role to the user empowering them and enabling meaningful conversations user-data. Moreover, these questions also transformed the negative experience or not reaching the daily goal, into

(the question) Makes me go beyond the disappointment and reflect about how could I improve myself. That makes me more motivated. **-Participant DG**

It makes you capable of having a conversation with yourself, provides a tool for strengthen will power. **-Participant G**

Fitness trackers set meaningless goals. But in this app, not only the goals but also the reflections come from yourself, so enables you to have an honest conversation with yourself to stop betraying your own goals. **-Participant G**

a positive experience focused on reflecting about finding solutions to blocking behaviors.

Unexpected finings and future design recommendations

The extra value of supporting lows with "What" questions

The value that the participants found about the reflection moment through "what" questions went beyond the intentions of the design. While the intention of this design element was to promote a positive experience by focusing on the learning, five out of six participants expressed that it gave them a new source of motivation. The question supported the user on finding for new motivation. Moreover, the fact of feeling that they could do something about it motivated them again. It was highlighted that the motivation came from the fact of looking at the solution instead of the problem (not reaching the daily goal), and in specific, on the fact of looking at the solution themselves. In this context, empowerment and motivation seem to be closely related.

As a design recommendation, one participant expressed that he would like to get these personal insights as personal notifications. Since motivation seems to be related with the proactiveness and creativity that the user has on the experience (for example by choosing your own goals or by getting solutions to the problems by themselves), these reflections could become sources of motivation by making them into notifications. Therefore, for future design iterations is recommended to evaluate the effect of offering to make personal reflexion into notifications for motivation.

Collectables

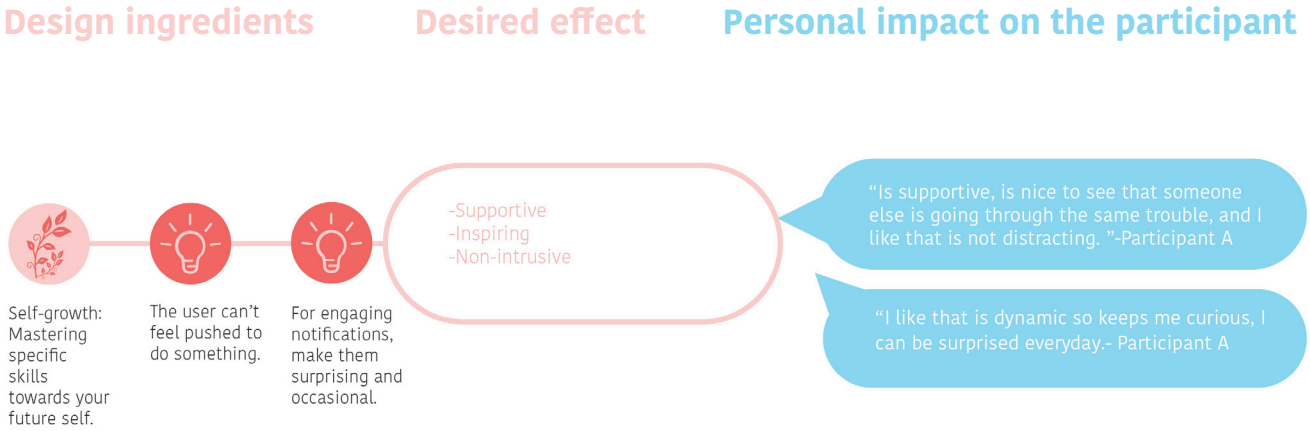
The users were asked an open question regarding which kind of element they would like to collect.

The feedback would serve to detail the design in future iterations. Two feedbacks pointed to different design directions. On one hand, participant D mentioned to collect fire, since once the question is answered, the balloon lifts up. This is an interesting design direction that follows more a game approach. On the other hand, participant P suggested to collect experiences to continue building the new habit as a sort of reward. Once the participant would have answered the question, the service would offer an experience gift, for example, if the participant is building the habit of doing mindfulness, would receive a five minutes mindful walk audio. These two design directions should be explored in further iterations.

Fitness trackers are very controlling, but this interaction, although it doesn't push you is also not passive. For me is more motivating for two reasons. One, I want to keep the balloon floating. Second, the questions make me evaluate my day motivating me more. **- Participant T**

This question gives me a new motivation to try. Makes me go beyond the disappointment and reflect about how could I improve myself. That makes me more motivated.**-Participant D**

Get inspired and inspire others' journeys



Design ingredient

This design intervention explored how to tackle the negative effect that the current experience could cause in the user experience. In the current experience, the users expressed that the notification was boring since they were repetitive. Moreover, they often could feel intrusive and demanding, making the user feel pushed to do something.

Therefore, the new approach focused on looking for non-intrusive experiences. For this purpose the notifications in this redesign are based on an exchange of user's insights with the intention of inspiring the user and through inspiration, motivating him in his habit in a non-intrusive way. Moreover, this design element has the intention to make the user feel supported in his journey by other users with the same habits. Finally, the exchange of insights from different participants had the intention of creating a dynamic experience through the time, since the notifications are always different. However, this last element couldn't be evaluated in this session for being based on long-term experience.

Evaluation of the desired effect

Supportive

Five out of six participants spontaneously highlighted the social element as something positive to make them feel accompanied One participant (Participant P) expressed that she had the intention of buying one Fitbit for a friend to create this supportive and social experience.

However, regarding the insights itself, two participants expressed his concerns about the genuineness of the insights given by other, so the trusting element needs further research to ensure a supportive experience not only by the fact of seeing others with the same habit but also by the insights exchanged.

Finally, participant P expressed to be positive about the sense of community, but not about the insight sharing since was coming from another person. Nonetheless, Participant P

expressed to be very positive about the fact of sharing the journey with someone close, and get an insight exchange from this person. This outcome shows that some users can value more the insights of a close buddy, while others prefer to explore from community insights. Understanding these personal references require further research. As a final remark, all the participants were positive about the possibility of having a journey buddy.

Inspiring

This element was difficult to evaluate in the session since it would require a real context of usage. However, one participant spontaneously compared the insight sharing with the inspirational quotes. As he expressed: *Is like inspirational quotes because make you think, I think these tips are the same* .-Participant D. Moreover, another participant expressed that the value of this insight exchange was in learning new ways of doing things. As she expressed: *I think is quite cool: You fo things always in your way, but it's nice to learn and see how others would do it.*- Participant C

It can be concluded that these insights spark user's creativity regarding their habit management and have the potential to inspire them to find new ways of building their habit. However, to evaluate the effectivity on this intervention in the user's inspiration, an evaluation in the real context of usage should be carried out.

Non-intrusive

This is an element that should be evaluated in real context since only in real usage can be seen how often the user encounters other users with similar goals and under which context. However, one participant highlighted that she liked that this interaction was not distracting (Participant A) since the balloon appears in the screen as a visitor, but only if the user clicks on it the ballon the insight is revealed and otherwise, the visitor will disappear from the screen and continue the journey.

Unexpected findings and future design recommendations

Journey buddy

During the session, the participants were asked if they would like the possibility of doing his journey towards his future-self with a buddy. All the participants reacted positively to it. Is interesting to mention that some participants stressed that they would like to pair with someone close to them (such as a friend or a partner) while other participants were excited about the possibility of pairing up with a stranger. To understand these preferences to elaborate the journey buddy further research is needed.

Having a journey buddy as someone they would know would increase the impact and the meaning of the insight sharing in comparison with anonymous ones. However other users were very positive about getting insights from strangers. To understand these preferences further research is needed.

Develop trust in the insight sharing

Although the anonymity of the insight sharing was seen as something positive, two participants expressed their concern about the trustworthiness of the insights coming from strangers. They proposed that a recommendation system would make them feel more confident regarding accepting the

Is supportive, is nice to see that someone else is going through the same trouble, and I like that is not distracting- **Participant A**

insight as valid. Therefore, in future iterations is recommended to look at how to build trustworthiness in the insight sharing, for example, by allowing users to recommend tips so it can be seen how many people found it useful.

Joint responsibility effect

Unexpectedly, two participants highlighted that knowing that their insights would be shared had a positive impact on their experience. On one hand, one participant (Participant A) shared that she will improve her reflection knowing that it would be shared. On the other hand, Participant communicated that he liked the fact that his refections could help someone else. This finding indicates that the insight sharing could create a feeling of joint responsibility which would have a positive effect on user's wellbeing and un user's engagement since promotes competence and relatedness (SDT).

The joint-responsibility effect could be enhanced in the experience by bringing the user a status the more shares insights. This status could be communicated by giving accessories or patterns to the balloon (for example, ethnic patterns).

I think I will improve my own reflection knowing that I will share it with someone else ... The fact of helping others makes you feel better about yourself

- Participant A

5.3. Self determination theory evaluation

The evaluation SDT is important for this project since allows to predict the future engagement of the user with the technology and the personal wellbeing that the concept enables . In this project, a long-term assessment can not be carried due to time restrictions.

The impact of the three human needs that the SDT describes (Autonomy, Competence, and Relatedness) serve as nutriment of individual wellbeing and foster the individual's motivation and engagement.

As explained in the section 4.3.2 *Design description* (Figure 47), each design intervention followed the ultimate goal of supporting the three needs described by the Self Determination Theory: Autonomy, Competence, and Relatedness. Firstly, the ownership of the goal-setting was intended to support the user's autonomy. Secondly, the data becoming an enabler of self-awareness was intended to support autonomy, while the resilience built through the questions followed the purpose of promoting competence since the user could see beyond the frustration of not reaching the goal and find personal learning. Finally, the insight sharing of the notifications had the intention of promoting relatedness (since the insights are shared with other persons with the same future habits) and competence (since the user could feel able to help others with his reflexion and being helped or inspired).

To assess the SDT the participants were given a questionnaire at the end of the session. The questions are formulated and summarized in Figure 60. In the questionnaire the user is asked to evaluate which concept (fitness

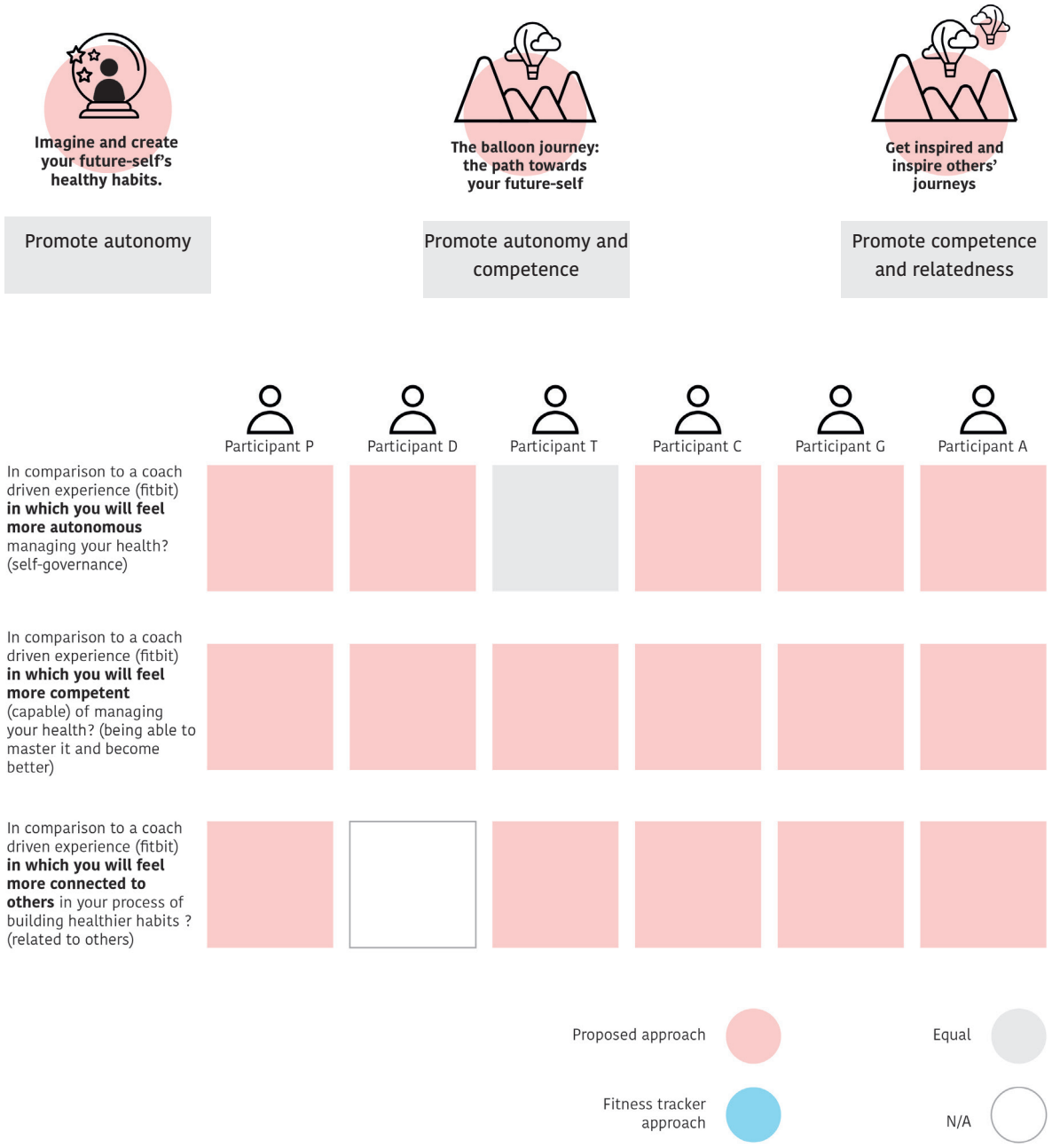


Figure 60 Table summary of the results of the STD survey

tracker, or the new approach) makes him or her feel more autonomous, capable and related to others while managing his or her health. Moreover, some synonyms of these needs are given in case the words could cause confusion. Finally, the participants were asked why, in order to asses which elements of the design caused the effect.

As seen in Figure 60, the majority of the participants found the current concept better more effective in terms of promoting Autonomy, Competence, and Relatedness. Only one participant found the current fitness tracker and the new approach to be equally effective in promoting autonomy. It has to be noted that this participant is the owner of the Fitbit Flex 2, which is the less intrusive device since only shows through lights the amount of activity performed through the day.

Design elements that promoted Autonomy regarding the participants

On one hand, as expected, the Goal setting and the self-awareness that the questions provide were elements that the participant expressed to be the cause of promoting Autonomy.

On the other hand, some unexpected elements were also autonomy promoters. The participants expressed as an element that promoted autonomy the focus on the process of developing themselves.

Design elements that promoted Competence regarding the participants

On one hand, as expected the questions enabled the users to finds a solution to a problem and therefore promoted competence. Similarly, the insight exchange was also mentioned for the participants as a design element that promoted Competence.

On the other hand, some unexpected elements were also competence promoters. The fact of being able to choose the goals instead of being forced in the user (as they described that is their experience with fitness trackers) promoted competence to achieve their goals. Moreover, the holistic perspective of the goal setting was also a design element that promoted competence in the user.

Design elements that promoted Relatedness regarding the participants

Finally, the insight exchange was described by the participants as a design element that promoted Relatedness. It was also interesting that one participant highlighted that this approach “shows how people do things instead of how good they are” (Participant C). Seems that the fact of focusing on the journey and therefore in the users’ learnings, instead of in the goal and therefore in comparing achievement fosters relatedness among the participants.

5.4. Conclusions

This section presents the conclusions of the evaluation in regards to the aim of the design assignment.

The project assignment (Chapter 1. Introduction) was to explore the fitness trackers' potential for creating meaningful and personal experiences and was framed as "How to create meaningful conversations user-data". This exploration aims to understand how to create significant experiences that will increase the user's engagement and promote the user's wellbeing.

The project found that for creating meaningful conversations, it needs to be first a common ground, which is a personality alignment and a common value of health. For this reason, this project not only redesigned the data visualization, but the entire experience creating a new personality (conceptual approach) for the tracker.

"How to create meaningful conversations user-data"

This conversation has been approached by "what" questions that enabled the user to have a proactive role in his health management. A participant said (Participant G) that Fitness trackers set meaningless goals. But in this app, not only the goals but also the reflections come from yourself, so enables you to have an honest conversation with yourself to stop betraying your own goals.

Therefore the design assignment has been achieved. Moreover, it has been learned in the evaluation that these personal reflexions are not only meaningful but also sources of motivation for the user, since they found them inspirational. Regarding this "inspiration" quality, extra learning of the project is that user's motivation seems to be related to creativity and proactiveness that the user can express on the experience. Therefore experiences that inspire the user (instead of instructing the user) result in meaningful conversations since the user has a voice to become a creative designer of his experience.

Meaning

Exploring how to create personal and meaningful experiences was a central part of the assignment.

The evaluation shows that the meaning in this experience is given in three ways

1- framing goals as habits for your future self will have, and making these habits specific and aligned to the personal def of health

Redesigning the setting up has been a key factor for creating a common ground for conversation. The evaluation shows that increases the meaning since approaching goals as "habits for future-self" made the user reflect about how they wanted their life to be, which was an unexpected finding. This was possible due to the holistic and specific goals, that became a source of inspiration for the user to envision which healthy life he wanted to build (here again inspiration and motivation are related). Finally, these elements make the

Fitness trackers set meaningless goals. But in this app, not only the goals but also the reflections come from yourself, so enables you to have an honest conversation with yourself to stop betraying your own goals.

- Participant A

user feel that was about how to take care of himself which has a deeper personal meaning than the focus on the physical activity itself.

2- Framing goals as a journey to build a healthier life
Beyond numbers and performance, the metaphor makes the user frame goals as journeys, which brought intangible meaning to the experience. As a participant said, "zoom out (from the activity itself)" to perceive a habit as a process for building a healthier life. An unexpected finding of the evaluation was that the use of a metaphor itself brought personal meaning to the experience since each participant interpreted it in a different way that was related to what feeling healthy meant to them. Therefore the metaphor itself became a symbol for their own journey.

3-Sharing insights instead of competition for who is better: this was an unexpected finding
It was an unexpected finding that the insight sharing created a meaningful experience for the user. The evaluation showed that the meaning was brought because the motivation (which was the desired effect of this design ingredient) was based on getting inspired by how other's do things instead a competing for who was better, this resonates with the meaning that health has for the target group, which is self-care and balance but not achievement. In this case, sparking the user's creativity (by the inspiration given through the insight sharing) was key not only for motivation for also for personal meaning.

Personal experience

Although the previous section tackles "personal and meaningful experience" is important to specify that the evaluation showed that a personal experience was also achieved by the ownership that the user experiences over the experience.
It has been described throughout the project that the current trackers have too much control over the conversation which causes the user to feel a passive agent in the experience. However, the evaluation showed that two design ingredients made the user feel ownership: The fact that not only the goals but the motivations came from the user gave to the experience a sense of personal ownership. Therefore, the fact of being able to define his future-self, and being able to reflect and find new ways of managing his health made the user feel ownership on the experience and therefore created a personal experience.

Engagement

The effect on the engagement only can be assessed in a long-term evaluation. However, the evaluation of the needs described in the SDT (Autonomy, Competence, and Relatedness) has served as a means to predict the engagement with the redesign and the wellbeing of the user when experiencing it.

The three needs were fostered in the redesign. The participants expressed to feel more autonomy to manage their health due to the personal habit setting, the self-management that the "what" questions enabled, and the fact of framing goals as journeys, which they expressed to imply a personal development to reach their future-selves. Moreover, the participants expressed to feel competent to manage their health and reach their goals due to the "what" questions, the insight exchange, the holistic approach of health, and the fact of being able to choose specific goals for their future self.

Finally, the participants expressed to feel more related due to the insight sharing, and as an interesting insight, the relatedness was enhanced by the fact that rather than focusing on competition, the concept focused on sharing learnings gained in the journey.

For these reasons it can be concluded that the redesign has the potential to create engaging experiences that foster wellbeing as well. Although these results should be contrasted with a long-term evaluation.

6. Conclusions and Recommendations

This report concludes by conveying the main learnings gathered during the process into a list that serves as a guideline for designers that if considered, can facilitate the design of engaging and meaningful fitness trackers experiences.

Finally, the project concludes with a list of recommendations for future design iterations and research.

6.1. Conclusions of the project

This list aims to serve as a guideline for designers to follow certain considerations that can facilitate engaging and meaningful experiences.

In this project, a specific design direction and conceptual approach were taken, but this list conveys the insights gained as a designer of fitness trackers experiences. Therefore, the guideline aims to guide the designers into considerations that can facilitate the creation of engaging and meaningful experiences, while leaving space for individual creativity. The guideline for designers conveys the following points:

Guideline to design fitness tracker experiences (positive and engaging)

A. Technology should step back (don't control) to engage the user in the experience.
Would you engage in a conversation with someone who is talking all the time and don't let you participate in the conversation? Probably not, and it would probably end up feeling boring, frustrating and overwhelming for you. These were the experience effects that the user expressed regarding the fitness trackers. Therefore a technology that is only giving outputs and is at the center of the experience is unengaging for the user.

On the contrary, an engaging technology would allow the user to own the experience and to be at the center. In the case of fitness trackers as examples, the users described the technology as too controlling when would give him a "health recipe to follow" or when it would give reminders about a "to do". In these cases, the user didn't decide, and it was perceived as imposed. They didn't own the experience, they were passive receivers, which resulted in a lack of engagement. In this project the ownership of the experience, and therefore the conversation was through allowing the user to choose his own goals, allowing the user to find a solution himself to the problem (when not reaching personal goals), and giving notifications for inspiring the user with his goal, but the decision to act on it will come from the user instead of being demanded by the technology.

When the user expresses that feels the ownership of the experience, this means that the technology could enable the user to be an active participant in the experience and to feel in control of his own decisions. In conclusion, an autonomous individual enriched but not controlled by technology.

B. Define a voice and a role for the user based on his skills and talents to create an engaging and meaningful experience.
As described in the previous paragraph, an engaged user is an autonomous user. Besides, a meaningful experience, as in a good conversation, is about the participation and enrichment of the two parts involved in the interaction. But for this enrichment, the user should be able to contribute to the experience. For discovering the contributions of these two interlocutors to the experience two questions (recommended by Valeria Pannunzio) have been asked in the project:

1. What does the user like to do regarding the goal of this experience? What is the user good at doing?

The role of the user should be defined by his skills and talents to create meaningful experiences since these will make the user fill competent and fulfilled. For example in this project I found that the users enjoyed finding new creative ways of keeping their goals (For example adding different natural flavors to the water to make it tastier), so not only the questions but the inspiring notifications were oriented in supporting that role of the user.

2. What does technology can do that the user doesn't like to do?

The technology should support activities that the user doesn't like to do. For example, a relevant value of fitness trackers in the experience is the role of collecting data and translate it into daily data visualization.

An example from the redesign that shows this meaningful conversation is the "What" questions. The user is good at finding new solutions and reflecting but is something that he doesn't naturally do (this was found in research). Therefore, the technology sparks the question and the user uses his reflective skills to find an answer that is personal and adapted to his context.

C. Objective information become subjective experiences
One learning from this project is that information and interactions always create subjective experiences since they are perceived by the user. Therefore is important to evaluate the intention of the interaction designed with the experiences perceived by the user to validate the intended effect.

For example, fitness trackers bring factual objective data to users. When the user didn't do the steps predetermined for the day, the device shows the factual information to create with the intention of creating a neutral experience (For example, 5000 steps). However, the user interpretation of this information creates a subjective experience. In research, the participants expressed (both in User Research and in Evaluation) that the message that they received was "You are not doing enough" or "Remember that you are not keeping your goal". All the participants felt extra punished by factual data, understanding these unexpected effects is key to create positive experiences, and also to learn how the technology can support the user.

D. Key factors for an engaging health management

Reflecting on the findings of the project, there can be found some key elements that should be present for a positive experience that engages the user in his health management:

-Building resilience

In a transformative experience such as a habit formation, the user has to develop a new lifestyle (a healthier lifestyle) that requires a physiological change were the user may build new values, new priorities, etc. This process comes with many lows and frustrating moments during the transformative experience. In this project, it has been shown that supporting the user in the lows of developing a new habit was key for maintaining the engagement.

Building resilience means to overcome difficulties and become strong or happy again. Therefore supporting the user to recover from this negative experiences and reframe them with a positive meaning (as learnings for example) is key for maintaining a feeling of competence the process and therefore the engagement in the new habit formation.

-Supporting balance, not competition

In User Research was found that the meaning of health for the user was self-care because by doing activities that are enjoyable for them and that make them feel that they take care of themselves they can balance the stress from everyday life, which is perceived as unhealthy. Therefore health experiences focused on "to do" or based on achievements are going to clash with the value of health for the user, since they will be stressful and therefore unengaging.

-Enable meaningful personal activities:

In User Research it was found that the user-perceived healthy activities like these that were meaningful and joyful since they were related to self-care (doing something that they enjoy). Moreover, is difficult to engage the user in activities that he doesn't enjoy. Therefore, engaging health management (in this case in primary prevention) interventions should offer to the user a set of activities to choose from. This will allow the user to select the ones that are meaningful for his wellbeing.

E. Designing experiences for wearables means to embrace and take into account the wide expectrum of human needs that surrounds the user in his everyday life, and not only the one that your device fulfills

It was found in research that one important characteristic that provoked negative experience was the demands that the user perceived from the device. As has been explained in this section, that should be tackled by giving the user ownership and autonomy on the experience. However, there is another important element that should be taken into account when designing wearable experiences.

A wearable follows the user journey throughout the day. This is an important factor, since the user needs throughout a day can be very diverse and the priorities of these needs are also dynamically changing, while the device is consistently only looking at the needs that the device tackles. This contrast can create a negative experience perceived by the user as demanding. For example, in this case the device tackles the need of fitness, but when the user is wearing the device at work, this need is confronted and prioritized with other user needs in this context such as competence or belongingness. That can result in the user working until late to finish a deadline when suddenly the device sends a notification to alert that the user have only done 30% of the steps expected. This interaction can be frustrating and disempowering for the user. Therefore, a wearables has to be seen as a user companion that interacts with him in very different context. Rather than seeing the device as an isolated object, to create a positive experience the device has to be seen as one more element in the user everyday life. Zooming out to take this context and needs into account for creating the fitness tracker experience can facilitate harmonic interactions with the user's context and other needs.

F. Tackling only one health component can have negative effects in the user's health. Follow the definition of health of the WHO

Fitness tracker technologies can argue to be specialized on fitness. However, in the research it has found that the fact that they don't tackle other health aspect doesn't mean that they don't affect them. Health is holistic, and only focusing on one aspect (for example fitness) can have a negative unintended effect on the other that should be taken into consideration.

The reason for this phenomena is that, in the case of fitness tracker, they make fitness goal tangible. Therefore, by using the device the user start being more aware of their fitness than they nutrition or they psychological health. For the same reason, they start prioritizing fitness over other health aspects. In specific, in research was seen that very often participants compensated fitness achievements with unhealthy nutrition behaviors. Therefore, is important to keep a holistic perspective when tackling any health aspect in order to ensure the user's wellbeing.

G. User's motivation is not related to instructions, but creativity: try to spark inspiration in the user instead of instructing.

This project thought me that very direct interactions make the user lose ownership of the experience, and therefore engagement. For example, interactions that are oriented to instruct or guide can feel controlling (Such as "go for a troll" or " you didn't close the ring yesterday, close at least one today"), there is no engagement from the user in the experience because he doesn't have a voice. The user should keep ownership of decision making to create an engaging experience. On the contrary, sparking user's inspiration to do an activity gives to the user a proactive role in the experience, since he is not guided but inspired, for example, in a rainy day offering activities to excessive at home. In conclusion, for engaging experiences, motivation should be related to creativity. Therefore, fitness trackers shouldn't instruct users' life but inspired them to design their wellbeing

G. For a meaningful experience ask to yourself: how has grown the user when the technology leaves?

I have found that beyond the tangible meaning (the activity) the intangible meaning is what makes the experience meaningful. The intangible meaning is what this product or service means for the user's life or for his flourishing as a human (user growth). In this case, people are always blocking their own goals with unconscious throughs. Embracing that lifestyle change implies not only physical but also psychological transformation, this redesign has become a platform to support personal self-awareness. There are two values here regarding what the technology leaves. One is to have built a healthier lifestyle, and the other to have supported the user in increasing his self-awareness if the user has transformed his life (healthier life) or himself (more self-aware) the experience will be meaningful for the user.

H. Be aware of your own culture and values to be open-minded in experience solutions

Why all the fitness trackers seem to follow the same philosophy? The current approach seems to have been taken as a norm. They are coach driven, the technology is at the center, is about achievement and there is a strong moral (what is good or what is not) that was called from a participant a "binary experience" which means that you reach or not the standards. In the Literature Research section of this project, it was introduced the origins of the technology, and the context of origin. In that section it was shown that the device follow the same experience approach since all the devices followed the same contextual origin (western modernity era where the good life started to be defined by tracking and coding bodies) and also cultural influence (in western countries the societal values follow the strict Christian morality, there is a clear line of what is good or bad, but that can affect a lot the autonomy of the user). This project brought to awareness the values embedded in the technology and pointed at the effect that they had on user experience.

I got the impression that designers often design following the values taken as a norm on our own culture since we have assumed them as standards in our everyday life. However, being aware of this can allow the designer to look beyond the values assumptions and be critical about them

Being aware of the philosophy that the technology follows allows to not take them for granted and look beyond, to find new alternatives that have a positive effect on the user's wellbeing. In this case, was the Aristotle Theory of Virtue, but only following this new philosophy brought innovative design solutions.

Therefore, being aware of your own culture and values, and the effect.

6.2. Recommendations

Validate the concept in a long-term evaluation

As described in the Evaluation chapter, due to the time limitations of the project it has been only possible to evaluate the direct impact of the design interventions on the user. To predict the wellbeing and motivation that the experience will foster long-term, it was carried out a survey about the needs described in the Self-determination theory. However, it is recommended to validate the findings with an evaluation with real usage through a longer period of time to get an understanding of the effect on the engagement and the user's wellbeing long-term. In specific, special attention should be paid to the goal setting over time, the notifications about insight sharing, and the effect of the questions long-term.

Analyze how to facilitate the tracking system

While the design intervention regarding make specific goals from the three categories had a crucial impact on the user, since fostered the meaning of the experience, it also presents a challenge, since some of the goals offered need manual tracking. The interaction was designed to make these manual goals as easy as possible to track and in the evaluation, the users expressed the threshold of use to below. However, it is expected that these facts can become a barrier for user engagement, since the ideal scenario regarding experience is that the habits are automatically tracked. For this reason, it is recommended to analyze other apps and connected objects that could create an ecosystem with the fitness tracker to share the tracking data and allow automatic tracking. For example, one of the healthy mind goals is "being offline" and there are apps and phone settings that support the user in this goal. Therefore these existing apps could be connected to the tracker to automatize the goal tracking.

Detail the metaphor experience

In the Evaluation carried out in the project it was collected feedback that would serve to generate knowledge for future design interactions. In specific, there are four aspects of the design that need to be detailed in future iterations. These aspects are the following:
The collectibles of the journey: In the evaluation the feedback of the participants served two identify two design directions. On one hand, collecting experiences as rewards for answering the questions could be a direction to explore. This would include elaborating experiences for each goal. For example, if the user has set the habit of doing mindfulness, one of the collectibles could be an audio guide for a meaningful walk. On the other hand, it could be considered to collect elements that support the narrative of the balloon and bring a gasified element. For example, one participant suggested collecting a fire element, which is what would propel the balloon to continue floating.
It is recommended to ideate and evaluate different solutions to see the one that fosters user engagement.

Animated interaction
It is recommended to animate the application in future iterations. Since the metaphor that the app follows is a balloon going through a journey, elements like the balloon bloating, the interaction with the questions, the balloon visitors and the changes of landscapes when the user is not in balance should be animated. Moreover, animating the app was a factor that the participants of the surveys expected the final design to have.

What happens once the future-self is achieved.
Further design iterations need to explore the development of the experience once the future-self is reached through the three goals. Questions such as what would happen with the habits reached once starting a new group of habits, or how will be the experience of reaching the future-self need to be explored. I suggest that, since the app has a social element reaching the future self could add a sort of status to the user in a simple way. For example, adding a pattern to the balloon.

Define the criteria for achieving the future-self.
In future iterations, it should be defined as the criteria of achieving the future-self. This criterion couldn't be explored in the project due to time limitations. To define the criteria of achievement of the future self real usage evaluations need to be carried out to have an understanding of the different scenarios of the user journey. For example, it needs to be understood how frequently the user has lows in the journey since the collectibles define the process of the journey. It also needs to be specified how long the user needs to be in balance to consider to have reached his future self, for example, literature research can be carried out to find if there is evidence that a specific amount of time doing a behavior

confirms to have incorporated this behavior in your lifestyle.

Enhance the experience of the future-self in the goal setting

In the evaluation it was found that participants expected a more immersive experience during the goal setting. Apparently the fact of designing your future-self brought in the user an expectation of an experience that could be compared by buying a car, they wanted to first thing what they wanted and then choose the features (in this case the future-self habits). Moreover, the participants expected the personalized character to be more dynamic, and change his appearance and behaviour depending on the future self habits chosen.

Two design directions can be proposed to be explored: One design direction could be to expand the user experience of goal setting beyond the app to the buying experience. Similarly to buying a car, where you want to see different models with different versions, the service could allow the user to envision different scenarios depending on the habits picked. Bringing the habit setting to the purchasing experience could offer the possibility of creating personalized purchasing experiences. For example, by offering VR experiences to envision your future-self or customized tests that could help the user to prioritize wit which habits to start.

Another design direction could be to enhance the envisioning experience through animating the goal setting and creating a story out of it. In this direction the habits choose by the user could be reflected in the behaviors and appearance of the character in the screen. For example, if the user chooses the goal of being grateful the character would communicate to have a positive mind even difficult events.

6.3. Personal Reflexion

Since graduation is a project that is done individually I found it a great opportunity to find my fears and perceived weaknesses and confronted them during the project since I aimed to improve myself as a designer (and as a person) throughout the process. Regarding design, I tried to explore different design activities and methods (context mapping, creative sessions, design with dilemmas, etc). I think the fact of working by myself had a very positive influence in my personal growth since every time I would apply a new method or activity I could see my strengths and weaknesses, both personally and professionally. For example, I have never organized a creative session by myself, so I decided to do it in this project.

Another design skill that I wanted to strengthen in this project was the transition from research to design. This is why I decided to choose for a design project when defining the briefing since. I noticed in this project that the reason was that I think in a very conceptual level, so I look for more abstract insights and I look for patterns among them. For this reason the "Define" section was the most challenging for me, however, I could communicate that to my chair and mentor and I also looked into design theory to gain more knowledge about this process transition. I feel I was able to combine the conceptual understanding and also tackle tangible interaction to be able to redesign the experience of fitness trackers. So I feel I could confront this fear and grow from it.

Regarding the design assignment, throughout the project itself, I gained a lot of insights. most of them described in the "Conclusion" section. However, one insight that is more suitable for a personal reflection is that the fact that a fitness tracker is a wearable was an important challenge for me as a designer. A wearable is a continuous experience (24/7). This means that wearables are not embedded in a specific context (such an ATM). On the contrary, wearables are in a very dynamic context that also varies per user. Fitness trackers are used everyday and anywhere so is not only a continuous interaction with different stages of the user psyche but also with different contexts. That was the reason why I defined a very conceptual dilemma since the more tangible dilemmas described only one interaction of this multifactorial experience. The solution I found was to focus on a stressful day since in this context was more clearly the effects of the tracker's interactions on the user's wellbeing.

In addition to these learnings, I am very happy to have had the opportunity to explore healthcare, or something as technical as a fitness tracker, from the perspective of design for emotion. The reason is that I have always valued design for emotion for going to the core of humanity, and therefore, the design is seen as an opportunity to promote individual wellbeing. I found that very valuable for fitness trackers since I always got the impression that in these devices there are two technical parties (healthcare and engineering) defining what goes to the user but they are not translated to the user. This can be seen in the finding from user research that states that the technology is perceived as controlling and strict, and that the goals are perceived as forced from an external party. I thought that was a beautiful opportunity because designers always play the role of moderators, they listen to the three parties. I think in this experience it was missing to listen to the user and translate the requirements from the other two parties to the user's language and needs.

Moreover, I learned a lot about what is the value of a conversation with a machine. When I was researching how to enable conversations user-machine I found much information that aimed to create a conversation as similar to a human as possible, this fits well the current approach of fitness tracker that tries to simulate a personal and motivating trainer. However, I got the feedback from several participants that said that this attempt to simulate human communication was very meaningless since they knew was a machine, so they felt fooled. Afterward, I read the research of Amber Case who stated that "machines shouldn't act as humans and humans shouldn't act like machines, they should amplify the best part of each " and that made much more sense to me. This is why I looked at the tracker as a platform to enable the user to be more self-aware and manage their own dilemmas. I am glad about this learning because I spent a lot of time defining what was the best of humanity and the best of this technology in order to define the roles that both agents would have in the conversation, and I think that was key to make the conversation meaningful.

Finally, I have found in this project a reflexion of all my passions, I think that is why I enjoyed until the last day.

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