Assessment of the Needs and Wishes of Partners of Cancer Patients Regarding a Smartphone Application of the Self-Help Intervention Hold on, for each other: A Qualitative Study

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# Dankwoord

Voor u ligt de scriptie die ik heb geschreven ter afsluiting van mijn master Gezondheidspsychologie en Technology aan de Universiteit Twente. De Universiteit Twente heeft het idee om een smartphone app te ontwikkelen voor partners van kankerpatiënten, gebaseerd op de cursus Houvast, voor elkaar. Om goed aan te kunnen sluiten bij de behoeften van de partners met betrekking tot zo een app, is deze kwalitatieve studie uitgevoerd.

Ik vond het zeer interessant en leerzaam om onderzoek te doen op dit gebied omdat ik merkte dat er voor deze groep mensen weinig ondersteuning was in de vorm van interventies. Ik hoop dat dit onderzoek en het gemaakte prototype bij kunnen dragen aan de daadwerkelijke ontwikkeling van een werkende smartphone interventie voor partners van kankerpatiënten.

Tot slot wil ik nog enkele personen in het bijzonder bedanken. Allereerst de respondenten die hebben deelgenomen aan mijn onderzoek, zonder hen was mijn onderzoek niet mogelijk geweest. Het was lastig om genoeg respondenten te vinden dus mijn dank is groot voor diegene die deel hebben willen nemen. Ook wil ik graag mijn twee begeleiders, Dr. N. Köhle en Dr. C.H.C. Drossaert bedanken voor de goede begeleiding. De feedback en adviezen die ik heb ontvangen hebben een belangrijke rol gespeeld in de totstandkoming van deze scriptie aangezien deze ervoor hebben gezorgd dat ik steeds een stapje verder durfde te gaan. Ten slotte wil ik mijn dierbaren bedanken voor de steun, het begrip en het vertrouwen gedurende mijn master thesis, wetende dat ik gedurende deze periode niet de makkelijkste ben geweest. Mijn familie en vrienden hebben ervoor gezorgd dat ik mijn onderzoek en scriptie tot goed einde heb kunnen brengen.

Chantal Werger

# Samenvatting

Achtergrond: Mantelzorgers van kanker patiënten negeren vaak hun eigen problemen om zich zo te kunnen focussen op de behoeften van de patiënt. Deze mantelzorgers spelen een belangrijke rol in het herstel en het ziekte management van de patiënt daarom moeten ook zij de juiste zorg ontvangen. Er zijn nagenoeg geen interventies beschikbaar voor deze verzorgenden. '*Houvast, voor elkaar*' is een voorbeeld van een interventie specifiek ontworpen voor deze doelgroep. Op dit moment is er alleen een web versie beschikbaar van deze interventie. Omdat mobiele apps veel voordelen kunnen hebben kan het voordelig zijn om een smartphone versie te ontwikkelen. Het doel van deze kwalitatieve studie is het vaststellen van de behoeften en wensen van partners van kankerpatiënten met betrekking tot een smartphone applicatie van de zelfhulp interventie 'Houvast, voor elkaar'.

**Methode**: Semi gestructureerde interviews zijn uitgevoerd met tien partners van kankerpatiënten. Ze varieerden wat betreft leeftijd, geslacht, opleiding, arbeidssituatie, kinderen, vorm van kanker en de behandeling. Deelnemers werden gevraagd naar hun achtergrond, mening over de voorgelegde mockups, mening ten aanzien van de verschillende mogelijke functionaliteiten (personalisatie, herinneringen, professionele begeleiding, lotgenoten contact, zelf monitoring en uploaden van gegevens) die gepresenteerd werden in de app en er werd gevraagd of ze suggesties hadden met betrekking tot het verbeteren de app. Er zijn audio opnames van de interviews gemaakt en deze zijn letterlijk getranscribeerd en geanalyseerd door één persoon.

**Resultaten**: Bijna alle respondenten waren positief over de app in het algemeen, echter gaven twee respondenten aan dat ze geen gebruik zouden maken van de app. Respondenten vonden de app en de inhoud van de cursus allesomvattend. Ze waren dan ook positief over de inhoud van de cursus. De meerderheid van de respondenten had een behoefte aan de volgende de functies; herinneringen, professionele begeleiding, lotgenoten contact, zelfmonitoring en het uploaden van gegevens. Ze waren echter minder behoefte aan de functie personaliseren.

**Conclusie**: Deze studie draagt bij aan het vergroten van het bewustzijn van de uitdagingen waarmee partners van kankerpatiënten worden geconfronteerd en hun behoefte aan een interventie. Het is aan te raden om de app te ontwikkelen, omdat daar blijkbaar behoefte aan is. Voor toekomstige ontwikkeling van de app wordt voorgesteld om de doelgroep te blijven betrekken om er zo voor te zorgen dat deze voldoet aan hun behoeften en wensen om een effectiever en efficiënter product te creëren. Deze studie leverde ons ook informatie op die kan worden gebruikt voor de ontwikkeling van m-gezondheidszorg in het algemeen.

# Abstract

**Background**: Informal caregivers often neglect their own problem in order to focus on the needs of the patient. Since informal caregivers play a very important role in the recovery and illness management of the patient, they need to be provided with the proper care as well. There are not many interventions available for these caregivers. '*Hold on, for each other*' is an example of an intervention specifically designed for partners. However there is only a web-based version of this course. Since mHealth poses many advantages, it might be beneficial to develop a smartphone application of this course. The aim of this qualitative study was to assess the needs and wishes of partners of cancer patients regarding a smartphone application of the self-help intervention 'Hold on, for each other'.

**Methods**: Semi structured interviews were conducted with ten partners of cancer patients. They varied in terms of age, gender, education, employment, kids, type of cancer and treatment. Participants were asked about their background, opinion about mock-ups of the app, opinion about features presented in the app (personalization, reminders, professional guidance, contact with fellow sufferers, self-monitoring and uploading data) and whether they had suggestions. The interviews were audio-recorded, transcribed and analyzed by one coder.

**Results**: Almost all respondents were positive about the app in general, only two people indicated that they would not make use of the app. Respondents said they thought the app and the intervention were all-encompassing. The respondents were also positive about the content of the course itself. The majority of respondents had a need for the following features; reminders, professional guidance, contact with fellow sufferers, self-monitoring and uploading data. The only feature they were not positive about was personalization.

**Conclusions**: This study contributes to the raising of awareness of the challenges partners of cancer patients face and their need for an intervention. It is recommended to develop this app since there, apparently, is a need for it. For future development of the app it is suggested to keep involving the target group to make sure it meets their needs and wishes in order to create a more effective and efficient product. This study also provided us with information which can be used for the development of mHealth in general.

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# 1. Introduction

With 8.7 million deaths in 2015, cancer is the second leading cause of death worldwide. In 2015, the number of cancer cases worldwide was estimated at 17.5 million (Fitzmaurice et al., 2017). Getting diagnosed with cancer can be a traumatic experience because it is a threat that comes from within, this can make a person feel powerless. Next to that, people enter a (possibly) long time of insecurity since it is not known whether treatment will succeed and if it does, whether the disease re-emerges or not. As a result of the disease or the treatment, many cancer patients deal with fatigue, memory problems and pain. Cancer can also have serious psychological consequences; anxiety and depression are prevalent in 20-30% of the patients and these effect can last long term. All these consequences can lead to occupational disability which means that cancer can lead to psychological, physical and societal limitations (Vonk, Korevaar, van Saase & Schoemaker, 2016).

The aforementioned consequences are not just limited to the cancer patients but they are also experienced by their partners. Currently, there is a bigger reliance on informal caregiving to provide support (Pitceathly & Maguire, 2003). This is due to the fact that there is an increase in cancer incidence and an increase in the survival of cancer (Girgis & Lambert, 2017). Another reason for it, is the trend towards shorter hospital stays (Stenberg, Ruland & Miaskowski, 2010). Lastly, because of the cutback in professional care many western European countries are implementing major reforms regarding long term care. This also increases the reliance on informal caregivers because they need to compensate these cutbacks (van Groenou & De Boer, 2016). Partners of cancer patients are identified as primary care providers and they provide the most extensive and comprehensive care to the cancer patients (Nijboer et al., 1998).

Partners have many responsibilities like (in)direct care for the patient and other care responsibilities like child care. Because of all these responsibilities, they can be exposed to a large burden, which is often for a long time (Stenberg, Ruland & Miaskowski, 2010). Most caregivers are capable of adjusting to this situation and they even mention positive experiences resulting from caring for their ill partner. For example, families are often brought closer together and they can spend more quality time with each other. Partners also reported that they learned a lot from the caregiving experience and that they experienced this period of caregiving as meaningful, purposeful and satisfying. In some cases, caregiving was found to improve self-esteem in the caregivers (Pitceathly & Maguire, 2003; Stenberg, Ruland & Miaskowski, 2010).

Yet, not all partners are capable of adjusting to the situation and some even report high levels of emotional distress and psychiatric problems like major depression and anxiety (Pitceathly & Maguire, 2003). Research suggests that 50% of the caregivers (most often spouses/partners) of cancer patients experience symptoms of anxiety and depression (Mosher, Given & Ostroff, 2015). Partners also report other emotional problems like struggling with their own feelings and they experience the caregiving process as riding an emotional rollercoaster (Stenberg, Ruland & Miaskowski, 2010). Next to these psychological problems, they also experience physical problems like sleep problems, fatigue, pain and weight loss. Social problems are also often experienced, partners for example feel isolated and roles and relationships change (Stenberg, Ruland & Miaskowski, 2010).

Partners often neglect their own problems in order to focus on the needs of the patient. Next to that they are also less likely to talk about their concerns and worries (Pitceathly & Maguire, 2003). Even though they can experience many complaints, they make little use of mental health services. For example, only 46% of the caregivers (mostly spouses/partners) with a psychiatric disorder sought help in mental health care (Mosher, Given & Ostroff, 2015). Research has identified several barriers which might be causing this underuse. First, partners prioritize the needs of the patient above their own needs. Second, partners often have a negative view of mental health care providers and the use of medication. Third, they try to avoid stigmatization and have a desire to manage their emotional concerns independently (Mosher, Given & Ostroff, 2015). Since partners play a very important role in the recovery and the illness management of the patients, they need to be provided with the proper care as well. Supporting partners of cancer patients will not only help them, but it will also indirectly support the patients (Stenberg, Ruland & Miaskowski, 2010).

### 1.1 Hold on, for each other

There are not that many supporting interventions for partners of cancer patients in particular. Most of the existing interventions are aimed at couples and the focus of these interventions was often on the patients. An example of an intervention that is aimed at partners themselves, is the web-based self-help course 'Hold on, for each other' (Köhle et al., 2015). This course aims to provide information and support and it aims to help partners to make the best of the difficult situation they are in. The course is based on two theories, stemming from positive psychology namely; Acceptance and Commitment Therapy (ACT) and self-compassion.

ACT is a form of behavioral therapy aimed at increasing psychological flexibility by taking action. Psychological flexibility is defined as *"the capacity to persist with or change* 

behaviour, in a context of interacting psychological influences, in a way that serves one's goals, and is consistent with what the situation at hand allows one to achieve" (Hayes, Luoma, Bond, Masuda & Lillis, 2006). ACT teaches people the psychological skills that are needed to handle painful thoughts and feelings. Next to that, it helps people to get in touch with wat is really important and meaningful to them. An acronym can be used to describe the model in an easy way, this acronym is also called ACT. Accept your thoughts and be present, Choose values that are important to you and Take action towards these values (Harris, 2009). Next to the acceptance part, cognitive defusion is also a very important component of ACT. This technique is focused on changing the way people interact with and relate to their thoughts instead of trying to change the form of frequency of these thoughts (Hayes, Luoma, Bond, Masuda & Lillis, 2006). As mentioned earlier, some partners of cancer patients have symptoms of depression and anxiety. ACT might be a useful theory to use since it can help the partners to deal with these negative emotions instead of avoiding them. Partners might also have dysfunctional thoughts like "Is the cancer going to come back?" and ACT could help them to cope with these thoughts as well (Köhle et al., 2015).

Self-compassion is about acknowledging that suffering and failure are part of human life and that everyone, including oneself, deserves compassion. Compassion involves patience, kindness and non-judgmental understanding. Self-compassion is based on three basic components 1) being kind and understanding to oneself instead of criticizing and judging; 2) placing ones experiences in a broader perspective instead of seeing it as a separate and isolating event; 3) balancing painful thoughts and feeling instead of over-identifying with them. Self-compassion can be seen as a strategy for emotion regulation in which negative emotions are transformed in a more positive feeling state (Neff, 2003). As mentioned before, partners of cancer patients often neglect their own needs because they prioritize the needs of the patient. Next to that, they also might feel guilty when they meet their own needs. Selfcompassion could help partners of cancer patients in acknowledging the difficult times they face and it could help them to be less hard on themselves. Research suggests that selfcompassion is positively related to mental well-being and negatively related to perceived psychological distress in partners of cancer patients (Drossaert, Köhle, Schroevers & Bohlmeijer, 2016).

#### 1.2 Mobile health

Up until now, the course is only available as a web-based intervention which means that it can only be used on a computer or tablet. To improve health outcomes it might also be useful to make the intervention available for mobile phones. The use of mobile applications for health information and services is called mobile health (mHealth) and has the potential to improve healthcare communication, delivery of healthcare and the distribution of medical information (Nacinovich, 2011).

Advantages of mHealth in comparison to traditional interventions that are delivered face-to-face or web-baes interventions are mentioned by Tate et al., (2013). First, since mobile devices are widely used across various age groups and populations, mHealth is highly accessible and implementation of health programs can be done more cost effectively this way. Secondly, data can be collected in real time which makes it possible to give instant feedback. Third, mobile devices can be used at every moment and place which makes it easier to access and it will be less time consuming. This lowers the burden of using the intervention and might therefore increase the motivation of participants. This might be particularly interesting for partners of cancer patients since they are already exposed to a large burden because of their increased responsibilities (Stenberg, Ruland & Miaskowski, 2010). Forth, mobile applications can be easily tailored and personalized which may increase the effectiveness of a program. Fifth, evaluation information (log data), for example about program delivery or usage, can be collected real time which makes it easier to gain insights in program delivery and usage. Sixth, users can easily obtain and track self-relevant information which allow for selfmonitoring. This might be interesting for partners of cancer patients because they often prioritize the needs of the patient and therefore not notice their own problems, by obtaining this information they could gain insight in these underlying problems (Mosher, Given & Ostroff, 2015). Lastly, mHealth can easily extent social networks which makes it possible to create social support networks for the users (Tate et al., 2013). This might be useful for partners of cancer patients because they often keep their problems to themselves because they do not want to burden the ill partner (Northouse, Katapodi, Schafenacker & Weiss, 2012). It might therefore be nice if they have someone to talk to, someone in the same situation. These characteristics of mHealth can lead to a smartphone application with the following features which could possibly help partners of cancer patients to cope better with the difficult situation that they are in: 1) personalization, 2) reminders, 3) professional guidance, 4) contact with fellow sufferers, 5) self-monitoring and 6) uploading data.

*1. Personalization.* Personalization can for example be used to give personalized feedback to the partners, which can reduce the information burden by only giving information which is relevant for that specific participant (Leykin, Thekdi, Shumay, Muñoz, Riba & Dunn, 2012). The use of personalization is important to engage a diverse group of participants. Research suggests that tailored information, feedback and expert consultations are the most acceptable and useful functions of this feature. Personalization can lead to higher retention rate and it can improve effectiveness of the intervention (Zhao, Freeman & Li, 2016). The reduction of the information burden, by personalizing information, might be helpful for partners of cancer patients since they are already exposed to a large burden, as mentioned earlier (Stenberg, Ruland & Miaskowski, 2010).

2. *Reminders*. Participants can be reminded about using the intervention by means of push notifications. These notifications can be send to the smartphones of participants and they can contain messages which could trigger the participants to do the exercises. The use of push notifications is a promising way of enhancing engagement of participants (Morrison et al., 2017). Partners of cancer patients often have to take over all kinds of tasks from the patients. As a result, partners become very busy and eventually overwhelmed (LeSeure & Chongkhamang, 2015). For them it might therefore be useful to receive reminders when they choose to use a smartphone supported intervention.

*3. Professional guidance*. This could be an important feature to include since it could increase the engagement and motivation, of participants, to use technology based interventions. Technology offers the opportunity to facilitate remote consultations regardless of time and place, which leads to a reduction of costs and a higher reach and accessibility of the intervention. It is also beneficial for the professionals since it can save them valuable time if participants would be able complete tasks on their own (Lappalainen et al., 2013). Again, the burden will be lowered for partners of cancer patients when they can have remote consultations and thus save time. This is beneficial for the partners since they already have a busy and overwhelming scheme (LeSeure & Chongkham-ang, 2015).

4. Contact with fellow sufferers. People can feel isolated when they think their suffering, mistakes and challenges are not shared by others. According to Neff and Germer (2013) common humanity is important in this. Common humanity is a part of self-compassion and it means that people can recognize that they are not the only ones who suffer, make mistakes and face challenges. Contact with fellow sufferers can help to increase this recognition. Since partners often do not want to discuss their problems with their ill partner to

avoid adding to their burden, it might be useful if they could talk to some who is in the same position and faces the same problems (Northouse, Katapodi, Schafenacker & Weiss, 2012).

5. Self-monitoring. Monitoring emotional well-being is very important when it comes to mental health because decreases in emotional well-being are associated with depression and anxiety. Monitoring for these changes is thus important in the early detection of mental health issues. Many people, including partners of cancer patients, in with mental health problems do not seek professional help. Self-monitoring is therefore an interesting feature in mental health care since it can provide individuals with the insight that they might need to seek help for their issues. Research found that young people indicate that they prefer self-managing strategies for addressing their mental health (Rickard, Arjmand, Bakker & Seabrook, 2016).

6. Uploading data. In the current context it means that information can be uploaded to a professional and/or to researchers. Participants can for example upload their self-monitoring data for professional to react on it (Leykin et al., 2012). These professionals are then able to provide personalized feedback (see personalization). To establish the efficacy and effectiveness of the application it is important that this feature is available. The obtained data can help to gain insight into behaviors and the well-being of the participants (Leykin et al., 2012).

Despite all these advantages, there are still some concerns regarding mHealth. The biggest concerns are about how privacy, security and confidentiality are kept when using mobile applications (Kumar et al., 2013). Trust is very important for users and their intention to use a technology. When people do not know where their information is stored or how it is transmitted, the degree of uncertainty increases. When this happens people might not trust an application and will therefore not make use of it (Schnall, Higgins, Brown, Carballo-Dieguez & Bakken, 2015). Next to that, low engagement and discontinuation are large problems in technology based interventions. This can for example be the case when participants perceive the intervention as not beneficial and if it has usability problems (Eysenbach, 2005). To increase the long term use of the app, it is therefore important to include user in the design process. The intervention should be matched to the needs and wishes of users. The user centered design will make the eventual product more efficient and effective. When opinions and suggestions of the users are taken into account, they feel a sense of ownership of the final design of the app, which can support the integration of intervention (Abras, Maloner-krichmar & Preece, 2004).

### 1.3 Aim of the study

Cancer is the number one cause of death across the world and the number of cancer cases and death are only expected to increase in the future. Being diagnosed with cancer and receiving treatment can have a great impact on the patients but also to their partners. The partners often neglect their own problems because they fully focus on the needs of the patient. Since partners play a crucial role in the recovery and illness management of the patient, it is very important that they also receive adequate treatment. Self-help interventions based on ACT and self-compassion can be very helpful for partners of cancer patients. The web-based self-help intervention Hold on, for each other was therefore developed. Research on the user experience and the effectivity of the course was promising.

However, currently only a web-based version of the intervention is available. It might be beneficial to also create a smartphone version of the intervention because mHealth proposes many advantages. To make sure, the smartphone version of the intervention meets the wishes and needs of the partners, it is important to involve the users in the development of the application. The wishes and needs of partners of cancer patients regarding such an intervention will therefore be examined. This will be done on the basis of a prototype of the app. The following research question has been formulated: *"What are the needs and wishes of partners of cancer patients regarding a smartphone-supported self-help intervention, which focusses on ACT and self-compassion?"* This question can be divided in the following subquestions:

- 1. What do partners of cancer patients think of the content of the app in general?
- 2. What are the needs and wishes of partners of cancer patients regarding the structure and design of the app?
- 3. What are the needs and wishes of cancer patients regarding the six features (personalization, reminders, professional guidance, contact with fellow sufferers, self-monitoring and uploading data) shown in the prototype of the app?

# 2. Methods

To gain insight in partners' needs and wishes with regard to an smartphone application of the course *Hold on, for each other*, semi-structured interviews were conducted. Ethical approval for this study was provided by the Ethics Committee of the University of Twente.

### 2.1 Participants and procedures

The target group of the current research consisted of a heterogeneous group of partners of cancer patients. The recruitment of the participants was based on convenience sampling, which means that they are recruited based on the network of the researcher. The participants were approached either by phone or by email and they were provided with an information letter (appendix 1). This letter contained information about the intervention Hold on, for each other and about the purpose of the current study. Based on the information they received, they could make the decision to participate or not. If they chose to participate, an appointment was made for the interview to take place. Ten participants were recruited this way.

There were several inclusion criteria for the respondents namely: 1) being the partner of a (former) cancer patient; 2) willingness to participate in the interview. After the pilot interview, a third inclusion criteria was set; 3) affinity with the use of smartphone/applications. Respondents had to fill in an informed consent (appendix 2) at the beginning of the interview. At this point, the participants were asked for their permission to make an audiotape of the interview. All ten interviews were conducted by one researcher and this same researcher also transcribed the interviews.

### 2.2 Context 'Hold on, for each other'

As mentioned in the introduction, 'Hold on, for each other' is a web-based self-help course. It aims to provide information and support and it will help partners to make the best of the difficult situation they are in. To make sure that the intervention meets the needs of the partners, they were involved in the entire design process. The course consist of six lesson and each lesson discusses a different theme. The themes are as follows: 1) coping with emotions; 2) your resilience plan; 3) my mind works overtime; 4) what is now really important?; 5) afraid, tired and moments of joy and 6) the art of communication. Each lesson consist of a short text, which describes the topic of that lesson, and some short psychological and meditation exercises. These exercises are based on the earlier described theories; ACT and self-compassion. After each exercise, participants receive a feedback message. Practical information, tips and references to websites, which are relevant for the theme of that week,

are provided to the partners. Next to that they have the option to receive short inspiring text which they can receive trough text messages. They can also decide to connect to peers to receive peer support and to exchange experiences. Participants are able to share tips but also read tips from others. Qualitative and quantitative studies have been conducted to examine the experiences of the partners with the course. Overall, the results were promising and partners appreciated the intervention (Köhle, 2017).

## 2.3 Mock-ups and interview scheme

### 2.3.1 Mock-ups

Based on the desktop version of Hold on, for each other, mock-ups were used as a paper prototype of a smartphone version of the intervention. The mock-ups could be divided into three categories: 1) structure of the app; 2) components of the app; 3) features in the app. Table 1 gives an overview of which mock-ups belong to which category, an overview of all mock-ups can be found in appendix 3.

Table 1. Overview of categories and mock-ups

Category	Mock-ups
1. Structure of the app	- Homepage
	- Overview of the lessons
2. Components of the app	- Information introduction
	- Psychological exercise
	- Feedback after exercise
	- Mindfulness exercise
3. Features in the app	- Personalization
	- Reminders
	- Professional guidance
	- Contact with fellow sufferers
	- Self-monitoring
	- Uploading data

### 2.3.2 Interview scheme

A semi-structured interview scheme was prepared and used to conduct the interviews. After conducting a pilot interview, the interview scheme was evaluated and a small adjustment was made regarding the background questions because there was no transitional sense between the general questions and the disease specific questions. During the pilot interview it became clear that this was "quite harsh" and that it would be better to include an introduction to these questions to prepare the participants. The interview consisted of five components. Respondents were asked about their thoughts on each topic and whether they had suggestions for improvement or not. Table 2 shows an overview of the interview scheme, the full interview scheme can be found in appendix 4.

Components	Content and core questions
1. Background	- Gender, age, children, education, employment, type
	of cancer, course of the disease, experience with
	health applications
2. Explanation of the course	- Description of the course Hold on, for each other.
3. Needs and wishes concerning the structure	- Impression of sample pictures and suggestions for
and design of the app	improvement
	"What is your general impression of this sample
	picture?"
	"What do you like most and what do you like least?"
	"Do you have any suggestions for improvement of this
	presented screen?"
4. Needs and wishes regarding features of an app	- Opinion about the features and impression of sample pictures
	"What do you think of this feature?"
	"Are there any preconditions this feature such comply
	to?"
5. Suggestions	- Suggestions for improvement, missing content. use
	of app

Table 2. Overview of the structure of the interview

The first component of the interview concerned the background of the participants. Participants were asked about the following social demographics factors; age, gender, education and employment. Next to that, they were asked about the type of cancer their partner was diagnosed with and the course of the disease. Lastly, they were asked about their experience with the use of health related smartphone applications.

The second component was about the course Hold on, for each other. Since participants had no previous knowledge of the course, the full course was explained. Print screens of all components of the current desktop version were shown to the participants. The researcher asked whether the participants had any questions regarding the course, to ensure that they understood everything before they had to look at the mock-ups.

The third component of the interview regarded the needs and wishes of the respondents about the structure and design of the app, based on the mock-ups presented to them. The same questions were asked for each mock-up, see table 2. The information obtained by the answers to these questions could be used when developing the actual application.

Component four was about the needs and wishes of the respondents regarding the six features, which could be present in the app. The six features were: 1) personalization; 2) reminders; 3) professional guidance; 4) contact with fellow sufferers; 5) self-monitoring and 6) uploading data. The function of the feature was briefly explained and respondents were asked about their opinion about the function and about their opinion of mock-ups of each feature. This obtained information could also be used when developing this app. Next to that, this information can also be used for the development of apps in general since it gives insight into needs and wishes regarding these features being present in applications.

The last components of the interview allowed for the possibility to make remarks about the app in general. Participants could make suggestions, mention missing components and indicate whether they would want to use the app, if it were available, or not.

#### 2.4 Data analysis

The audio records of the interviews were transcribed, by the researcher, into clean transcripts. The names of the respondents and the names mentioned in the interview were deleted to guarantee and secure anonymity. Next, the transcripts were read and reread to get familiar with the content of the interviews. Then, the transcripts were coded, the researcher was the only coder in this study. Relevant fragments were selected and coded into one of the three main categories: 1) needs and wishes regarding the content of the app in general; 2) needs and

wishes regarding the structure and design 3) needs and wishes regarding the six features. Each category had subthemes which matched the themes that were discussed. For example, category 1 had subthemes such as: homepage and overview of lessons. After placing relevant fragments into one of the main categories, they were further categorized into: 1) positive remarks/arguments pro; 2) negative remarks/arguments con; 3) precondition; 4) suggestion and 5) other information. Two supervisors were involved in the process of obtaining these categories and sub categories. Discussions about the themes continued until consensus was reached.

# 3. Results

# 3.1 Description of the participants

In total, ten participants took part in this study. The characteristics of these participants are listed in table 1. Participants were heterogeneous regarding gender, age, education and employment. There was a variation between the type of cancer, four partners were diagnosed with colon cancer. There was also a variation in whether partners received treatment or not, half of the ill partners were receiving treatment during the time of the interviews. Participants were also asked about their experience with the use of health applications, nine of them reported that they had none.

Characteristics		Ν
Gender	Male	3
	Female	7
Age	Mean	56.3
	Range	25-77
Children	Yes	8
Ciliaren	No	2
Education	low	Λ
Education	Medium	4 Δ
	High	2
	Eulltime er part time	6
Employment	Patirod	0 2
	Disabled	1
		-
Type of partner's cancer	Colon	4
	Long	2
	Breast	1
	Brain tumor	1
	Lymphoma	1
	Leukemia	1
Partner undergoing treatment	Yes	-
	No	5
	-	5
Experience with health	Yes	1
applications	No	9

*Table 3. Characteristics of the Participants (N=10)* 

3.2 Needs and wishes of partners of cancer patients concerning an app and the content of the course in general

In general, the idea of a supportive app for partners of cancer patients was appealing to all ten respondents. Eight of the respondents said they would make use of the app if it was available. Four of them respondent reported that they would use all features of the app, as illustrated by quotes as: "Yes I would, definitely!" and "Sure, absolutely". The other four reported that they would download the app and then choose the parts of the course they would want to use. One of them commented: "Afterwards I did some mindfulness, so I might use the app for that. Out of curiosity I would check which exercises are offered. I would select the useful things for myself.". Two respondents said they would not make use of the app because they (partner and patient) had each other or a strong network of friends and family and therefore did not need such a course, as illustrated by the following quote: "To be honest, I would not use it because we are handling it perfectly with the two of us."

The presented prototype was also appealing to the respondents. In general, the mockups were said to be clear and consistent, as illustrated with the following quote: "In fact, it is all the same, the whole pattern. Everything is well coordinated and matches." Several respondents found it difficult at times to make suggestions for improvement because it was a paper prototype which makes is harder to image using it. One respondent commented: "I cannot really make a suggestion about the app in general because I am not really in it. I would have a better idea of it once I would be using it, I need to really be in the situation".

Two suggestions were made to the app in general. The first suggestion was to add more facts and statistics about different types of cancer and treatments, as illustrated by the following quote: "*In our case, with colon cancer, it would be nice to have some facts about the progress with certain treatments*". The second suggestion was to add a video tour in the app which shows all the features and possibilities. This way it would be easier to decide whether one would use the app or not.

Even though it was not a focus of the current research, respondents often made comments about the content of the course itself. Five respondents made several positive comments about the course. One of the respondents was struck by the fact that something like this was not available yet, as illustrated by the following quote: *"It is weird that this does not exist yet. How long has this been a problem? Everyone knows someone with cancer."* Mindfulness and contact with fellow sufferers were mentioned as very important and interesting components of the course, as illustrated by the following quote: *"Oh this is*  *interesting! I like the fact that mindfulness is part of the course. It is accepted as a part of therapy for people at difficult moments.* "Lastly, the content of the lessons was evaluated as positive because it is it is all-encompassing.

3.3 Needs and wishes of partners of cancer patients regarding the structure and design 3.3.1 Homepage and overview of the lessons

Table 4 shows an overview of the needs and wishes of respondents' by showing the remarks and suggestions that they made regarding the mock-ups of the homepage and the overview of the lessons.

Mock-ups	Positive remarks	Negative remarks	Suggestions
Homepage 1	- clear - tile structure	- very basic/stiff - boring	<ul> <li>add colors and the image from version 2</li> </ul>
Homepage 2	- specific and clear - designed well - showing image - matching icons - playful	<ul> <li>icons raise more questions -</li> <li>icons make it less clear</li> <li>icon for mindfulness is not</li> <li>clear</li> </ul>	<ul> <li>colors need to be brighter</li> <li>place image at the bottom</li> </ul>
Homepage General		- reminders unclear	- add start screen before the homepage
Overview of lessons	<ul> <li>clear</li> <li>tile structure</li> <li>icons are nice and</li> <li>clarifying</li> </ul>	<ul> <li>icons for 'values' and 'mind</li> <li>is working overtime'</li> <li>icons in general</li> </ul>	<ul> <li>find matching icons for values</li> <li>get rid of icons</li> <li>use design of homepage</li> </ul>

Table 4. Respondents' needs and wishes regarding the structure of app

### Homepage

To assess the needs and wishes regarding the homepage, two example homepages were shown (see figure 1a and figure 1b). The respondents' preferences regarding the two versions of the homepage varied. Three respondents preferred the first version. Seven respondents had a preference for the second version. The tile structure in the first version was mentioned, by one of the respondents, as a positive feature of the first version (see table 4) because this made the homepage more clear. On the other hand, four respondents mentioned that they found the first version very basic/stiff and quite boring, as illustrated by the following quote: *"Well, nowadays, apps normally have more images in the background. This is really boring."* Two respondents suggested that the first version should have a bit more color to it and that the image, which is shown in the second version, could be added too.

One respondent for example mentioned: "The first one is a bit plane, the colors could be brighter and maybe an image at the bottom, that would be nice."





Figure 1a. Homepage version 1

Figure 1b. Homepage version 2

A positive remark for the second version of the homepage was that respondents liked the design (see table 4). For example, all seven respondents with the preference for this version mentioned that the image of the flower made it more appealing and better looking. One of them mentioned: "If I had to choose, I would pick something like this. The way in which it is organized, like with the image in between." Interestingly, the opinion about the icons, belonging to the categories, was ambiguous. As can be seen in Table 4 remarks about the icons are both in the positive as well as the negative remarks column. When asked, two respondents mentioned that the icons matched the topics. On the other hand, three respondents mentioned that these icons were only raising more questions and made everything less clear, especially for elderly people or people with cognitive problems. This can be illustrated by the following quote: "The second version has those arrows and other icons, it gets much more unclear this was, especially for elderly." For this version, the suggestion about adding more color was also made. Next to that, one respondent suggested to change the mapping by placing the image of the flower at the bottom and to resize the icons to the same size. This respondent mentioned: "This version can be a bit tighter by placing the three icons at the bottom, above the image, and in the same size as the other two icons."

The only thing about the homepage in general, that was not clear and therefore negative remark were made (see table 4), was the component "reminders". Three respondents mentioned that they did not know what this term encompasses, as illustrated by the following quote: "*I do not have a clear idea of reminders yet. I do not know what to expect.*" One

respondent made a suggestion for the homepage in general and suggested to add a start screen before the homepage. This way the images could be transferred to the start screen to make the homepage less crowded and therefore more clear.

## Overview of lessons

To assess the needs and wishes regarding the overview of the lessons a mock-up of a possible overview was shown (see figure 2). In general, the presented overview was appealing to the respondents. Seven respondents mentioned that the overview was very clear in general. One respondent made a positive remark about the tile structure (see table 4) because it made the overview more clear. The opinions about the icons were, again, ambiguous. Seven respondents mentioned that the icons were a nice addition and that they clarified the topics, as illustrated with the following quote: *"I like the fact that it is represented with a symbol, this clarifies the topic even more."* One respondent said to not like the icons at all because the text was already clear enough, four respondents mentioned to find the icon for "values" not fitting and one respondent said the icon for "my mind makes overtime" was not fitting. One of them for example mentioned: *"The icons for week three and four are not that characteristic for the theme."* Therefore suggestions were made to either change these icons or not use any icons at all. One person also suggested that the design of the homepage should be integrated in the overview more, as illustrated by the following quote: *"The design of the homepage should be used here, I think."* 



Figure 2. Overview of lessons

### 3.3.2 Components of the app

Finally, participants were shown mock-ups of various components of the app and asked for their needs and wishes. Below, the remarks (positive and negative) and suggestions are discussed for each of these components (see table 5).

Mock-ups	Positive remarks	Negative remarks	Suggestions
Information introduction	<ul> <li>clear</li> <li>fitting amount of text</li> <li>showing image</li> <li>i-icon after each</li> <li>emotion</li> </ul>	<ul> <li>crowded, too much</li> <li>information</li> <li>schoolish design</li> <li>showing image</li> </ul>	- change the word that refers to the homepage, because home is unclear
			- explain emotions right away, not in different screen - make the design flashier - pick a more neutral image
Psychological exercise	<ul> <li>clear</li> <li>easy to understand</li> <li>enough space to</li> <li>answer</li> <li>information is clearly</li> <li>presented</li> <li>progress bar is clear</li> <li>and helpful</li> </ul>	- progress bar not clear	<ul> <li>add the option to zoom in on the text</li> <li>make use of brighter colors</li> <li>put 'write answer here' in the textbox</li> <li>use '%' in progress bar</li> </ul>
Feedback after exercise	- scroll bar is clear - matching image for title - clear wording	<ul> <li>text is in one piece (there are no headers)</li> </ul>	- do not use currently shown image, just write feedback
		- scroll bar was not clear - large amount of text - added image for title	<ul> <li>make sure the design is</li> <li>consequent</li> <li>put headers in text</li> </ul>
Mindfulness exercise	<ul> <li>clear</li> <li>recognition with</li> <li>homepage through</li> <li>icons</li> <li>progress bar is clear</li> <li>and helpful</li> <li>start symbol is</li> <li>recognizable</li> <li>notion of duration</li> </ul>	- icon for title	- explain the progress bar/put a percentage in it

Table 5. Respondents'	needs wishes	regarding	various	components	of app
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# Information introduction

To assess the needs and wishes regarding the information, which is provided by the introduction of each lesson, two mock-ups of what this could possibly look like were shown (see figure 3 and figure 4). These information screens were appealing to nine respondents.

They mentioned that it was all very clear, that it looked nice and that there was a fitting amount of text (see table 5). Two respondents were particularly positive about the "i-icon (for more information)", as illustrated by the following quote: "*In any case, such an "i-icon" come in handy. I notice that when I visit a site and I do not get it, I need extra information. So this is very handy.*" One respondent, on the other hand, suggested that it would be easier if all emotions were explained right away instead of being in a different screen. This respondent mentioned:

"I think for us, elderly, it would be easier to understand if the emotions were explained right away, instead of in a separate screen. So, that you would have all the information at once and you do not have to click on anything."



Figure 3. Information introduction



Figure 4. Extra information introduction

Respondents had mixed feelings about the image shown in figure 3 (see table 5). Four respondents liked the image because it made the whole more attractive, as illustrated in the following quote: *"It just makes it nicer to look at."* Three respondents did not like the image because the screen was already very crowded and because they just disliked the image. This is illustrated in the following quote: *"This is an image that just does not make me happy. If it were to be a flower or something like that, that would be peaceful. With this image I feel obligated to feel sad."* Therefore the suggestion was made to pick a more neutral image. Another suggestion was to make the screens flashier because the design was very schoolish. Three respondents suggested that the word "thuis" should be changed to "home" or "homepage" because that would be more recognizable, as illustrated by this quote: *"Home is more recognizable, it is used more often"*.

## Psychological exercise

Participants were shown two mock-ups of what a psychological exercise within the programme could look like (see figure 5a and figure 5b) and they were asked to reflect upon this. Nine respondents found these screens appealing. Positive remarks were mostly about the fact that the screens were very clear and easy understandable (see table 5). One respondent mentioned: "It is very clear, even if you are not that skilled in it. I do not want to say that I am skilled but you can easily find your way with this." One respondent mentioned that the information was presented clearly and that it was a good decision not to add images to these screens. Two respondents mentioned that there was enough space to fill in the answers, as illustrated by the following quote: "I think you can put your opinion into that, it also teaches you not to answer too wordy, to say what you mean in short sentences and little words." The progress bar above the exercise was not clear to everyone but once they knew what it was for, they were all positive about it. They thought it was nice to know how much work was left for that moment, this way they could decide whether to finish the lesson or continue later. Two respondents mentioned that it would be nice if a percentage was added to the progress bar to make it more clear. One respondent mentioned: "I figured it was a progress bar but I was not sure of it. If you see a percentage going up, it would confirm what the bar is for." One respondent made the suggestion to add more color and three respondents said it would be nice if there was an option to zoom in on the text. Lastly, one respondent suggested to place the phrase "write your answer here" in the text box (figure 8) and place an arrow with the text "click here to answer" at the bottom of the introduction of the exercise.



Figure 5a. Psychological exercise (1)



Figure 5b. Psychological exercise (2)

### Feedback after exercise

To assess the wishes of the respondents regarding the feedback, which is received after an exercise, a mock-up was shown of what this could look like (see figure 6). Seven respondents found this screen appealing. One respondent made the positive remark that the wording was very clear (see table 5). Another respondent mentioned that the scroll bar, on the right, was a nice addition. On the other hand, for one respondent the function of this scroll bar was not clear, right away. The opinion of respondents regarding the image of the title were ambiguous. Four respondents made a positive remark about the image, as illustrated by the following quote; "I like the image, you will look to such an image more quickly." Three respondents mentioned that they would not use the image and suggested to just write feedback. One of them mentioned: "I personally would not have chosen the hand, I do not like that. I would not use an image and just write feedback, otherwise it will be too much." Three respondents made negative remarks about the text and said that it was quite long and that it was one large whole. The suggestion was therefore to put headers in the text if it is this long, as illustrated with the following quote: "With headers you could decide easier which parts you wanted to read and which ones you want to skip." Lastly, two respondents mentioned that the design could be more consequent because the image for the title does not match the rest of the titles and the house style of the app. One respondent mentioned: "I would keep everything in the same theme, this one for example is in blue. An image makes it look nicer and prettier but it should all be a bit more in the house style."



Figure 6. Feedback after exercise

### Mindfulness exercise

Participants were shown two mock-ups of what a mindfulness exercise within the programme could look like (see figure 7a and figure 7b) and they were asked to reflect upon this. All ten respondents found these screens appealing, they all mentioned that it was very clear (see table 5). Three people mentioned that they liked the icon above the title because it was recurring through the app and therefore recognizable. One respondent for example mentioned: "*It is to the point but still an icon at the top, which is nice. That icon is a recurring theme.*" Two respondents did not like the icon that much because they did not understand why that was fitting for mindfulness. Three respondents mentioned that they liked the start button because it was very recognizable, as illustrated by the following quote: "*It is very clear that you can click on this button and that the exercise will start then.*" As also suggested earlier, one respondent mentioned that the progress bar should contain a percentage, this would make it more clear for people that do not use apps or their mobile phone a lot.



Figure 7a. Mindfulness exercise (1)



Figure 7b. Mindfulness exercise (2)

3.4 Needs and wishes of partners of cancer patients concerning the six features Table 6 shows an overview of the opinions of respondents concerning the six features presented in the app.

Feature	Pro	Con	Precondition	Suggestion
Personalization	<ul> <li>everything you</li> </ul>		<ul> <li>privacy and</li> </ul>	<ul> <li>app suggests playlist</li> </ul>
	feel comfortable		anonymity	for certain moments
	with is combined		are guaranteed	<ul> <li>link to add personal</li> </ul>
	- use of self-chosen		<ul> <li>use neutral pictures</li> </ul>	diary
	image			- welcome back
	- playlist for music			message
				- integrate username
				- add privacy message
Reminders	- reminds to use	- too intrusive in		, , ,
	the app	daily life	- not too many	- right amount of
	- inspiring quote	- annoving	- possibility switch	messages
		, 0	them on/off	- being able to save
			- program how often	quotes
Professional	- nice that there is		P0	4
guidance	acknowledgement		- message is enough	- present professionals
8	for situation of the		at first	with photos and
	partner		- need for information	additional information
	- asking questions		about professional	
	is easier		- face-to-face	
	- low threshold			
Contact with	- need for it	- too much	- wish for anonymity	
fellow sufferers	- sharing tips and	negativity	- possibility to switch	<ul> <li>create groups based</li> </ul>
	tricks	- you do not	on/off	on type of cancer
		, know who you	- group setting	- add links to patient
		talk to		associations
		- strong private		
		network		
Self-monitoring	<ul> <li>keeping track of</li> </ul>		- should not be an	
-	progress during	- can be	obligation	- measure moment of
	course	confronting	U	relaxation
	- raising awareness	C C		
	of underlying			
	problems			
Uploading data	L		- privacy/anonymity	
- F	- useful for future		- choice of what to	- add message about
	developments		submit/upload	privacy
	- getting feedback			P. 1940)
	is nice			
	13 1100			

Table 6. Respondents' needs and wishes regarding the six features

#### Personalization

This feature was appealing to by three respondents. One respondent mentioned that is was nice to have personal things, with which you feel comfortable, combined (see table 6). This is illustrated by the next quote: "*That everything is combined, with which you feel comfortable, that is nice. Things you can get positive vibes from.*" They also mentioned that is was nice to have a self-chosen image linked to their account. Another positive component for one of the respondents was the ability to make a playlist for music because music was very important to them, as illustrated by the following quote:

"I think that is very good, music is so recognizable. My partner listens to music a lot, to relax. I also get very emotional when I hear a song, it would be nice if I could save it somewhere then."

This respondents also suggested that the app made suggestions for music that would fit certain moments like relaxation.

The other seven respondents had mixed feelings about this feature. They mentioned that is was a nice feature but that they would probably not use it themselves. Four respondents mentioned that they would like to add an image to their account but that they would never use personal pictures. One respondent mentioned: "Yes, this picture is acceptable, it is a peaceful one. There are no persons on it, this is fine." Neutral images are therefore mentioned as a precondition for this feature (see table 6). Another precondition concerns the privacy of the respondents, as illustrated by the following quote: "Of course, privacy is very important nowadays. It is therefore very important that everything is protected properly, that people cannot get their hands on sensitive information about you and your partner." This lead to the suggestion to add a message about privacy which informs participants about how their data is handled. Another suggestion, made by three respondents, was to integrate the username throughout the app to make it more personal. For example a welcome back message or when a new exercise starts, this is illustrated by the following quote: "I think a username is good, if you were to integrate it in the app. For example when I sign in that it says welcome back! That would be very nice and it makes it more personal and appealing." The last suggestion for this feature was a personal diary. One respondent mentioned that it would be nice if there was a possibility to write down what happened in certain situations, this way one could reread what it was like at that particular moment.

This suggestion is illustrated by the following quote:

"Dates are of great importance to me, I write everything down. This way I can reread what happened after a chemo for example. This way I know what it was like in that moment and I can reread how I reacted to it. It would be nice if I could do that."





Figure 8a. Personalization (1)

Figure 8b. Personalization (2)

Two mock-ups (see figure 8a and figure 8b) of what the personalization could look like were shown to the respondents and they were asked to reflect upon them. In general, respondents found these screens to be appealing. One respondent who was a bit hesitant at first and mentioned that this was data that he/she would be willing to fill in. Four respondents mentioned that both screens were very clear. One respondent suggested that it would be of added value if colors and background could be adjusted to personal preferences.

### **Reminders**

Six respondents found this feature appealing because they would like a reminder every once in a while because it is easy to forget to use the app (see table 6). One respondent mentioned: *"I get them often from other apps as well, I think it is important. You have a lot on your mind so it is nice to get a reminder".* One respondent was only positive about the inspiring quote which could be send in the form of a push message, as illustrated by the following quote: "The inspiring quote is nice, only the inspiring text. Say, when it is out of your mind for some time and you get an inspiring quote, that would be nice. This way you will automatically be reminded about the app."

This respondent also mentioned that reminders about using the app were way too intrusive in daily life. Three respondents evaluated this feature as negative because it felt too forcing and quite annoying.

Several preconditions were mentioned for this feature (see table 6). The first was that there should not be too many reminders. Respondents varied a lot, ranging from receiving them on a daily basis to only receiving them once a month. The majority, namely six respondents, had a preference for receiving reminders once a week. Two respondents mentioned that it was important that they were offered whether they wanted to receive reminders or not and also to select how often they want to receive them. This precondition is illustrated by the following quote: *"It would be nice if you could switch the reminders on and off yourself, that these messages are not automatically send."* Next to the preconditions, a few suggestions were made as well. Two respondents mentioned that they would like the ability of saving quotes they like. *"This is funny because just today, I send my partner some inspiring quotes. I do that quite often. It would definitely be nice if I could save the ones I like."* 





Figure 9a. Reminders; settings

Figure 9b. Reminders; inspiring quote

Two mock-ups (see figure 9a and figure 9b) of how reminders can be installed and what an inspiring quote could look like were shown to the respondents to assess their wishes regarding this feature. Eight respondents found the screens appealing because they felt that they were very clear. A positive remark about installing the settings (figure 9a) was that the respondents

recognized this way of installing settings from other apps, as illustrated by the following quote: *"Yes, this is a piece of recognition. You can swipe yes or no, I recognize that from other apps so I know how to use it."* Six respondents said that it could be nice to add an image to the quote/background and two respondents suggested to add some color to it and enlarge the text. This way, the quote would stand out more.

#### Professional guidance

All ten respondents found this feature appealing, though four of them said they did not plan to use it. They mentioned that they think that for some people it might be useful but not for them because they had a good network or did not feel the need for it (see table 6). One respondent mentioned *"It would be a nice feature but I already have lots of people helping me and that is sufficient. We are already guided so well, nothing can come between that."* One respondent mentioned that it was nice that there is acknowledgement for the situation of the partner because normally only the patient is addressed. Another respondent mentioned that it is also nice that you can ask a question right away and do not have to wait for the next appointment, as illustrated by the following quote:

"I think it is nice, sometimes you have a question and then you just have to wait till the next consult. It would be nice if you could ask this question right away. It is not even necessary to receive an answer right away."

Two respondents mentioned that contacting a professional through an app would lower the threshold and therefore make it easier to get in contact with one.

An important precondition for this feature was that there was a need for information about the professional that could be contacted. Three respondents suggested that it would be nice if there was a list with professionals you could choose from, based on their picture and additional information about what they could offer you. The following quote illustrates this suggestion: *"If I were to contact someone via an app, I would want to know who that person is, what he/she does and what he/she looks like."* Preconditions with regard to the contact itself varied, five respondents said a message would be fine to start, one respondent wanted to make a phone call first and two respondents preferred to only have face to face contact.



Figure 10. Professional guidance; contact

To assess the needs of the respondents regarding the professional guidance in the app, a mock-up of what it could look like was shown (see figure 10). Respondents were positive about this screen since it tackles all possible options for contacting someone. Two respondents suggested to add an icon for each option in order to make it clearer and more interesting to look at.

## Contact with fellow sufferers

This feature was appealing to all ten respondents though not everybody wanted to make use of the function themselves. All respondents mentioned that some people really needed it, therefore it is important that the feature is available. Three respondents specifically mentioned that they liked the tips and tricks function and would use it while at first mentioning not wanting to use this feature at all. Three arguments were mentioned for not using this feature (see table 6). One respondent mentioned that he/she did not want to hear someone else's misery, as illustrated by the following quote: "*I would rather nog have everybody's misery*. *When you have a partner who is ill, you hear a lot of misery*." Another respondent mentioned that he/she did not like the fact that you do not know for sure who you are talking to. The next quote illustrates this: "You never know who you are talking to. *I find that difficult because je never know whether someone has good intentions or not and if they really go through the things they say they go through*." Lastly, two respondents mentioned that they did not felt the need for this contact because they had a strong network already in which they could share and talk about it, as illustrated by the following quote: "*Back then, I chose not to do it. Our friends and family were enough for us.*"

Several preconditions were mentioned for this feature, seven respondents mentioned anonymity as an important precondition (see table 6). Another precondition, mentioned by three respondents was the ability to indicate whether you wanted contact or not. A suggestion therefore was to add an on/off switch to indicate this, as illustrated in the next quote: "*It would be nice if you could shut it off, otherwise you might get overwhelmed. Some people can get very attached to you.*" One respondent mentioned that it would be nice to have a support group instead of one on one contact. A suggestion for this precondition was to create groups based on the type of cancer, four respondents mentioned that this was a good idea. One respondent mentioned: "*In these groups, you are really fellow sufferers.*" One respondent also suggested to add links to patient associations.





Figure 11a. Contact fellow sufferers; share

Figure 11b. Contact fellow sufferers; tips

Figure 11a and figure 11b show the possibilities to share information with fellow sufferers, these mock-ups were shown to the respondents. In general, respondents found these screens appealing because they were clear and easy. All respondents understood how they had to share information because the icon was clear. One respondent however mentioned that the second screen (figure 11b) was a bit boring and thus suggested to add some colors to it, for example by giving the frames different colors. The next quote illustrates this suggestion: "*I think a bit more color, for example the frames of those boxes. If each option would have a different color, that would be nice.*" Another suggestion was to split the screen for tips (figure 11b) into "add tips" and "read tips". This would make it easier to understand and use.

#### Self-monitoring

This feature was appealing to six respondents, two respondents did not like it and two respondents were not sure what they thought of this feature. Two arguments in favour of this feature were used as argument in favor of the feature were: 1) that self-monitoring can keep track of the progress one is making during the course. One respondent mentioned: *"Such a chart is very clear because you can see how you were doing during that period."* and 2) that self-monitoring could raise awareness of underlying problems one is not aware of, as illustrated by the following quote:

"It is good to check how you are doing because most of the time you think you are doing fine. If you were to keep track of it with charts, you might discover that things like sleep and proper nutrition are not going so well.".

Three respondents mentioned that it might be very confronting if, for example, a chart shows a constantly declining line indicating that you are not doing so well. One respondent mentioned: "Of course you feel bad, imagine seeing that in a charts, that will definitely not make you feel better." One respondent mentioned a precondition namely that one should not be obligated to participate in the self-monitoring. Two respondents mentioned that it might also be useful to keep track of moments of relaxation since this might be something that do forget to do when you have an ill partner. One respondent mentioned: "Maybe something like relaxing activities. I can image that when you have an ill partner, that you stop doing things for yourself."

Two mock-ups of what self-monitoring could look like were shown to the respondents (see figure 12a and figure 12b). In general, respondents found these screens to be very clear. The only suggestion five respondents had, was to add a score to the "emotion bar". They like the image but to clarify it a bit more, a score and a definition/explanation of that score should be added. "*With a score combined to the bar, it is possible to score more specific. The next time you have to score you can also compare scores better.*"





Figure 12a. Self-monitoring (1)

Figure 12b. Self-monitoring (2)

### Uploading data

This feature was divided into three components namely uploading data to researchers, to professionals and uploading photos. All ten respondents had no problems with data being send to researchers and professionals. The only two preconditions were that they could decide which information they wanted to upload and that their privacy was protected. One argument for uploading information to researchers was that the data could be used for future developments in this domain. One respondent mentioned: "Yes, I think this is very good, this way it remains in constant development. Therefore, uploading to researchers is particularly important to me." One reason for submitting data to professionals was the possibility to receive feedback on your answers on the exercises. As mentioned in the section on personalization, respondents were quite hesitant with uploading photos, especially personal photos. There was one suggestion, made by five respondents, for this feature and that was to add a privacy message to explain what would happen with the data and how they would be processed.


Figure 13a. Uploading data (1)

Figure 13b. Uploading data (2)

Figure 13a and figure 13b show mock-ups of how data could be uploaded in the app. In general, all ten respondents were positive about these screens. Seven people suggested that it would be wise to add the word "upload" to the icon because otherwise it may not be clear to everyone. One respondent mentioned: "*I think it is better to write something under the icon. I think it is not clear to everyone, for example elderly, they do not get it I think.*"

## 4. Discussion

This study aimed to investigate the needs and wishes of partners of cancer patients regarding a smartphone-supported self-help intervention which focusses on ACT and self-compassion. We found that most partners of cancer patients appreciated such an intervention, they indicated that there was no other course available for them. They mentioned that it was nice that they received some attention as well and not just their partner. They also liked the fact that they could share and read tips and tricks. This is in line with findings from earlier research into the needs and preferences regarding an intervention for partners of cancer patients. In that study they found the same arguments regarding the need for an intervention (Köhle et al, 2015)

An important outcome of this study was that almost all of the participants were positive about the possibility of such an app in general. Only two respondents mentioned that they would not make use of the app. This was an interesting finding since earlier research described that partners of cancer patients underuse mental health services, despite their high rates of psychological distress (Mosher, Given & Ostroff, 2015). This finding should however be interpreted with caution for several reasons. First, this study contained a small number of respondents, the results may therefore not be generalizable. Second, all respondents were acquaintances of the researcher which may have led to social desirable answering. Respondents may have given more positive answers because they knew the researcher and wanted to avoid conflict or spare the feelings of the respondents. This phenomenon is called "fake good" (King & Bruner, 2000). Third and last, this study only investigated whether respondents had the intention to use the app. This means that we do not know if they would have really used the app if it were to be available.

On the other hand, these positive findings might also be due to the fact that this intervention is delivered via an app. This way, certain barriers mentioned by Mosher, Given & Ostroff (2015) might be overcome. In their study they mentioned that partners indicated that psychological help is often very expensive since insurance only covers a limited amount of sessions. The use of an app can overcome this since mhealth can be more cost-effectively (Tate et al., 2013). Another reason that was mentioned was that caregivers had a desire to independently manage their own emotional problems (Mosher, Given & Ostroff, 2015). By using the app, they would be able to go through the course themselves with might increase their feeling of control. Lastly, caregivers mentioned that they would not take away time from

their ill partners to seek mental health care (Mosher, Given & Ostroff, 2015). The app can be used anywhere regardless of time and place. This way, partners would not have to leave their ill partners to receive mental health care. For future research it might be interesting to investigate the specific reasons why people would use this app, this was not asked in the currently held interviews. This way, we could investigate whether mHealth could really overcome the barriers concerning the underuse of mental health care.

Respondents mentioned that they liked the components of the intervention and argued that it was all-encompassing. Respondents found the themes discussed in the course appealing and recognizable, as they encountered much of these themes in daily life. In general, the paper prototype of the app was also evaluated as positive. Respondents found the mock-ups clear and consistent. The positivity regarding the course as well as to the prototype might suggest that this research is a good starting point for further development of the actual app.

This study also provided insights in the respondents' needs and wishes regarding integrated features. This study addressed the following features; reminders, professional guidance, contact with fellow sufferers, self-monitoring, personalization and uploading information. The majority of the respondents would prefer it if the app would made use of reminders in the form of push notifications. They mentioned that it would be nice to be reminded about the app every once in a while. Most respondent indicated however that they would not want to receive lots of reminders. Therefore, they wish to be able to adjust the settings to their own preferences. Push notifications have shown to motivate enrolment into health interventions and evoke repeated use of the intervention. Research suggest that if notifications are perceived as irritating and intrusive, apps might be discarded more quickly. Push notifications are more accepted when users have control over them (Morrison et al., 2017). This control could be obtained by adding the suggested on/off switch. For future research and development of the app it might be good to keep this in mind and add such a switch.

All respondents would appreciate it if the professional guidance feature was present in the app. However, not everyone felt they had a need for it because they already had a strong network but they thought others might benefit from it. This is in line with earlier research in which caregivers of cancer patients mentioned that they perceived their informal support system to be sufficient for coping with their difficult situation (Mosher, Given & Ostroff, 2015). An important precondition for this was that they wanted to have some information about the professional before they contacted this person. Most respondents said the ability to send a message first was nice and met their first needs. Interestingly, almost all respondents mentioned that they would need additional information about each professional before they wanted to contact them. For future development of the app it might be important to incorporate this additional information on health professionals. For future research it might also be interesting to investigate the reasons behind this need for information on professionals and to investigate which information people want about their professionals.

All respondents preferred contact with fellow sufferers as a present feature though not everybody wanted to use it. They all found it important that the feature was present in the app. An argument in favor of this feature was that it would be nice to share experiences and tips and tricks. This is in line with research among cancer patients which showed positive effects of experiential information sharing. Sharing experiences with others can reduce fear and uncertainty and may give people more hope (Rini et al., 2007). These effect may also be occurring in partners of these patients since they also face fear and uncertainty. One reason for not wanting the use it themselves were that respondents reported that they had enough support from their own network. Another reason was that respondents did not want to hear negative stories of other people. These reasons for not using this function are in line with research on the web-based version of the course, in which respondents also gave these arguments (Köhle et al., 2017).

The majority of respondents would prefer it if self-monitoring was a feature in the app because this could raise awareness of underlying problems of which one is not aware. This is in line with the notion that self-monitoring forms the starting point for self-insight (Os et al., 2017). Some respondents however mentioned that they would find it very confronting when they would see a chart showing a declining line suggesting they were doing worse and worse. For future development of the app it might be useful to investigate whether this information should be shown in a chart at all or whether there might be another way to display this data.

Respondents had different opinions regarding the personalization, only three participants would like it if this feature would be present. In general, respondents were willing to fill in some basic data like age and gender. The biggest issue they faced with this feature was the use of personal pictures. Respondents wanted to upload neutral pictures but they were hesitant when it came to personal pictures. They mentioned that they found it very important that their privacy was guaranteed. When using mHealth, people must share their health information in order to fully use the health application. People want to utilize personal services but they are hesitant when they have to disclose personal information, this is called the privacy-personalization paradox (Guo, Zhang & Sun, 2016).

At last, when it came to uploading of data, all ten respondents had no problems with

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data being uploaded to researchers and professionals, as long as they could decide what information they would send. Another precondition, again, was that the privacy of the respondents was guaranteed. Apparently, privacy is a recurring theme that is very important to the respondents. This is not surprising giving the major privacy breaches that reached the news lately. For example a very recent breach, which happened in March, were the personal details of 150 million users of the MyFitnessPal app were leaked (Techworld, 2018). There is an increasing use of smartphones and mobile health apps have great potentials, as of 2017 over 300.000 mHealth apps are available. Unfortunately many of them have issues regarding privacy (Neary & Schueller, 2018). The problem is that very few apps even take privacy in account, these apps do not even have privacy policies. The ones that do have such policies often state that data can be sold, marketed, stored or shared (Margolin, 2017).

As mentioned in the introduction, trust is very important for users when they consider using a technology. When people do not know where and how their information is stored and transmitted they might not trust an application. Therefore they will not use the intervention (Schnall, Higgins, Brown, Carballo-Dieguez & Bakken, 2015). Respondents reported that they would find it soothing if a message about privacy would be added in the app. This message should state what will happen with the data that they upload. For further research on this topic and research on health apps in general, it is therefore advised to add such a message about privacy when personal and sensitive information is obtained with an app.

#### Strong points and limitations

One of the strong points of this study is the involvement of the target group. By using a usercentered design, the eventual product will be more efficient and effective (Abras, Malonerkrichmar & Preece, 2004). It is recommended to continue involving the participants in the further development of the app. Another strong point of this research is that it is one of the first researches which investigates and smartphone supported self-help intervention for partners of cancer patients.

However, there are also some limitations to the current study. First of all, the study contained a small number of respondents. The aim was to collect a heterogeneous group of respondents to assess their needs and wished concerning a smartphone supported self-help intervention. The current sample consisted of more women, elderly people and almost none of the respondents had experience with the use of health apps, only one respondent had experience with these apps. This is quite interesting since recent research showed that 34% of the Dutch population uses health apps (icthealth, 2018). These factors may lead to results

which are not generalizable. Still, a lot of valuable information was obtained which can be used for further development of the app. Next to that we also obtained a lot of information about the use of persuasive features in apps in general. This information might be interesting for developers of future mHealth interventions in this domain but possibly also for the development of apps in general.

Another limitation of the research was that respondents found it quite difficult at times to imagine that it was a smartphone app. The mock-ups that were presented during the interviews helped to overcome this problem but for some respondents it was still very difficult. When researchers are at the beginning of the developmental process it is recommended to use mock-ups. Paper prototyping is a validated technique which is often used for exploring and evaluating early designs (Bailey, Biehl, Cook and Metcalf, 2008). For further research it is recommended to build a high-fidelity prototype based on the evaluation of the mock-ups in this study. With a high fidelity prototype the findings of this study could be evaluated in a more practical context. With a high fidelity prototype it might be easier to test the usability of the app because participants can interact with the prototype of the app (Rukzio, Leichtenstern, Callaghan, Holleis, Schmidt & Chin, 2006). Further research should also aim at a greater population which is divided in terms of gender, age and experience to enlarge generalization.

The last limitation concerns the questions that were asked regarding whether they would make use of the app. In the current study, we only examined whether participant would use the app or not. The reasons behind their decision were not asked. This means that we do not know why they do or do not want to use mHealth. In order to overcome certain barriers and low adherence it would have nice to know these reason. For future research it is recommended to ask for these reasons.

#### Conclusions

This study contributes to the raising of awareness of the challenges partners of cancer patients face and their need for an intervention. The partners of cancer patients provided us with valuable information regarding their needs and wishes regarding the structure, design, components and features of the prototype of the app. Apparently there is a need for such an app so it is recommended to develop the app. For future development of the app it is suggested to keep involving the target group to make sure it meets their needs and wishes. This way the app will probably be more efficient and effective. We think, the needs and wishes regarding the features, discussed in this study, are not specific for the current target

group. Therefore, this study also provided us with information which can be used for the development of mHealth in general.

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# Appendix 1. Information letter

## Leven met een partner met kanker

Het krijgen van de diagnose kanker en de bijbehorende behandeling heeft niet alleen een grote impact op het leven van patiënten maar ook op dat van hun partners. Een partner van een kankerpatiënten moet toezien hoe geliefde lijdt, probeert te helpen waar kan, neemt taken over en probeert voor zijn of haar dierbare te zorgen. Daarnaast moet omgegaan worden met eigen gevoelens en onzekerheden en al de consequenties die de kanker met zich meebrengt. Partners spelen een cruciale rol in het herstel en het ziektemanagement van de patiënt en daarom is het van groot belang dat ook zij adequate zorg ontvangen om deze moeilijke periode zo goed mogelijk te doorstaan.

## Doel van het huidige onderzoek

De Universiteit Twente en het VU medisch centrum hebben met financiële steun van KWF Kankerbestrijding/Stichting Alpe d'HuZes de online cursus "Houvast, voor elkaar" ontwikkeld. Bij het maken van de cursus is nauw samengewerkt met een aantal partners. Zij hebben aangegeven waar zij behoefte aan hebben en wat hun wensen en ideeën zijn ten aanzien van een online cursus.

De cursus biedt informatie en steun en helpt partners van mensen met kanker het beste te halen uit deze moeilijke tijd. Partners kunnen de cursus op de computer of op een tablet doorlopen, maar de cursus is nog niet te gebruiken op een mobiele telefoon. Dit zou echter van toegevoegde waarde kunnen zijn, omdat partners van mensen met kanker zo op elk moment van de dag, onafhankelijk van de omgeving (bv. wachtruimte van het ziekenhuis) gebruik zouden kunnen maken van de cursus. Om deze vertaalslag van de cursus te kunnen maken zijn we op zoek naar partners die met ons mee willen denken hoe we de bestaande cursus het beste kunnen vertalen naar een smartphone app.

## Wat houdt deelname in

Als u deelneemt aan het onderzoek zal er een interview plaatsvinden waarin we u vragen stellen over de behoeften en wensen die u heeft ten aanzien van de smartphone app. U krijgt onder andere voorbeeld plaatjes te zien van de smartphone app waarbij we u vragen stellen zoals "Wat spreekt u wel of niet aan?"

Het interview zal bij voorkeur in december of januari gehouden worden en zal een kleine 45 minuten duren. Het interview kan plaatsvinden bij u thuis of op de Universiteit Twente. Alle gegevens van het interview worden strikt vertrouwelijk behandeld.

Indien u nog vragen heeft kunt u contact opnemen met: Chantal Werger (tel. 0628544899); e-mail. <u>c.werger@student.utwente.nl</u>

## Appendix 2. Informed consent

### Toestemmingsverklaringformulier

### Titel onderzoek:

Het onderzoeken van de behoeften en wensen van partners van kankerpatiënten met betrekking tot een smartphone applicatie van de zelfhulp interventie Houvast, voor elkaar: een kwalitatief onderzoek.

### Verantwoordelijke onderzoeker:

Chantal Werger, c.werger@student.utwente.nl, 06-28544899

### In te vullen door de deelnemer

Ik verklaar op een voor mij duidelijke wijze te zijn ingelicht over de aard, methode, doel en de risico's en belasting van het onderzoek. Ik weet dat de gegevens en resultaten van het onderzoek alleen anoniem en vertrouwelijk aan derden bekend gemaakt zullen worden. Mijn vragen zijn naar tevredenheid beantwoord.

Ik begrijp dat geluidsopnames uitsluitend voor analyse en/of wetenschappelijke presentaties zal worden gebruikt.

Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Ik behoud me daarbij het recht voor om op elk moment zonder opgaaf van redenen mijn deelname aan dit onderzoek te beëindigen.

Naam deelnemer:

.....

Datum: ..... Handtekening deelnemer: .....

# Appendix 3: Overview mock-ups

## Homepage



## Overview of lessons

6600 ABC 12:4	13 PM 🔳
◄ H <sup>Q</sup>	♥E 🚼
Week 1 Omgaan met je emoties	Week 2 Het (***) veerkrachtplan
Week 3 Mijn verstand maakt overuren	Week 4 Waarden
Week 5 <b>R</b> Communicatie	Week 6 Mild zijn voor jezelf
	Meer



### Extra information





## Psychological exercise

Hoe houd i klein?	ik me
Hoe houd klein? g willen we gestelde a nen, nameli	] ik me graag an de
Hoe houd klein? ng willen we rgestelde a nen, nameli	ik me e graag an de
ng willen we rgestelde a nen, nameli	e graag an de
zien. Hoe w t worden er en getroost je antwoord	vilde je n hoe werd? I op:
	vas) je emo zien. Hoe w t worden er en getroost je antwoord



### Feedback after exercise



### Mindfulness exercise





## Personalization



### Reminders





## Professional guidance

Contact
Plan een afspraak met een professional
Bel een professional
Verstuur een bericht naar een professional
<b>Či</b> Thuis

## Contact with fellow sufferers

	11.10 AM	(8
Week 2	H₩₽₽	
[		
Oe	fening: Omgaa pende aebeur	on met tenissen
Zijn er di oefening doen of v mee zoud	ngen die je/ju anders zoude vaar je/jullie u den willen hou	ullie na dez n willen rekening den in je/
Zijn er di oefening doen of v mee zoud jullie com	ingen die je/ju anders zoude waar je/jullie den willen hou municatie?	ullie na dezo n willen ekening den in je/



## Self-monitoring



eeeco ABC	10.15 AM	(MC)
•	<b>I₩</b> E	
Hoe g	aat het me	tu?
In de one een over stressiev week	derstaande grafiek rzicht zien van uw reis van de afgelop	i kunt u sen
1	$\sim$	
<b>C</b> Thuis		Delen

## Uploading data

0
●●●●○ ABC 10.15 AM (III)
Hoe gaat het met u?
Schuif met het knopje om aan te geven hoeveel stress u op dit moment ervaart
Korte beschrijving (optioneel)
Thuis Celeri



## Appendix 4: Interview scheme

#### Het interviewschema

#### Welkom

Mijn naam is Chantal Werger en ik volg de masteropleiding Gezondheidspsychologie en Technologie aan de Universiteit Twente. Het huidige onderzoek is onderdeel van mijn afstudeeropdracht. Ik voer dit onderzoek uit onder begeleiding van Dr. Nadine Köhle en Dr. Stans Drossaert. Ik wil u bedanken voor uw bereidheid om deel te nemen aan dit onderzoek.

### Toestemming

Ik zou graag een geluidsopname willen maken van dit interview zodat deze naderhand uitgeschreven kan worden om zo de gegevens optimaal te kunnen gebruiken. Het uitschrijven van de opname zal anoniem worden gedaan. De gegevens zullen zo gepresenteerd worden dat ze niet te herleiden zijn tot de persoon in het interview. Gaat u akkoord met de geluidsopname?

<u>Indien ja</u>: Dan wil ik u vragen om de toestemmingsverklaring te ondertekenen en dan zal ik u daarna een korte uitleg geven over de opbouw van het interview.

Indien nee: Kunt u uitleggen waarom u niet akkoord gaat?

#### Korte uitleg over opbouw

Het interview bestaat uit 5 onderdelen, beginnend met enkele achtergrond vragen. Hierna zal ik een korte uitleg geven over de cursus Houvast, voor elkaar. Vervolgens zal ik een aantal vragen stellen over de voorbeeldplaatjes van de app. Daarna wil ik het met u hebben over mogelijkheden die een smartphone applicatie kan hebben en wat u daarin belangrijk vindt. Tot slot biedt het laatste gedeelte ruimte voor eventuele vragen en suggesties. Heeft u voordat we beginnen met het interview nog vragen?

### **Deel 1: Achtergrond**

- 1. Kunt u mij vertellen hoe oud u bent?
- 2. Wat is uw hoogst voltooide opleiding?
- 3. Wat is uw huidige arbeidssituatie?
- 4. Heeft u kinderen?

Zo ja: wonen uw kinderen thuis of zijn zij uitwonend?

Dan zou ik nu graag enkele vragen willen stellen over de ziekte om een beter beeld van de situatie te krijgen.

- 5. Om welke soort kanker gaat het?
- 6. Wanneer is de diagnose gesteld bij uw partner?
  - Kunt u mij iets vertellen over de huidige situatie?

Verloop ziekte? Hoe gaat het met uw beiden?

- 7. Heeft u al ervaring met het gebruik van smartphone apps die gericht zijn op gezondheid? Zo ja: - welke app(s) gebruikt u?
  - wat vindt u van het gebruik hiervan?
  - Hoe vaak gebruikt u deze? bv. dagelijks, wekelijks
  - wat bevalt u aan deze app? Wat bevalt u minder?

### Deel 2: Uitleg cursus (aan de hand van PowerPoint)

### Doel van houvast, voor elkaar

Het doel van Houvast, voor elkaar is het bieden van informatie en steun, en het helpt partners het beste te halen uit de moeilijke tijd waarin ze zich bevinden

De cursus wordt individueel toegepast en deelnemers kunnen op ieder moment en op iedere plek toegang krijgen tot de cursus. Deelnemers kunnen inloggen om zo op hun persoonlijke beginpagina te komen. Op deze beginpagina kunnen ze alle onderdelen van de cursus vinden.

### Thema's van de lessen

De cursus bestaat uit 6 basislessen, die elk een thema behandelen namelijk:

- Emoties, omgaan met je eigen emoties
- Veerkracht, hoe zorg je dat je het volhoudt
- Negatieve gedachten, mijn verstand maakt overuren
- Waarden, wat is nu echt belangrijk
- Zelfcompassie, momenten om van te genieten
- Communicatie, de kunst van het in gesprek blijven

Daarnaast zijn er nog 2 aanvullende lessen namelijk:

- Het leven weer oppakken
- Een goede laatste periode

### Opbouw van de lessen

Iedere les begint met een overzicht van alles onderdelen van die les. Daarna volgt een korte informatieve tekst over het thema van de les en er wordt afgesloten met een kernboodschap (Zie dia). Vervolgens krijgt u korte psychologische oefeningen en een mindfulness oefening (Zie dia). Als deze zijn afgerond krijgt u praktische informatie, tips en verwijzingen naar relevante websites (Zie dia). Houvast, voor elkaar is niet alleen een online cursus, maar ook een bron van tips en persoonlijke ervaringen

- Zou kunt u ervoor kiezen om gebruik te maken van een SMS service waardoor u wekelijks korte inspirerende teksten kunt ontvangen via sms.

- Daarnaast kunnen cursisten antwoorden die zij bij sommige oefeningen hebben gegeven delen met andere cursisten. De ervaringen van medecursisten zijn terug te vinden op de beginpagina.

- Cursisten kunnen ook zelf tips en adviezen plaatsen voor hun medecursisten en tips van andere deelnemers bekijken.

- Tot slot kunnen cursisten er ook voor kiezen om persoonlijke berichten uit te wisselen met medecursisten via de website. Dit is geheel anoniem en cursisten kunnen zelf aangeven of zij behoefte hebben aan lotgenotencontact of niet.

Heeft u nog vragen over de cursus? Zo nee: dan zou ik nu graag verder gaan naar deel 3.

## Deel 3: Voorbeeldplaatjes van de app

Op basis van de huidige website hebben we al een aantal schetsen gemaakt van hoe een app eruit zou kunnen zien. Deze zou ik nu graag met u door willen nemen.

## Voorbeeld 1: Begin pagina

Op dit plaatje ziet u het eerste "scherm" als u de app opent.

Lessen Mindfulness oefeningen Tips Herinneringen Meer	_	0
Lessen Mindfulness oefeningen Tips Herinneringen Meer	H	2.43 PM D
Tips Herinneringen Meer	Lessen	Mindfulness oefeningen
Meer	Tips	Herinneringen
	Meer	
	(	

- 8. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 9. Wat spreekt u het meest aan?
- 10. Wat spreek u minder aan?
- 11. Wat verwacht u dat er achter ieder vakje zit?

Dit is nog een andere optie die is gemaakt voor de beginpagina



- 12. Wat is uw algemene indruk van deze versie?
- 13. Wat spreekt u het meest aan?
- 14. Wat spreek u minder aan?

15. Als u kijkt naar de icoontjes in deze versie, vindt u die dan passend voor het onderwerp? Zou u bijvoorbeeld aan de hand van het icoontje met de pijltjes (aanwijzen) weten dat dit de mindfulness oefeningen zouden zijn?

- 16. Welke van de twee versies heeft uw voorkeur?
- 17. Heeft u nog suggesties voor de beginpagina?

### Voorbeeld 2: Overzicht lessen

Op het volgende plaatje ziet u een overzicht van de lessen. De inhoudelijke thema's zijn uit voorafgaand onderzoek naar voren gekomen.

0000 ABC 12:4	3 PM 🔳
I H	E E
Week 1 🙂 Omgaan met je emoties 😄	Week 2 Het (**) veerkrachtplan
Week 3 Mijn verstand maakt overuren	Week 4 Waarden
Week 5 <b>R</b> Communicatie	Week 6 Mild zijn voor jezelf
	Meer

- 18. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 19. Zijn alle onderdelen van het scherm duidelijk voor u?
- 20. Wat spreekt u het meest aan?
- 21. Wat spreek u minder aan?
- 22. Heeft u nog suggesties voor het weekoverzicht?

Voorbeeld 3: Informatie over introductie

Op het volgende plaatje ziet u extra informatie die u krijgt bij de introductie van een les. Dit is een voorbeeld van de informatie die u krijgt bij de les 'omgaan met emoties'.



- 23. Wat is uw algemene indruk van de voorbeeldplaatjes van de app?
- 24. Wat spreekt u het meest aan?
- 25. Wat spreek u minder aan?

26. Als u op het huisje klikt gaat u terug naar de beginpagina, vind u het woord thuis hier het meest passend voor? *Of heeft u bijvoorbeeld liever home, beginscherm of beginpagina?* 

27. Heeft u nog suggesties voor de informatie over introductie?

Voorbeeld 4: Psychologische oefening

Op het volgende plaatje ziet u een psychologische oefening uit de cursus.



- 28. Wat is uw algemene indruk van de voorbeeldplaatjes van de app?
- 29. Wat spreekt u het meest aan?
- 30. Wat spreek u minder aan?
- 31. Heeft u nog suggesties voor de psychologische oefening?

Voorbeeld 5: Feedback na een oefening

Op het volgende plaatje ziet u die feedback die u krijgt na het afronden van een oefening.

Deeco ABC	10:34 AM	
Week 1	<b>I &amp; </b> €	
E	EEDBACK	9
Voelen kind biggelen tri wangen. He dan door hi Een dikke H Een dikke H Een dikke H Een dikke H Een dikke H Di door h verdriet ga eerder al a soms goed houden en laten zien. echter vaai	leren pijn, dan anen snel lang ut liefst worders un ouders getr nuffel of een k die pijn doet e ergeten en het angegeven da a som je klein je kwetsbaarh Volwassenen z k niet meer ge	s hun o zij oost. :usje n snel ben t het te eid te ijn het wend
		Meer

- 32. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 33. Wat spreekt u het meest aan?
- 34. Wat spreek u minder aan?
- 35. Heeft u nog suggesties voor de feedback?

### Voorbeeld 6: Mindfulness oefening

Op het volgende plaatje ziet u een mindfulness oefening uit de cursus.



- 36. Wat is uw algemene indruk van de voorbeeldplaatjes van de app?
- 37. Wat spreekt u het meest aan?
- 38. Wat spreek u minder aan?
- 39. Heeft u nog suggesties voor de mindfulness oefening?

## Deel 4: Mogelijkheden van de app (features)

### 1) Personalisatie

In de app kunt u uw account een persoonlijke invulling geven. Hierbij kunt u denken aan eigen foto's, muziek of leuke uitspraken/quotes/gedichten. U kunt bijvoorbeeld een afspeellijst samenstellen op basis van muziek, deze kan u helpen bij het ontspannen in tijden van stress.

40. Wat zou u er van vinden als u uw account kunt personaliseren?

In het volgende plaatje kunt u zien hoe personalisatie eruit zou kunnen zien.



- 41. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 42. Wat spreekt u het meest aan?
- 43. Wat spreek u minder aan?
- 44. Heeft u nog andere suggesties voor deze functie?

### 2) Herinneringen (pushberichten)

Een app kan berichten verzenden naar uw mobiele telefoon. Deze pushberichten kunnen ingezet worden als herinnering wanneer u een opdracht zou kunnen uitvoeren maar het zou ook een pushbericht kunnen zijn die een inspirerende uitspraak of tip laat zien. 45. Wat zou u er van vinden als u herinneringsberichten ontvangt?

Indien positief: Hoe vaak zou u deze berichten willen ontvangen?

In de volgende plaatjes kunt u zien hoe de herinneringen eruit zouden kunnen gaan zien. Allereerst een afbeelding die laat zien hoe de herinneringen ingesteld kunnen worden in de app.



- 46. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 47. Wat spreekt u het meest aan?
- 48. Wat spreek u minder aan?

Zoals u kunt zien kunt u ook aangeven of u een inspirerende tekst wilt ontvangen. Deze zou er bijvoorbeeld zo uit kunnen zien als op de volgende afbeelding.



- 49. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 50. Wat spreekt u het meest aan?
- 51. Wat spreek u minder aan?
- 52. Heeft u nog suggesties voor de herinneringen?

### 3) Professionele begeleiding

Een app kan worden gebruikt om in contact te komen met een professional zoals bijvoorbeeld een psycholoog of een oncologieverpleegkundige.

53. Wat zou u er van vinden als u in contact zou kunnen komen met een professional door middel van de app?

Indien positief: Met wie zou u dan het liefst contact willen hebben?

54. Aan welke voorwaarden zou dit contact moeten voldoen? bv bellen of via een tekst bericht

In het volgende plaatje ziet u een voorbeeld van hoe u in contact zou kunnen komen met een professional.

10-15 AM ABC COMP H��₽F Contact Plan een afspraak met een professional Bel een professional Verstuur een bericht naar een professional 1 Thuis

- 55. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 56. Wat spreekt u het meest aan?
- 57. Wat spreek u minder aan?
- 58. Heeft u nog andere suggesties voor het contact met de professional?

### 4) Lotgenoten contact

Een app kan gebruikt worden voor lotgenotencontact. Hierbij kunt u denken aan een chatfunctie, waarin bijvoorbeeld onderlinge ervaringen gedeeld kunnen worden. De cursus biedt bijvoorbeeld de mogelijkheid om ervaringen met oefeningen te delen en ook om tips uit te wisselen.

59. Wat zou u er van vinden als u ervaringen kunt delen met lotgenoten?

60. Aan welke voorwaarden zou het lotgenoten contact moeten voldoen?

In het volgende plaatje kunt u zien hoe u informatie kunt delen met uw lotgenoten. Nadat u de antwoorden op de vragen hebt ingevuld kunt u op het icoontje 'delen' drukken om zo uw gegeven antwoorden met anderen te delen.



- 61. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 62. Wat spreekt u het meest aan?
- 63. Wat spreek u minder aan?

Het volgende plaatje laat zien hoe u bijvoorbeeld tips zou kunnen geven.

0	
eeeco ABC 10:15 AM	
✓ H♥♥₽	
Tips	
Tips Tips van anderen Tips van Houwas	
Deel jouw tip met je medecursisten!	
Tip toevoegen	
Selecteer een categorie voor uw tip:	
Plaats hier uw tip	
🚹 🗲 Thuis Delen	

- 64. Wat is uw algemene indruk van het voorbeeldplaatje van de app?
- 65. Wat spreekt u het meest aan?
- 66. Wat spreek u minder aan?
- 67. Heeft u nog suggesties voor het lotgenotencontact?

## 5) Zelfmonitoring

Bij zelfmonitoring kan gedacht worden aan een korte test om te kijken hoe het met u gaat (hierbij kunt u denken aan het meten van stresslevels, slaapanalyses, gezond eten of dagelijkse activiteiten). U kunt de uitslagen vervolgens ook terugvinden in grafieken. Op deze manier kunt u uw eigen voortgang bijhouden.

- 68. Wat zou u hiervan vinden?
- 69. Welke onderwerpen zouden voor u nog meer zinvol zijn om bij te houden in een app.
In de volgende plaatjes kunt u zien hoe deze zelfmonitoring eruit zou kunnen zien.



- 70. Wat is uw algemene indruk van de voorbeeldplaatjes van de app?
- 71. Wat spreekt u het meest aan?
- 72. Wat spreek u minder aan?
- 73. Heeft u nog suggesties voor monitoring?

## 6) Zelf toevoegen (uploaden van data)

Bij het uploaden van data kan gedacht worden aan informatie die doorgestuurd kan worden vanuit de app naar de onderzoeker of naar een professional. Deze informatie zou van toepassing kunnen zijn voor onderzoeksdoeleinden. Daarnaast zou een professional feedback kunnen geven op de door u ingevulde opdrachten/tests. Ook kan bij uploaden gedacht worden aan het uploaden van uw eigen foto's.

- 74. Wat zou u hiervan vinden?
- 75. Aan welke voorwaarden dient dit volgens u te voldoen?

In het volgende plaatje kunt u zien hoe het uploaden eruit zou kunnen zien. Deze afbeelding heeft u net ook gezien als voorbeeld bij zelfmonitoring alleen is er een icoon toegevoegd. Met dit icoontje zou u de informatie kunnen uploaden.



76. Wat vindt u van de toevoeging van dit icoontje?

In het volgende plaatje ziet een voorbeeld van hoe het uploaden van foto's eruit zou kunnen zien.



77. Wat is uw algemene indruk van het voorbeeldplaatje van de app?

- 78. Wat spreekt u het meest aan?
- 79. Wat spreek u minder aan?
- 80. Heeft u nog suggesties voor het uploaden?

## **Deel 5: Suggesties**

We hebben alle onderdelen van het onderzoek besproken.

- 81. Heeft u in het algemeen nog suggesties voor verbetering van de app?
- 82. Heeft u nog dingen gemist in de app?
- 83. Zou u gebruik willen maken van deze app?

## Afsluiting

We zijn aan het einde gekomen van het interview, heeft u nog vragen? Zo nee dan wil ik u graag uitleggen hoe het nu verder gaat. Het interview zal geanalyseerd worden en in combinatie met de andere interviews zal dit mij helpen bij het beoordelen van de mogelijke applicatie. Wellicht zal er op basis hiervan ook daadwerkelijk een app worden ontwikkeld.

Mocht u geïnteresseerd zijn in de uitkomsten van dit onderzoek, zou ik u daarover kunnen mailen. Mag ik in dat geval uw e-mailadres noteren?

E-mail:

Dan zou ik nu graag het interview willen afsluiten. Ik wil u bedanken voor uw medewerking, dit stel ik erg op prijs!