Master Thesis of Suzanne Lampe

A Serious Game for the well-being of CSN Parents

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Acknowledgement

Glossary

CSN: Children with special needs. The target group of the project is their parents. These children need extra care compared to other children, because of a physical or mental disability or a combination of these. Examples are autism, ADHD, Down syndrome, eating disorders, cerebral palsy emotional disturbance and learning disabilities.

Survival mode: Helps us respond to the stressors that we are faced with. When we experience stress, a sequence of hormonal changes and physiological responses occur in our body that allow us to respond by preparing them to fight, flight, or freeze (Harvard Health Publishing, 2018). However, a frequent stress response can take a toll on the body, emotional health, impact our relationships, lead to a number of medical issues, and increase the risk for anxiety and depression (Harvard Health Publishing, 2018).

Executive Summary

Many parents of Children with Special Needs (CSN parents) struggle with finding the right balance in their life between doing all their responsibilities, taking care of their child with special needs and taking care of themselves. As a result, they take less care of themselves, by eliminate their needs.

Therefore, the aim was to design a serious game for parents with children with special needs and should be playable during retraite weekends within the constraints of the COVID-19 measurements. However, due to COVID-19, there was no opportunity to create a physical serious game that can be played during the retraite weekends, thus an online version was created that could easily be converted to a physical design.

The graduation project consisted of three phases: the analysis, conceptualisation and detailing phase.

For the analysis phase, to understand the issue of self-care, five CSN parents and an orthopedagogue were interviewed along with literature research. Also, serious gaming was studied by literature research, reviewing examples of serious games, trying out serious games, talking with experts and being a facilitator of an online serious game I signed up for. With the insights of the analysis phase the design goal was translated in the following transfer effects: 1) Create awareness about the importance of avoiding an unbalance in energy to increase self-care, 2) Create awareness about having the option to increase self-care, and 3) Alter to or reinforce the attitudinal change towards a creative problem-solving attitude for providing self-care.

During the project, the game environment changed from real-life to the online platform Miro. A brainstorm session and co-creation followed, aside from individual brainstorming and with other creative minds. Three concepts were developed and tested and in collaboration with Ontzorghuis one was selected.

The Bekommerkom game was created after four iteration cycles with different prototypes and four tests. The last two tests were with CSN parents. Based on the reactions of the players and observations I can conclude that the Bekommerkom game is evaluated as successful in achieving the transfer effects. To achieve this, both a well-prepared facilitator and a video call service (e.g. Zoom) are required.

Playing the game made the players think and reflect on their life. Many shared to do things differently concerning self-care and thought about possible solutions to improve their situation (like asking for help). Also, Ontzorghuis is content with the result and wants to further develop the Bekommerkom game and a physical version of it in the future.

'The game woke me up again; I have to take care of myself, otherwise I cannot take care of others. I need to look and think outside the box: Sometimes the world is small, but there is more than you think."
- CSN parent one week after playing the Bekommerkom game

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1. Introduction

1.1 The scope and Ontzorghuis as company

This paragraph describes the designer, company, stakeholders, scope, relevance, and design goal.

The Designer

After my bachelor (Industrial Design) and master's programme (Design for Interaction), I was eager to show that I am capable of conducting a design process with the focus on users. Besides, I wanted to learn more about how to **integrate and use psychology with design**. This project was a great opportunity to explore the common ground between these two fields. My interest in mental well-being started from being a kid and can be seen in the many topics of my projects and my Medisign specialization. **My dream is to add meaning to people's lives by increasing their (mental) well-being.** This all has a perfect fit with this project about the

mental health of parents who have child(ren) with special need(s) (CSN parents, see glossary).

Moreover, I am very **interested in designing serious games**, because of the higher aim. For me, it is beautiful how complex and difficult problems can become visible and/or solved in a playful way by playing a game. It affords to learn through experience and this is very powerful.

In this project, these interests are joined together with the wish to do a project **in collaboration with a company.**

The Company

This graduation project was in collaboration with Ontzorghuis. Ontzorghuis, established by Marise Schot (figure 1.1) and Astrid Bontenbal in 2018, aims to support CSN parents by creating a community that provides practical and emotional support. This is visualised in figure 1.2 by having a CSN family in the centre and Ontzorghuis connecting them with other CSN families. The outer circle shows most of the stakeholders with who CSN parents mostly get in touch with. Providing practical and emotional support is done by letting parents share their experiences, providing information, creating a feeling of community, offering online self-care-reflecting exercises, and offering parenting training. Also, they are currently developing a cooperative housing community, where parents

can move in for long or short stays during which specialists take care of their child, so parents can have a break.

Recently, they are organizing retraite weekends in which the children will be taken care of while the parents get respite and have the opportunity to do workshops with the theme 'a valuable future'. **One of the main topics is to explore what they need to unburden themselves in the future and this graduation project led to a serious game on this topic.**

Figure 1.1:
**Marise Schot -
Director of Ontzorghuis
(www.Ontzorghuis.nl)**

Figure 1.2: Stakeholdermap of Ontzorghuis and CSN parents.

Scope, relevance, and design goal

Many parents with a child with special needs get a burnout or overworked (60%) and there is a 42% chance of relationship problems to occur (Trouw, 2014). This is partly caused by the search of figuring out what special care the child exactly needs via many appointments by doctors and specialists (Trouw, 2014). Aside from that, they go through a kind of grieving process, in which they are challenged to accept that their child is different and to reframe their ideas about the future (which will look different than expected). Often parents are intensely focused on their child that they get in the survival mode and tend to care less for themselves (can be seen in the numbers of the probability of a burnout, becoming overworked, getting relationship problems, etc.). This may result in the child placed outside his/her home.

A serious game whichavoids that it could get this far, will increase the well-being of the parents as well as of their child(ren) (and even would be cheaper for the municipality). The design goal in advance of the analysis phase can be found in the pink box. If these parents don't take care of themselves, it will be hard or even impossible to take care of their child. This can be illustrated by an aeroplane accident in which parents should first put the oxygen mask on their face to be able to put one over their child's face (figure 1.3).

Figure 1.3: In emergency parents put first oxygen mask on their own face (adapted from www. scottsdale.momcollective.com).

The design goal in advance of the analysis phase:
'To design, prototype and test a serious game for parents with children with special needs. And which firstly makes parents more aware of the importance of taking care of themselves and secondly give suggestions on how to take better care of themselves (based on psychology) to be able to take better care of their child. The serious game should be playable during retraite weekends within the constraints of the COVID-19 measurements.'

Why a serious game?
Aside from becoming motivated as a result of achieving goals throughout the game, a serious game is useful for transferring information, raising awareness and achieving learning goals (Manenschijn, 2020). Players often feel free to experiment, because they know their actions in the game have no real impact on their real-world. So a serious game serves the design goal well by offering a space to experiment with such a serious and personal issue as self-care in a safe, playful and open-minded way and reflect together on it. During the reflection moment, CSN parents will compare the game with their own situation and hopefully share tips and tricks on how they currently increase their well-being/take care of themselves. Ideallly I hope that after playing the game they have an idea of how to unburden themselves and thereby increase their well-being and happiness.

At the start of the project, it depended on how the COVID-19 situation would develop, whether the serious game would shift more to an online version, a version that can be played in real life or a combination of these. Therefore, during the design process was taken into account that the (elements of the) game should be easily transformed into a more online or more physical one. For the original project brief see Appendix A.

1.2 Approach

The graduation project consisted of three phases (blue text), which follow the three diamonds CPS model (Buijs, 1986).

Original Project Brief

Analysis phase
Three fields were researched: the target group, serious gaming and psychological models. Psychological theories, because these gave insights into possible ways to support CSN parents to increase their self-care. For exploring these three fields, literature and field research was conducted about the target group (contextmapping and interviews experts) and about serious gaming (interview experts, facilitating a serious game and trying out serious game ideas). The research answered the following design questions:
1.   How to raise the awareness of CSN parents about the importance of self-care (also about the impact on the child)?
2.   What are strategies for CSN parents to take better care of themselves to increase their mental well-being?
3.   How to design a serious game in general?
4.   How to design a serious game about self-care and CSN parents?

The phase concluded with mapping out the insights about the well-being of the parents and how they could increase this (also inspired by psychological theories) and about designing a serious game. With this, the design brief was formulated.

Design Brief

Conceptualization phase
The phase was about further brainstorming and defining elements of the game (with the design brief as the starting point). The phase started with researching the possibilities for an online serious game (suitable program/platform), which is still possible to convert to a physical serious game and deciding on the platform to use. Many brainstorming followed (including a session and co-creation) and three concepts were developed, which were Lo-fi prototyped and quickly tested. The concepts were evaluated with the objectives from the design brief and one was chosen to continue with.

Final Concept

Detailing phase
Many iteration cycles including tests were conducted. The two last Hi-fi prototypes have been tested with the target group. An online final design and physical design were proposed together with recommendations. This phase ended with this thesis, a showcase and a presentation.
For the more extended planning see Appendix B.

Final Design Proposal and Deliverables

Analysis phase

2. Parents with Children with Special Needs

2.1 Approach

This chapter consists of two parts: a literature study and field research concerning CSN parents (figure 2.1).

The field research consisted of talking with experts and CSN parents (using a context-mapping approach). The goal of the analyses concerning the target group was to find the answers to the design questions in the pink boxes in figure 2.2 which were split up into research
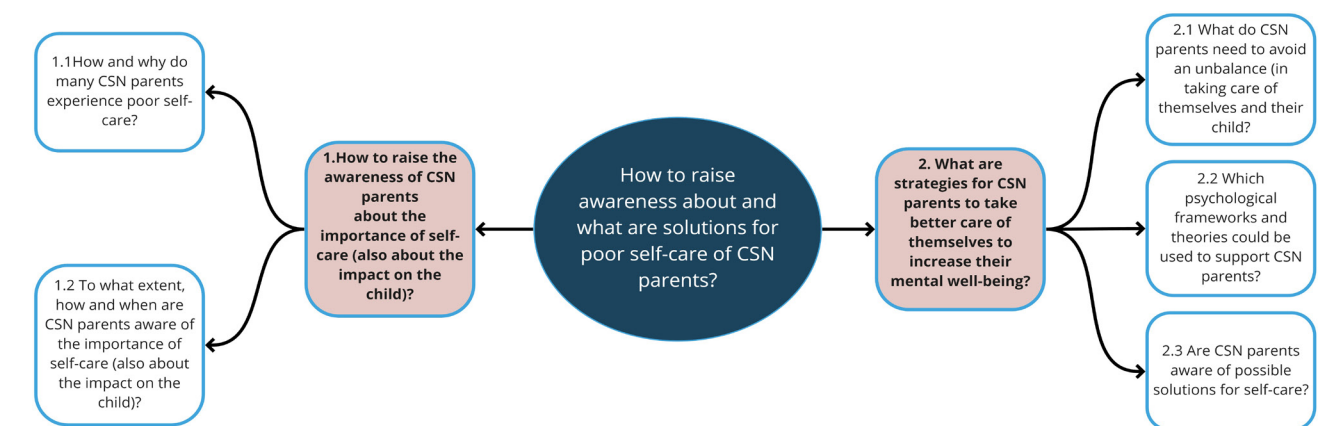
Figure 2.2: Approach analysis CSN parents.

Figure 2.1: Parent with child with a special needs (www.accel.org).

questions. The first design question provided means for the first part of the design goal and the second design question supported the second part of the design goal of the serious game. More elaborated sub-questions can be found in Appendix C. For answering the second design question, psychological frameworks and theories were reviewed of which an interesting one appeared to be Universal Needs (Desmet & Fokkinga, 2020). Part of the field research got more focus on these universal needs.

To illustrate the world of CSN parents many quotes that reflect their experiences are presented.

2.2 Literature Study CSN Parents

Having a child with disabilities changes family life and places additional demands and responsibilities on many family members (Simeonsson & McHale, 1981). Another source explains that it is quite challenging and also requires a lot patience, energy, and time (Crowe, VanLeit, Berghmans, & Mann, 1997). This paragraph further elaborates on this and each section contains a summarizing visual which aims to represent a part of the world of CSN parents:

• The extra responsibilities parents encounter when having a child with special needs
• The effect of it on the common responsibilities of the parents
• The extra emotions involved
• The causes of poor self-care
• Finally the result of not caring for yourself as a parent.

Extra responsibilities which many CSN parents face

This subparagraph explains that CSN parents have many extra responsibilities by having extra roles next to raising children like being a fulltime caregiver, manager and counsellor. These parents are not only overwhelmed with having to manage things and making choices (Figure 2.3), but also have to adapt to the situation and often have to expand their limits (Verdonk, 2018). In other words: They are confronted with numerous hardships and encounter more stressors and responsibilities than mothers of regular children, so their lives change beyond anticipation (Park, 1982).
These extra responsibilities are summarized in Figure 2.4 and further explained in this subparagraph.

Many hospital visits/specialists

According to Okma (2014) it often takes a long time to find out what special need(s) their child has. As a result of visiting hospitals etc. during work hours, they work during their free hours. For a long time, they appeal on their capacity until they are exhausted.

Moreover, the visuals show some of the interactions with various stakeholders which were presented previously. The literature research also led to insights about positive developments for CSN parents by having a child with special needs (see Appendix D).
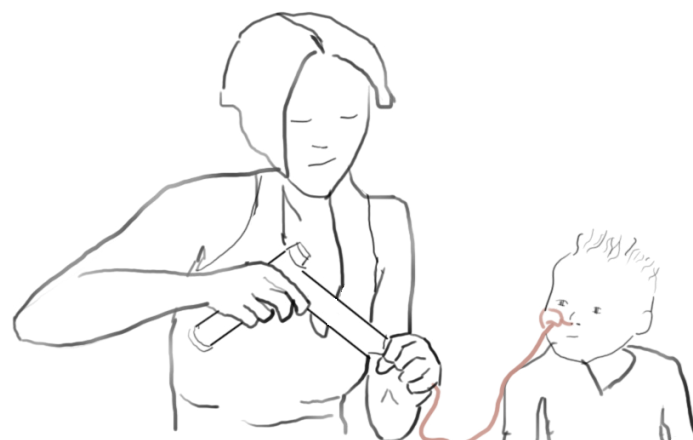

Figure 2.3: Example of extra responsibilities.

Also, the following quote illustrates the extra responsibilities many CSN parents face:
'My newly gained expertise on the "ins" and "outs" of Medicaid, special education, adaptive equipment, disability law, and therapists challenged me every day. I quickly became familiar with assistive technology devices, absence seizures, individualized education plans, pediatric walkers, and oesophagal strictures—all things I knew nothing about before Laney entered my world. But I had no choice in the matter. I had a child with special needs to care for, and she desperately needed me. I could not collapse under the newfound burden of responsibility.' (Lawrence, 2011).
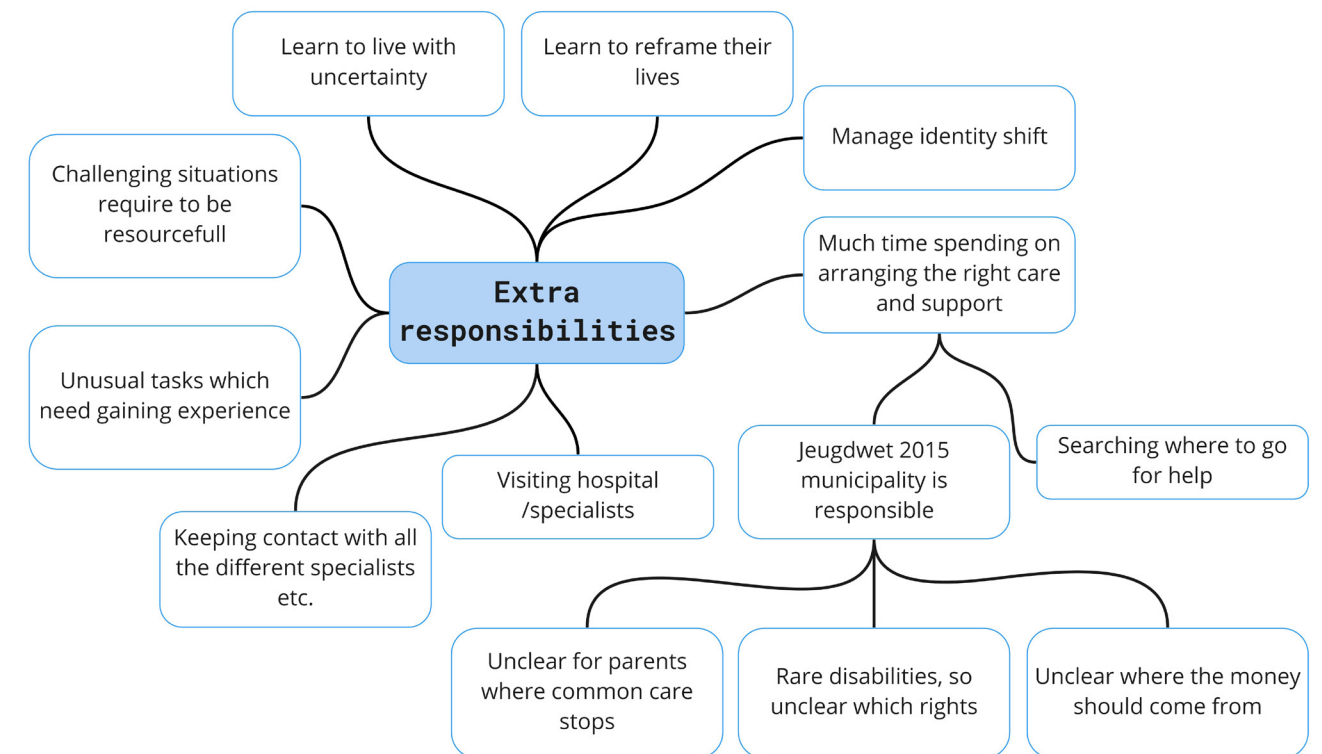

Figure 2.4: Extra responsibilities that CSN parents face.

Keeping contact with all the all specialists, doctors, organisations, school transport etc.)

As was said the parents are also the manager of their child and therefore should be in touch with all their various stakeholders to update everyone and assure themselves they reach their goal. More precisely, according to Pelchat et al. (1999), CSN parents are affected by the duties of managing therapeutic services, special education requirements, medical intervention, and behaviour management, in addition to the usual responsibilities expected of the parental role.

Unusual tasks which need gaining experience

'Oxygen, tube feeding, medicines. In the hospital I learned a lot, at home I learned even more and became kind of a nurse.' (Vriendin, 2020).
Often the care of the child includes unusual tasks or certain ways of treating them. Therefore aside from the need to gain experience in this, fewer people can take over due to having no experience.
'In my work with families, I see special needs parents scrambling to adjust to their new and unexpected role as a healthcare manager for their child.' (Pinhorn, 2018).

Much time spending on arranging the right care and support

When the parents do not have to spend time with their children they are often sitting behind their desk to arrange the right care and support and thus often fighting for the rights of their children (Zembla, 2020). In the Netherlands, the municipality is responsible for providing the right support, since 2015. CSN parents and the municipality are often debating about what rights should be given for a long time. Also, the budgets of care come from different organisations (Zorgverzekeringswet, Jeugdwet, and WLZ) and it is unclear for parents were to go to. The parents are dependent on which contacts the municipality has. The offering of support is rather more responsive than pro-active. What makes it even more difficult is that many special needs are rare, so it is unclear which rights of care should be given to a specific case. Lastly, parents struggle with the distinction between what is usual care and what is the 'extra' care, especially when it is their first child (Okma, 2014).

Challenging situations which require resourcefulness

As an additional task, parents need to be able to solve previously unknown challenges (also as a result of unexpected events) creatively, also known as resourcefulness. Resourcefulness

is explained as a set of skills, objects and values involved in dealing creatively with personal and situation-specific challenges for which no commonly agreed standard solution is available (Giaccardi & Nicenboim, 2016). CSN parents need high resourcefulness because they face many challenges which are new for them and cannot be solved with their current knowledge/skills/objects, also called capability set.

Learn to reframe life
This reframing their life has partly to do with living-loss (levend-verlies in dutch), which will be further explained later, but also with adapting their life (working less e.g.) and reframing their future which will be different than previously thought.
'It's a given: parenting is hard work. But when you're raising a child with special needs, the level of care and stress is not just higher—it shifts the foundations of families and adds unimaginable complexities for everyone involved.' (Pinhorn, 2018).

Learn to live with uncertainty
CSN parents often have to live with uncertainty (about independency, development etc.) (Pryce, 2015). Causes for this uncertainty are that the child's future degree of independence is blurry and that the child's development does not have regular stages (Ribelles Armell, 2020). This is illustrated by this quote from CSN mother: *'No one knows how our son will develop because his special need is rare. Sometimes I cannot sleep due to the questions: What happens with him if we are not there anymore? This can make me cry.'* - (Vriendin, 2020)
Another reason found for uncertainty is that their path is unexplored (there is no reference to look at), because every situation and child is unique (Ribelles Armell, 2020). Also on Facebook (parents in Special Needs Parents Support & Discussion Group, 2020) many CSN parents shared that they struggle with not knowing what the best is for their child.

Manage Identity shift
CSN parents experience an identity shift from perceiving themselves as a regular parent to seeing themselves as a CSN parent (Ribelles Armell, 2020). The following quote of a CSN mother shows struggling with her identity and that this can be confusing and emotional frustrating: *'It was as if my identity as a mother changed overnight.'* - (Lawrence, 2011)

The effect of extra responsibilities on top of the common responsibilities for CSN parents

This subparagraph explains the effect of having too many responsibilities (figure 2.5) as a result of having the previously mentioned extra responsibilities on top of their common responsibilities. This is summarized in figure 2.6 in which the arrows show the effect on the common responsibilities as a result of having a child with special needs and this is further explained in this paragraph.

Figure 2.5: Too many responsibilities.

Having a job
78% of the parents who have a child with special needs started to work less (Quickscan, 2014). *'I became kind of a nurse, working was no option anymore.'* (Vriendin, 2020).
Moreover, 60% gets a burnout or overworked (Quickscan, 2014) and they experience even more stress while working at home due to COVID-19 (Wiebes et al., 2020).

Maintaining a good relationship with your partner
Providing intensive care has in one way a positive impact on the relationship: having the aim to provide the best care for their child creates an intensive bonding and gives direction and purpose (Okma, 2016). However, often parents grow apart, for example as a result of having a different way of processing emotions that a child with special needs adds to their lives. Also if a relationship was already unstable, the extra stress could cause relationship problems (Okma, 2016). According to research, 42% has relationship complications (Quickscan, 2014).

Maintaining good relationships with friends and family
For CSN parents, it is hard to maintain their social network as a result of having to deal with a care-intensive child, therefore the risk of social isolation increases (Dyson, 1991). Also, a CSN mother wrote on her blog: *'Having a child with special needs is isolating.'* (Nadella, 2017).
Apart from having not much time to maintain their social relations, they also do not have many others in their surrounding that experienced the same. Another quote that illustrates this from a CSN mother: *'I felt often alone, we didn't have many people surrounding us and our friends moved on with their lives'.* (Vriendin, 2020). Also, they sometimes feel misunderstood by family members and friends (Ribelles Armell, 2020). A CSN mother wrote that also the way in which family members, friends, colleagues, and neighbours related to her changed (Lawrence, 2011).
Moreover, CSN parents often use their network for support, however most think they have reached their limit of what they can ask from their network. 75% of the parents state that their the involvement of their social network has reached it's limits (Quickscan, 2014).

Impact on brothers and sisters
It has an impact on the brothers/sisters of the child with special needs. According to Quickscan 50% of these other children do not get enough attention (Quickscan, 2014). This quote from CSN mother illustrates what the sister of her child with special needs went through: *'In the weekend our daughter went with us to the hospital, where we often just walked around out of boredom and sadness. No one ever organized to do something fun with her.'* - (Vriendin, 2020)

Running a household
On the question 'What is one service you all need that will make your lives easier?' asked in a Facebook group for CSN parents most answered a housekeeper/maid, a good babysitter & respite (parents in Special Needs Parents Support & Discussion Group, 2020). In other words, there is not much time for running the household.

Taking care of yourself
Due to the many responsibilities and the extra emotions (which are further explained in the following paragraph), it is harder for the parents to take care of themselves. This results in that 60% got a burnout or overworked (Quickscan, 2014). Also, many parents get in the 'survival mode', which is further explained in the paragraph 'causes of poor self-care'.

'Here is what I know to be missing in our special needs world: parental self-care. And not normal self-care. We need deep, even radical, self-compassion practices. We are all so concerned about the deficits of our children that no one is looking at the emotional crisis happening in the lives of the parents and overall family. As parents of special needs children, we need to add ourselves back to the family care list. We actually need to be number one on the list, but I know that's not always possible for special needs parents' (Pinhorn, 2018).
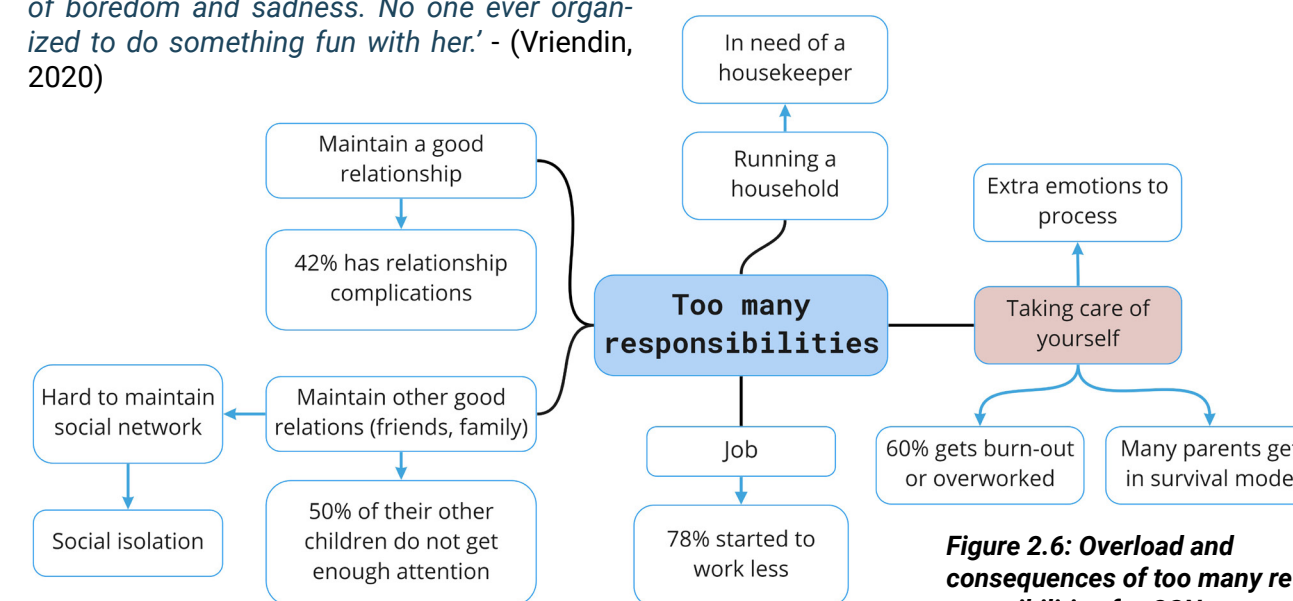

Figure 2.6: Overload and consequences of too many responsibilities for CSN parents.

Extra emotions

This subparagraph shows how this overload of responsibilities on top of the common responsibilities leads to many emotions. However, being a CSN parent already involves extra emotions as can be seen in figure 2.7 and 2.8. In other words, due to the extra emotions CSN parents experience, they need even more self-care compared to regular parents.

Figure 2.7: Many emotions.

Struggling with personal thoughts and reactions

Also, most parents are ill-prepared and raising a child with a physical or intellectual disability is an extraordinary event from which no parent is immune (Seligman & Darling, 2007). This and other changes in the lives of CSN parents let them often struggle with their thoughts and reactions, including feelings of guilt, anger, resentment, despair, and inadequacy (Featherstone, 1980). However, it takes much time to take care of their child, so there is no time to process emotions and certain events and this is postponed.

This quote of a CSN mother on Facebook shows the guilt for not being able to provide the right care (parents in Special Needs Parents Support & Discussion Group, 2020): *'As special need parent I am most struggling with guilt, shame, patience!! I feel like a failure as a parent and human most days! The only thing getting me thru are those rare days that I feel like I'm trying and that's enough!'*
In this Facebook group, more parents shared to struggle with patience: *'my patience; I run thin sometimes'* and *'feel like I'm being pulled every direction'*.

Increased levels of stress

As was discussed in the previous paragraph and underpinned by Dyson (1991) who found that CSN parents are at risk of increased levels of stress, social isolation, and stigmatization and a decrease in psychological well-being, compared to parents of typically developing children.

Often these increased stress levels are due to their child's decreased cognitive functioning, physical limitations, challenging behaviours, and limited social skills (Lessenberry & Rehfeldt, 2004). On Facebook (parents in Special Needs Parents Support & Discussion Group, 2020) parents mentioned 'keeping our child safe' as one of the biggest struggles. These parents experience a sense of danger which often leads up to stress. This increased stress has also to do with feeling of being unable to change anything in this situation.

The following quote illustrates the increased stress levels: *'At a certain moment, I experienced so much stress that I started to hyperventilate. I was home for three months and that felt like a failure; you just want to work, as you did prior to having a child with special needs.'* (Pronk, 2014).

Experience living-loss

Grief specialist Manu Keirse (2019) introduces living-loss, levend-verlies in Dutch, as a special kind of grieving process, as a result of expecting a different life with a healthy child (it is hard to accept their child with special needs and to reframe expectations of their life/ way of living).
'In an instant, I was no longer like other mothers. I was an outsider. When the moms I knew talked of first steps, first words, separation anxiety, and potty training, I could not relate. (..) I could explain that because of my daughter's disorder, she cannot communicate and might never ride a bike, talk on the phone, read a book, have friends over for a sleepover, or go out on a date. But who wants to hear that story?' (Lawrence, 2011).

Living-loss often fades over time and recurs for short a short period at certain moments (like certain dates). However, for CSN parents the grieving can increase as well. What makes it even harder, is that there is not much recognition in the society for living-loss.

After having her child diagnosed one mom shared in her blog: *'The grief that came with each doctor visit was very real. During the slow process of adjusting to a new normal, I became a warrior.'* (Pinhorn, 2018).
Many emotions come with experiencing living-loss like denial, anger, fear, guilt, confusion, powerlessness, disappointment, and rejection.

(McGill Smith, 2003). These feelings create anxiety, health problems, and depression (Seligman & Darling, 2007). The following quote illustrates the mentioned emotions: *'Laney's inability to act and interact in expected ways caused me to turn to my younger daughter and son for the parent-child experiences and interactions that I so yearned for. This caused me constant guilt, stress, and heartache because we were not the family I had always imagined.'* (Lawrence, 2011).

What probably adds to living-loss and is one of the main struggles of being a CSN parent, is the lack of understanding from others and the public judgement (parents in Special Needs Parents Support & Discussion Group, 2020).

Often face traumatic or life-threatening events around the health of their child

If a loss is overwhelming it is called a trauma. The heaviest feelings are pushed away and people get in the survival mode according to grief counsellor Tanja van Roosmalen (2019).
'Nobody can prepare you for the emotions that come with parenting special needs children, especially as a single parent. It is full of questions, self-doubt, and eventual acceptance of your situation—a path that should never be seen as a straight line. Each new challenge for my child can trigger old emotions that send me back into the grief cycle, which is full of negative thoughts and less than ideal coping strategies.' (Pinhorn, 2018).

On top of that CSN parents often face life-threatening events like operations around the health of their child, which could develop a post-traumatic stress disorder (PTSD) in which they struggle with fear, tension or reliving experiences. A child with special needs is number six of the top 10 list of causes of PTSD (de Vries, 2009). PTSD causes problems of memory and cognition and a low allostatic regulation (Iribarren, 2005) aside from a lower resilience, lack of overview and focus. Lastly, PTSD also gives a high chance of occupational instability, marital problems and divorces, family discord and difficulties in parenting (Iribarren, 2005).
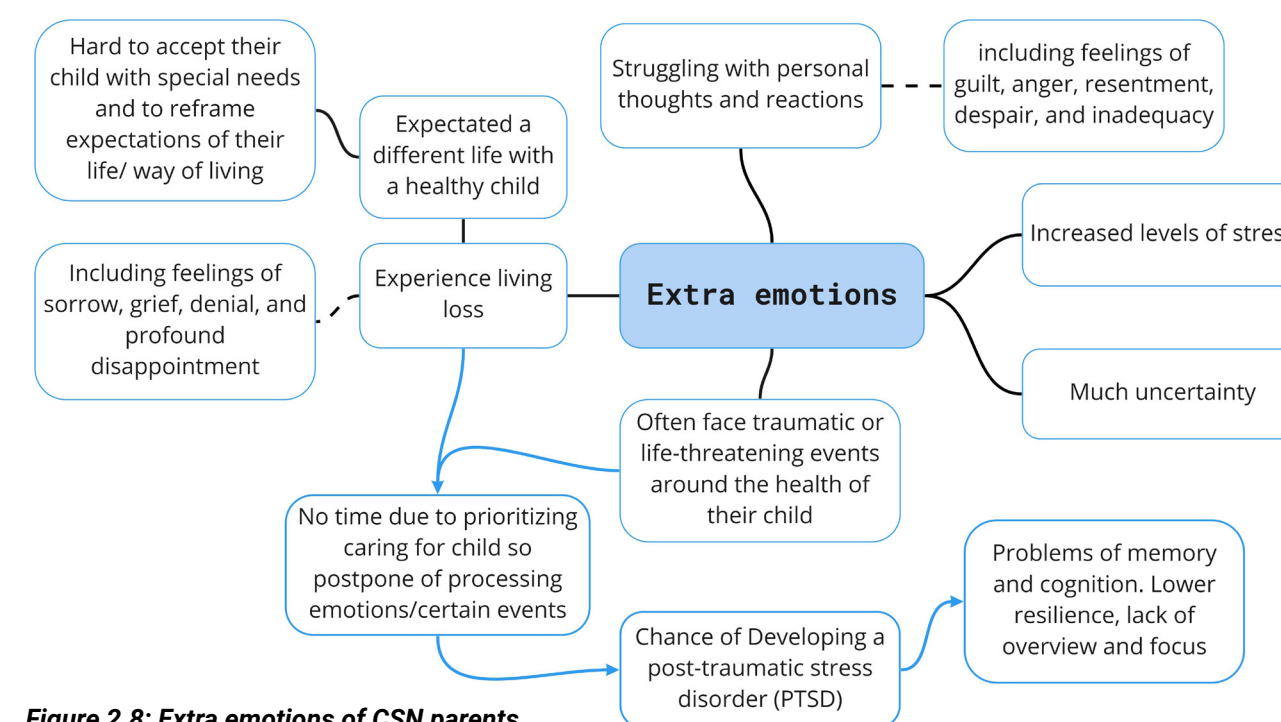

Figure 2.8: Extra emotions of CSN parents.

Causes of poor self-care of CSN parents

The fact that parents often experience poor self-care is something I hope to have made clear in my thesis and some causes are summarized in figure 2.10. The previous subparagraphs illustrated how CSN parents get more responsibilities on top of their common responsibilities and face extra emotions which often results in burn-outs, relationship problems and isolation. This subparagraph further explains that at a certain point, parents face to many responsibilities, and they choose which responsibilities to fulfil and which to neglect, often at the costs of themselves.

According to Gezondeboel (2020), an e-Health platform for mental health with psychologists and experts, the first responsibility which parents drop when they are busy, is the activities they need to relax and thus reload their battery with. In the long term, this often results in mental and physical exhaustion and thus leads to living in a survival mode and poor self-care (figure 2.9).
This poor self-care is best illustrated with these stories on Facebook (parents in Special Needs Parents Support & Discussion Group, 2020) which were answers for the question: What's one thing you struggle with being a special

Figure 2.9: Poor self-care.

need parent?
 'Everything for me. I don't have any child care. I have been with my son 24/7 the whole year without a break. 20 years and no vacation. I need a vacation without any kids. I am losing my mind. I didn't know this was going to be so hard. I am married but a single parent. I am a mom and dad to my 20 years old son.' Another CSN mother shared she was struggling with:
'Sleep, communication, worrying if he's content, happy, and feels accepted and loved. So much!'

Another very imaginable answer which shows the hard times this CSN mother faces and how she still holds on to positivity:
'Feeling guilty and like I'm failing all the time. Being exhausted in what feels like every single

Figure 2.10: Causes of poor self-care of CSN parents.

minute. Worrying that I'm failing and traumatizing my other kiddos. Being isolated and not understood by almost everyone. But even with all that, there are so many amazing bright spots in our lives!'*

Parents prioritizing care child over themselves out of love

The number one reason for poor self-care of the parents is them prioritizing care for their child over caring for themselves, because they simply want the best for their child out of love. They fight to get the best for their child which costs a lot of energy and time according to stories on Facebook (parents in Special Needs Parents Support & Discussion Group, 2020).
They would even want to switch places with their child as this Facebook post of a CSN mother shows:
'I struggle with knowing I don't endure what my son does. I wish I could trade him places every single day.' Or as another mother posted: *'My struggle is remembering that if it's hard for me, it's even harder for her.'*

This is illustrated by this quote from a CSN father about his wife: *'For Anu, it was never about what this meant for her — it was always about what it meant for Zain and how we could best care for him. Rather than asking "why us?" she instinctually felt his pain before her own.'* And *'As his parents, it was up to us not to question "why," but instead to do everything we could to improve his life'* (Nadella, 2017). So aside from the love they felt for their child, Zain, they felt responsible for improving his life.

This feeling of responsibility is also shown by this CSN mothers' quote from her blog: *'Having a newborn is hard; it's a long, 24-hour day. When the baby is fragile and has medical needs, it stretches out even more. Questions such as 'Did I do something to cause this?' and 'Am I doing enough?' creep up. These doubts make you judge yourself harshly and feel judged.'* (Nadella, 2017).

This quote illustrates the attitude of CSN parents in which they prioritize their child over themselves:
'I ask families to think how their lives would change if they took 10% of the love and energy they donated each day to their child and gave it back to themselves. Many say they can't, that it would be selfish, that there is no time. It's natu-

ral that special needs parents are super focused on their children. They have to be. But they also need to care for themselves to avoid the downhill flow of anxiety into their already compromised children. When I remind them of how interconnected stress is within families, they begin to think a little more about a yoga class or going for that swim.' (Pinhorn, 2018).
So, many parents see it as selfish to give 10% of their love and energy to themselves. It also shows that they have to be reminded before taking action, that if they do not take care of themselves, this will also have its impact on their child(ren).

This love for their children is also reflected by the following quote: *'She is a wonderful, happy, loving little girl. While her growth and development might be very different from that of other children, she is no less human, valuable, or in need of my love and affection.'* (Lawrence, 2011).

Desire to be a good parent and have a 'normal' family

However it is not only their love for their child which pushes them, but they also put pressure on themselves. Research shows the belief that to be a decent parent, you should "devote your entire physical, emotional, and intellectual being, 24/7, to your children and enjoy every minute of it" (Douglas & Michaels, 2004).

Another possible reason is that the family ignores the situation, because they want to be a normal family. families that depart from the normative standards of what constitutes a "real" family bear an additional discursive burden of presenting themselves as legitimate (Braithwaite et al., 2010).

The pressure put on parents by society

Moreover, there is also added pressure by the society. Research discovered that incorporated within the role of the mother is the idealized mother-child relationship, as well as the perception that motherhood is a calling; children are fragile and need continuous mother nurturing (Blair-Loy, 2003). So parents are held responsible for the healthy development of their child. According to Gezondeboel (2020), it is widely believed that you have to solve your own problems, so it is hard to ask and accept help from others. Moreover, we often have the feel-
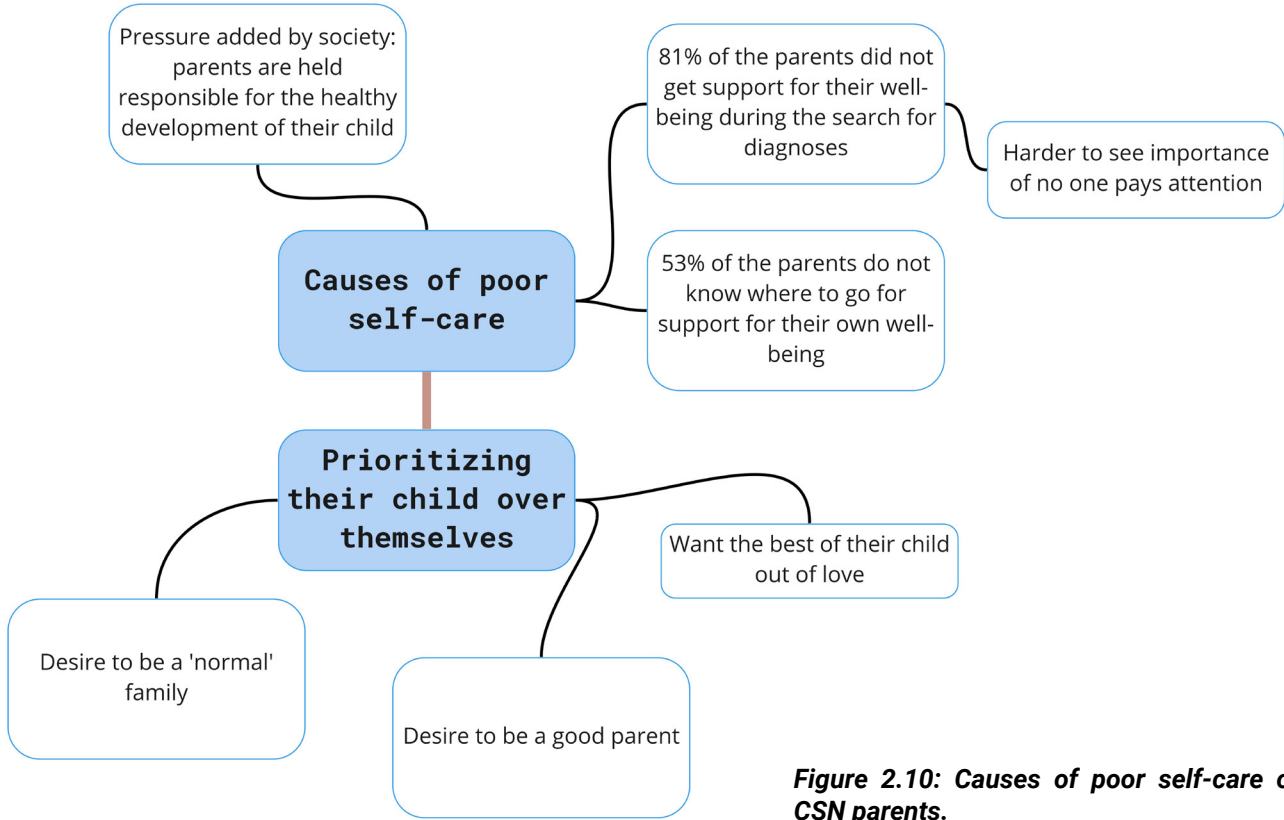
ing that we have to do something in return if someone does a favour, however CSN parents have no time left for that.

Not much support for the well-being of the parents

53% of the parents do not know where to go for support for their own well-being (Quickscan, 2014). Moreover, if help is offered, it is often late. 81% of the parents indicated that they did not receive support for their well-being during the search for the diagnoses (which often takes long) (Quickscan, 2014).

"There is not much for parents, it is all about the child. Someone telling me to stop working, first recover and get things into perspective, would have really helped me. As parent you are so tired, you completely don't see it and loose overview.'– CSN mother (Quickscan, 2014).

Also, most attention goes to the possibilities of the child, which causes not enough room to talk about living-loss (Roosmalen, 2019). Probably if you never get attention as parent for your well-being it is harder to see the importance of reserving time for it.

Result not caring for yourself as CSN parent

This subparagraph conveys the possible result of not caring for yourself as parent. Often the responsibilities, added responsibilities and emotions ask so much time and energy from the parents, they are not able to care for themselves as well and get into 'survival mode' (Roosmalen, 2019). This could lead to CSN parents with a burnout and a child placed outside home (figure 2.11).
'In such a stressful period due to getting their child diagnosed, parents have no time to think about how they are doing, with the result that they notice the impact of the situation on themselves, their relationship and possibly other children in the family too late.' (Okma, 2016).
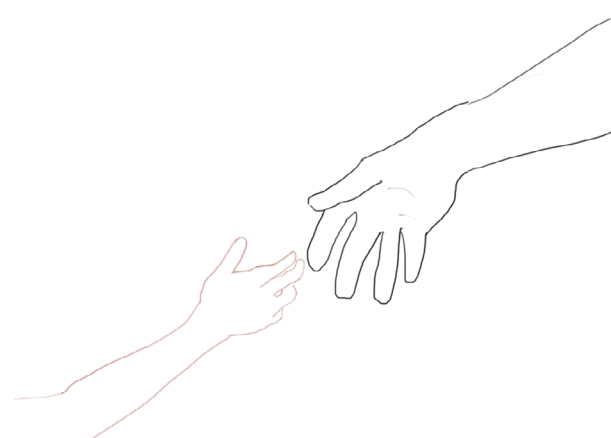
Figure 2.11: Placed outside home.

This leads to a downwards spiral (see figure 2.12) in which they have poor or no self-care and eventually are so worn out that they cannot care for their child(ren) anymore and external help is urgent. For example, parents are afraid to hurt their child as a result of that it all becomes too much to handle as this CSN mother explained: *'We were very afraid that we would hurt our daughter, because she went to the extremes.'* (Zembla, 2020). A cry for help is often late and due to many government systems, the help is even delayed.

This also has an impact on the child(ren) of these parents. As Dr Stuart Shanker, child psychologist and Founder of The MEHRIT Centre, explains that if parents are stressed and their bodies and brains are in overdrive all day, every day, it all flows down into the lives of our children (Pinhorn, 2018). This can be seen as children being the mirror of their parents: if parents are stressed, this stress seeps into the nervous system of their children and the children reflect it back to the parents. So poor self-care for the parents will have a bad impact on their children.
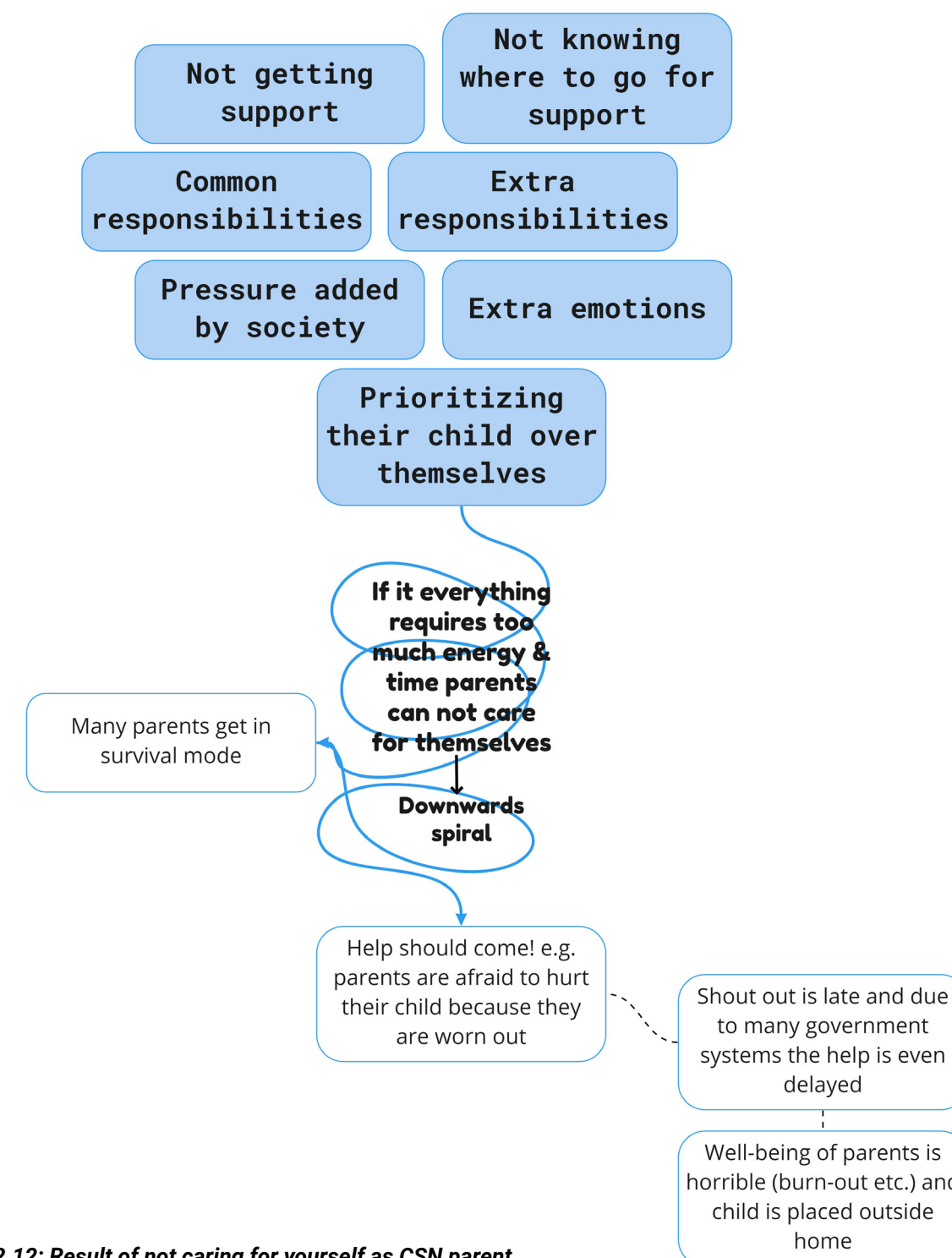
Figure 2.12: Result of not caring for yourself as CSN parent.

Solution directions for self-care CSN parents

Many (inspiration sources for) solutions for poor self-care and becoming aware of poor self-care of CSN parents can be found in literature as well as in psychological frameworks and theories. This subparagraph explains the for the project most interesting solution directions. Some terms are mentioned and explained previously. 'Parents of children with special needs require more than just self-care practice, namely they need to be supercharged, exceptional, and have much self-compassion.' (Pinhorn, 2018).

Human Needs
Different theories about human needs can be found of which two are the Self-Determination Theory (also known as SDT) (Deci & Ryan, 2000) and the 13 Universal needs (Desmet & Fokkinga, 2020).

According to the **Self-Determination Theory (SDT)**, there are three psychological needs that motivate the individual to initiate behaviour and specify nutrients that are essential for psychological health and well-being of an individual. These are the need for (Deci & Ryan, 2000):
- **Autonomy**: Being the cause of your actions and feeling that you can do things your own way, rather than feeling as though external conditions and other people determine your actions (Desmet & Fokkinga, 2020).
- **Competence**: Having control over your environment and being able to exercise your skills to master challenges, rather than feeling that you are incompetent or ineffective (Desmet & Fokkinga, 2020).
- **Social relatedness**: interacting with, be connected to, and experience caring for other people (Baumeister & Leary, 1995). Can also be referred to as the need for belonging: need to build up or main attachments, friendships, intimacy or sense of community (Schot, Desmet, van Dijk, & Schoone-Harmsen, 2009).

The three needs of the SDT seem to have an overlap with three of the 13 universal needs. These **13 universal needs** are (Desmet & Fokking, 2020): **Autonomy, beauty/order, comfort/ease, community, competence, fitness, impact morality, purpose, recognition/acknowledgement, relatedness, security and stimulation**.

According to Deci & Ryan (2000), the fulfilment of human needs is essential for ongoing psychological growth, integrity, and well-being: None of these needs can be neglected without negative consequences (Tay & Diener, 2011).

Creating ways to fulfil these needs in the lives of all humans and thus CSN parents as well, will contribute to their lasting well-being and the prevention of impoverished functioning and ill-being (Deci & van Steenkiste, 2004)

Looking at universal needs and how much these are fulfilled can create awareness of poor self-care and give insights into what is needed to increase their well-being. For example, for the need Relatedness, 67% of the parents want to be in touch with other parents with a child with special need (Quickscan, 2014). Insights in the (fulfilment of) needs of CSN parents could serve as inspiration and foundation for the serious game.
Besides, much human activity is fuelled by the aspiration of need fulfilment; needs are the fundament of our motivation system (Ford & Ford, 2013). In other words, it is important to have need fulfilment in the serious game to create motivation for the players. As is later explained, SDT has an important role in this.

Other mental well-being factors
Other factors that influence our mental well-being are expectations, perceptions and personal values. For the first two, Mo Gawdat (2018) described a happiness formula in his book solve for happy: 'Happiness = your perception of the events of your life - your expectations of how life should behave'. Parents often face sudden, unfortunate events which they did not expect and this could decrease their happiness level. Learning how to cope with these sudden, unfortunate events by paying attention to their own expectations could increase their well-being by avoiding a mismatch between perceptions and expectations. Personal values are different for everyone and possibly hard to change so it will be hard to integrate this into the serious game.

Becoming more resourceful
By becoming more resourceful CSN parents can cope more effectively with the challenges they face. They will become more confident in taking care of their child. This resourcefulness requires creativity, energy, and skills of adapting, improvising and experimenting (Giaccardi & Nicenboim, 2016), which is harder to bring to the table while being in a survival mode. The person(s) involved should not feel like a victim of circumstances, but rather feel in control of the situation (Giaccardi & Nicenboim, 2016), which is possibly hard for CSN parents who experience much uncertainty and sudden, unfortunate events. It would help parents if they become resourceful by adopting a creative problem-solving approach. However, training is needed to practice this, including the **building of confidence** and motivation, and thus also requires courage.

Having conversations in which the right questions are asked
According to Okma (2016), it would support CSN parents if someone (like a family coach) would come past the doorway and asks a question like: '**How are you doing and what do you need?**'. It is relevant to ask CSN parents on regular basis questions like this or 'How are you doing as a person?' and secondly asking follow-up questions, because they will start to think about it and become aware of how they are actually doing. In the long term this will make them easier alerted by stress-signals like experiencing that it is hard to relax, insomnia or physical complains.

Dumping, Passing on, Doing-Method
A balance tool for CSN parents, developed by Magenta (Magenta, n.d.) was based upon the 'dump, pass on, do method' (In Dutch the *'Dumpen, Doorgeven, Doen methode'* and from now on called the DDD-method). One of their users shares: *'From this method, I especially learned that I have more choice and freedom in my situation than I previously thought.'* The method in short:
- **Dumping** by questioning yourself: Do I really have/want to do this? And stop doing things, do these less frequent or pay less time to it.
- **Passing on** by questioning: Do I have to do this? Who else can do this?
- **Doing** is among other things about less postponing of tasks and being less perfectionistic.
The Passing on part is also important according to Gezondeboel (2020), because it would

help if CSN parents ask sooner for help, and thereby realize that most people like to help others. Besides some think no one can help them, it would be good if they would check whether this is only their expectation or reality.

Positive thinking
Adopting positive thinking could increase the mental well-being of CSN parents and could be stimulated by:
- Seeing the **small achievements**.
- Receiving and giving **compliments**.
Besides positive thinking could increase the confidence and courage for becoming resourceful. So adding these two stimulations to the serious game will possibly make the players more confident to explore the options of the game.

For more solution directions for self-care for CSN parents see Appendix E.

Conclusion literature study

CSN parents face extra responsibilities in comparison with parents without a child with special needs and this makes it complicated to also execute their common responsibilities like cleaning. CSN parents could be overwhelmed by all these responsibilities and the **rollercoaster of emotions** that add to having a child with special needs. **Often they prioritize taking care of their child above taking care of themselves**. This together often leads to CSN parents finding themselves in the **survival mode**. In the **long term, this could result in parents that are not able to take care of their child anymore**, due to being worn out. If they do not take action to change the situation on time often the child has to be placed outside their home.
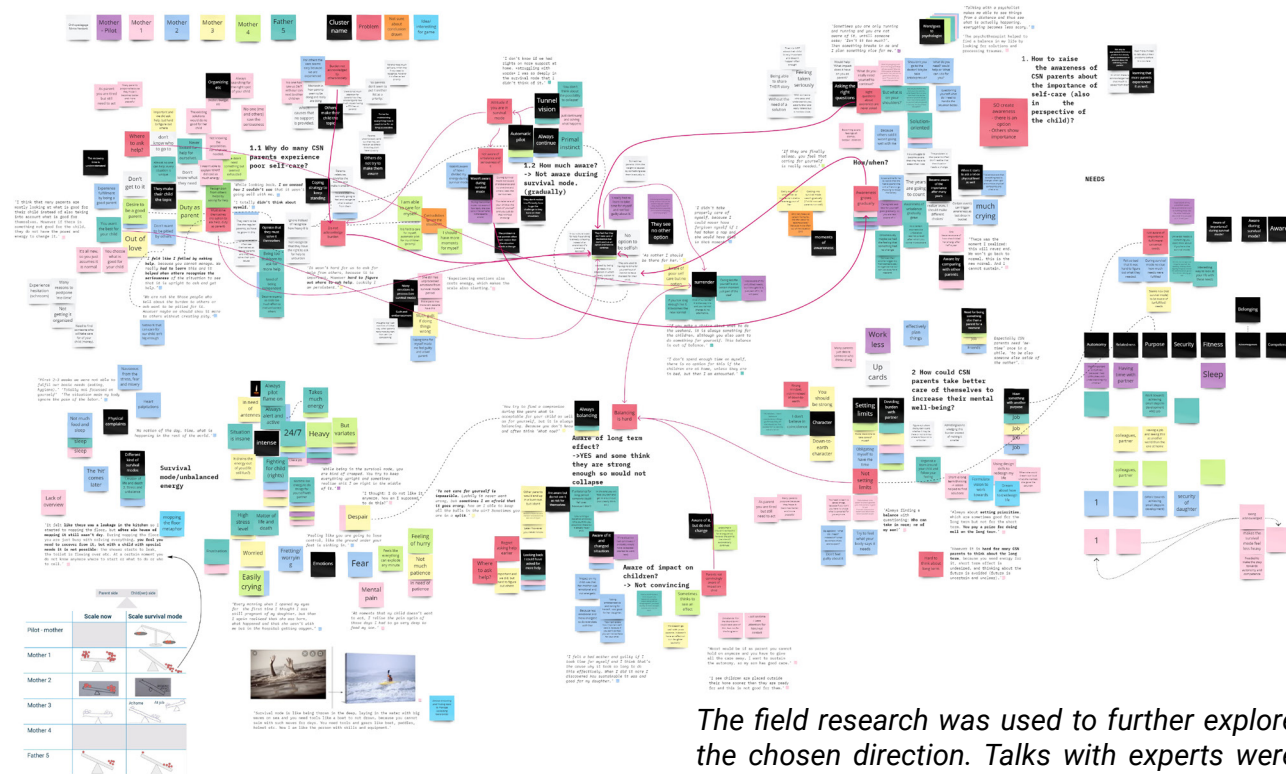
2.3 Field Research CSN Parents

Figure 2.13: Analysis in Miro of results field research.

The field research was used to further explore the chosen direction. Talks with experts were conducted of which one was with an orthopedagogue and CSN mother. *Moreover, interviews with CSN parents (after using a contextmapping technique) were conducted. After gathering all the insights, these were mapped out on post-its on a Miro board, after which clustering followed. Problems that occurred more often were selected and set in order of time, which resulted in a timeline of the process most CSN parents go through.*

Insights first talks with experts

Orthopedagogue Minke Verdonk
Orthopedagogue and CSN mother Minke Verdonk (figure 2.14) offers help for CSN parents and their children. The interview provided many insights which served as structure during clustering.

- CSN parents go through a lot and if there is never looked at this, they will probably collapse. Also, the **recovery time of poor self-care for CSN parents is underestimated**.

Parents experience poor self-care because:
- **They make their child the topic**: CSN parents don't get to providing self-care, don't know who to go to for support for it, and do not know what to talk about and what they need. Also, they make their child the topic, because others make their child the topic.
- **Others make their child the topic:** there is not much attention for parents how they are doing and how much impact having a CSN has on parents, because there is **often a mismatch in how parents seem to be doing and how parents are really doing**. This is caused by **coping strategy to keep standing for CSN parents: relativize, trivialize the burden and make it smaller.** Resulting in unconsciously sending out that they can hold on and no support or becoming aware of the situation is needed.

Other reasons for poor self-care:
- Discrepancy inside the parents; **they feel that they do not take care of themselves but on the other hand, they do not see it as an option to reserve time for themselves and having to continue.** Possible reasons for this discrepancy: **Feels selfish which feels wrong**, being **used to having no time for themselves**, out of instinct to **have the best for their child** and by **being already in a situation** in which self-care it is barely an option.
- Having the **opinion that they must solve it themselves** and ignore instead of recognize and acknowledge how heavy it is and that they have the right to ask for help to unburden. This is often because of **perceiving themselves as regular parents and regular parents can solve their own issues** and the **desire to do so as well**.
- It is **in our culture to ask for help if**

Figure 2.14: Orthopedagogue Minke Verdonk.

everything is already collapsing instead of a preventing approach.
- **having certain thoughts** like 'I cannot think of it that way, other parents have more burden, how can I be complaining' which goes hand in hand with feelings of guilt and embarrassment.
- **Hesitation, not getting it organized, need to find someone who will take care for of your child** (money).
- **In the first years of having a child with special needs, they strive for maintaining everything how it used to be** for as long as possible.

- **The problem is that parents often are not aware that the situation needs a change and that it is important to take care of yourself to be able to take care of your child.**
- This is the first step towards self-care and certain events can add to this awareness.
- **This awareness often comes after many years**, when it starts to ask a lot on a **physical level as well and the years are going to count**: parents realize that they should have made **different choices**.
- **For many, what would help to raise awareness (and prevent collapsing) is** someone **asking the right questions** ('What impact does it have on you as parent?'), providing the possibility to **share their story**, letting them **feel taken seriously and understood** and that the c**onversation is about them**.
- It often **helps and relieves to know that also other CSN parents experience poor self-care.**
- Being seen and heard, in other words **recognition and acknowledgement,** are important needs for CSN parents.

'Finding (again) a balance between your own needs and those of the other, is essential for parents of children who need extra care. Balancing between burden and capacity is often experienced as a big challenge.' (minkeverdonk.nl)

Expert universal needs and CSN parents Marise Schot

As explained before, Marise Schot is one of the founders of Ontzorghuis. She is in contact with other CSN parents and has a child with special needs herself. Also, she knows much about universal needs and a small interview was set up to check whether balancing between the needs of the CSN parents and those of their children would be a good topic for the serious game.

- She realized that she could not fulfil her universal needs and take care of herself, due to her child asking too much time by having to take care of his needs on top of her own needs. She put her needs aside.
- By giving much energy to your child, your energy disappears over the long-term.
- **Only becoming aware of not caring enough for yourself is not the solution, but it is an essential step in the process to start looking for solutions.** It helped her to fight for more help and to realize that if she would have been in the survival mode for a longer period she would not be able to take care of her child, so something had to change.
- Caring for a child with special needs is something **you need more people** for (arranging help).

To conclude, **creating awareness about the unbalance of CSN parents in which they do not properly take care of themselves as a result of taking care of their child with special needs is an interesting topic for the serious game**. Marise also confirmed that **using universal needs for the contextmapping** is a valuable way to learn more about this unbalance.

Contextmapping

The goal of the contextmapping sessions was getting insights about CSN parents while being in a survival mode (or not) about:
- *The experience of the survival mode*
- *The causes of an unbalance in energy division*
- *How much they were aware of this unbalance*
- *How and when did they become aware*
- *How much are they aware of the consequences of an unbalance for a longer period (also on their child)*

Method

There was chosen for qualitative research because unlike quantitative research, it is successful in providing a deep understanding and insight into individuals' stories (Morse, 2006). Secondly, there was chosen for generative design research by using first an **online, partly interactive booklet** (google presentations) as sensitizing material and secondly conduct **semi-structured interviews** to reach even more the 'latent knowledge level' of the target group. In other words, to get access to what they know, feel and dream and insights in their personal experiences (Sleeswijk Visser, 2005).

The already given main questions formed the basis for the contextmapping booklet (Appendix F) and the interview questions (Appendix G). Some interview questions were personalized or later added after analysing the booklet in advance of the interview.

Ontzorghuis expects that most CSN parents who sign up for the retraite weekend will be in an early stage of being a CSN parent which often includes being in **the survival mode** (see glossary). For some questions, the participants were asked to think back to a period they were in the survival mode if they weren't already in the survival mode. There was chosen to use this point of view from the survival mode, to gain insights about the user's world of possible participants of the retraite weekends and to research the unbalanced energy dividing between taking care of their child and themselves resulting in poor self-care of the parent. By having this situation sketched, insights about how much they were aware of the importance of self-care (also about the impact on their child), how to increase this awareness and how to

provide better self-care for themselves were more easily gathered.
Secondly thinking back to times of survival mode will possibly be tough for some participants. Therefore in the booklet, a **metaphor** is used for dividing energy by using a scale with a parent and a child side (for examples see figure 2.15) instead of talking too much about the survival mode. There must be taken into account that the participants are possibly not in the period of survival mode or in urgent need of help, because otherwise they would possibly say not 'yes' to an interview.

During the **pilot** (see Appendix H), the scales appeared to be a good metaphor, however the needs were hard to understand and talk about. Therefore, in the booklet a picture, more explanation, and Likert-scales were added. The design of the booklet was aimed to be appealing and serious. It was expected that with creating one online, it was easier in times of corona to fill it in.

Looking from the **ethical** perspective (Sanders & Stappers, 2012), a (verbal) consent form was conducted as well as permission for the recording and use of the data.

To represent the target group well, it is important that the participants are diverse (Sanders & Stappers, 2012). For this research, the recruited participants had different amounts of children with different special needs. However, only one CSN father was included.
Five parents with special need child(ren) were individually interviewed. In advance of sending out the contextmapping booklets, a pilot was conducted to test various elements of the booklet (in Miro) and the interview questions.

Results

The insights of the contextmapping are brought together with the previous insights from the literature study and formulated into the conclusion of this chapter.

As was explained, the participants were asked to create **scales** of their energy division between themselves and their child(ren) for how it would look like now and during the survival mode. An overview can be seen in figure 2.15. As can be seen, there is an unbalance in energy division towards the child's side (right sides) during the survival mode. The 'now scales' are also often a bit out of balance towards the child's side.
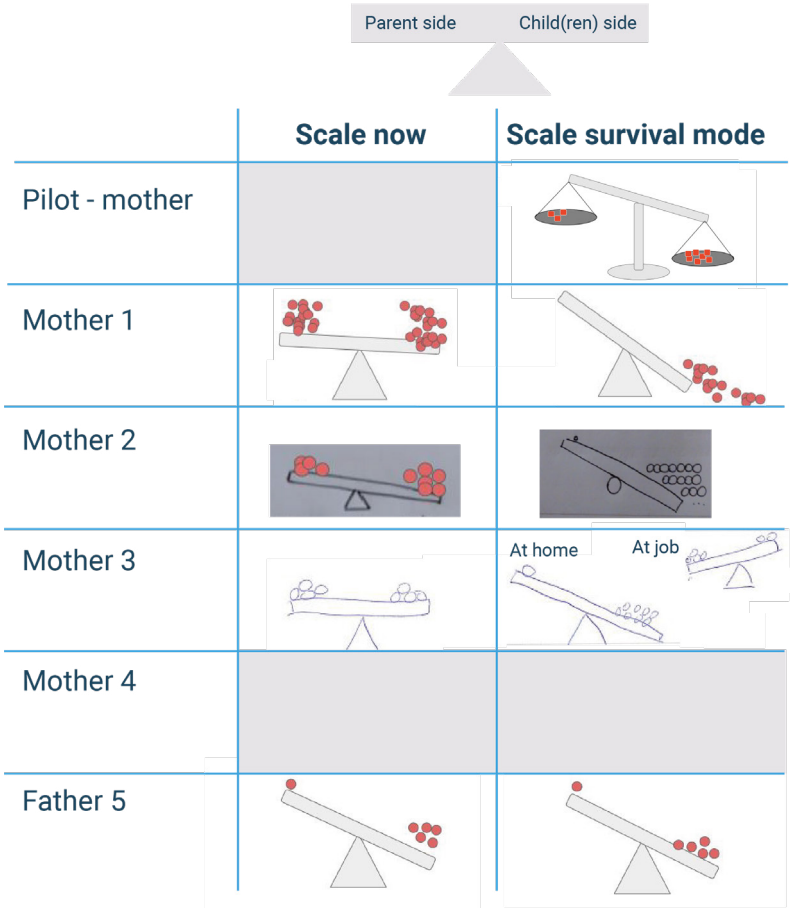

Figure 2.15: Scales of the energy division of various CSN parents.

Other insights from the scale:
- Mother 1 experienced during the survival mode that her energy seemed to disappear as well and that she had no clue where it all went.
- Mother 3 distinguished during the whole contextmapping her life in her job and her home world. In her 'job world' she didn't put her child(ren) first and got energy out of it.

See Appendix I for the interview results per participant, analyses of the universal needs of CSN parents, and more insights and limitations.

For one CSN mother it felt like there was a leakage in the kitchen so she started to mop the floor, but after six hours of mopping it still wasn't dry. *'During mopping the floor you are just busy with solving everything, you feel you need to recover from it, but with a child with special needs it is not possible: the shower starts to leak, the toilet is flowing over etc. At a certain moment, you do not know anymore where to start or what to do or who to call.'*

2.4 Conclusion CSN Parents

The insights are concluded from the literature study and field research about the target group. Please note that all possible interpretations described are subjective and might differ between participants. Figure 4.1 summarizes this paragraph and connects the later formulated transfer effects (chapter 4). Figure 2.16 shows the found process CSN parents go through in short.

Survival mode
One of the findings from the literature research was that the process of most CSN parents starts with being overwhelmed by responsibilities (many added responsibilities on top of their common responsibilities). Besides, they experience a rollercoaster of emotions (can include traumas as well) they have no time to process. They prioritise caring for their child over their own well-being. This together for a longer period often results in being in the survival mode. In summary, the survival mode was described by the parents who were interviewed as heavy (24/7 care), having not much energy, stress, fear, worries, frustration, lack of overview, despair, in need of patience, easily crying and no time for self-care (also not for basic needs).

Not being aware of unbalance
Following from the interviews and according to Verdonk, CSN parents are not aware of the unbalance, how huge the challenge actually is, the seriousness of the unbalance and that the situation asks for a change. This is caused by being in the survival mode as their coping strategy in which they go on automatic pilot with a tunnel vision. Besides, some parents think the situation is normal or temporarily, which often isn't the case. Another cause is that the unbalance that CSN parents experience is not acknowledged/recognized by others nor society. These insights are illustrated with the following quotes from CSN parents during the interviews: *'During survival mode, you and others do not see the seriousness of the situation.' 'No one says: This cannot continue, this situation isn't normal.'*

'I don't know if we had rights on more support at home *struggling with words* *I was so deeply in the survival mode that I didn't think of it.'*

Aware of poor self-care
According to Verdonk, awareness grows gradually and often takes many years. When and how parents became aware variates, often (also for most CSN parents who were interviewed) it is caused by a conversation in which questions are asked like: *'How are you going to do this in the long term? How will you sustain? What do YOU need for it? What do you want? Why don't you just ask the government what you want?'*

Other triggers of awareness found with field research are: (almost) collapsing/burnout, others mentioning, comparing the care with other (regular) parents, physical complains and realization of long term characteristic of the situation. This can be illustrated with quotes from the interviews:
'There was the moment I realized: this will never end. We won't go back to normal, this is the new normal. And I cannot sustain. I thought: I do not like it anymore, how am I supposed to do this?'

'Now I am aware of how important self-care is, because if you don't do that, you cannot be there for your child.'

Perceived as no option for self-care
Following from the intevierws and according to Verdonk, CSN parents do not see it as an option to create balance by taking (more) care of themselves. There were many causes found of which an important one was that the parents do not see it as an option to be selfish and would feel guilty if they would take time for themselves: *'I felt a bad mother and guilty if I took time for myself and I think that's the cause why it took so long to do this effectively.'*

This is possibly caused by the desire to be a good parent, the love for their child and seeing it as their duty as a parent to prioritise their child over themselves (literature study and

Conclusion field research

- Parents need much **self-care**, which they first need to recognize and acknowledge, however for several reasons it is often their **last priority** (also conclusion of literature research).
- They feel they don't take care of themselves but d**on't see it as an option to reserve time for self-care** and having to continue.
- They think they must solve it themselves.
- Coping strategy to survive for CSN parents is to relativize, trivialize the burden and make it smaller.
- **Awareness of CSN parents about the importance of self-care often comes after many years**.
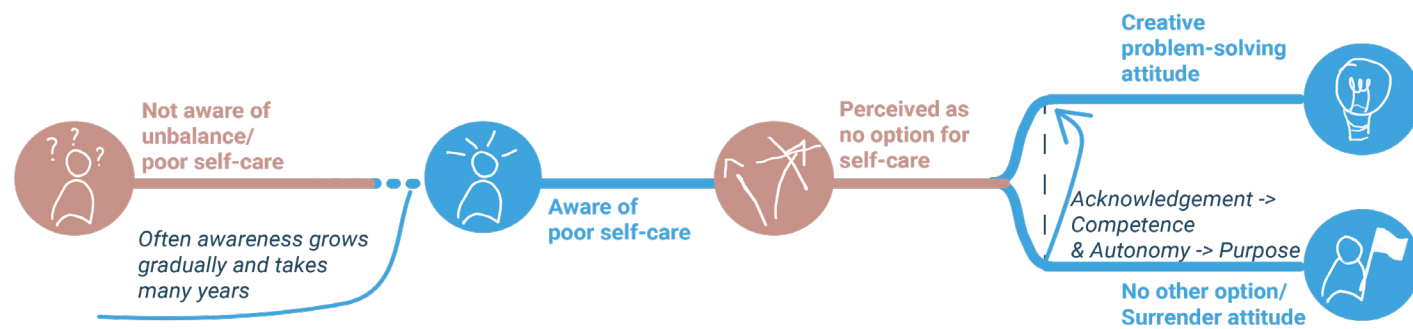
Figure 2.16: Found process CSN parents go through: The developing attitude process.

interviews). Another cause found in field research, is that the unbalance that CSN parents experience is not acknowledged by others, resulting from perceiving the burden smaller than it is. According to Verdonk, this last part is also caused by the CSN parents themselves by relativize, trivialize the burden and make it smaller. So, they do not reveal the actual situation, because they do not want to be pitied, sometimes see themselves as regular parents (and don't know what normal care is), seeing it as their duty to solve it like good parents would do and being afraid to lose autonomy. This is shown in quotes from the interviews with CSN parents: *'It is the way it is and you should be strong'.* *'Eventually, I have chosen for children, so that is my priority and I want to give all my energy to them.'*

Lastly, according to Verdonk it is in our culture to ask only for help if everything already collapsed (instead of a preventing approach) and also according to most interviewed CSN parents, it is your duty as parent to solve your own problems.
'I felt like I failed by asking help because you cannot manage. We really had to learn this and it helped when others recognize the seriousness of the situation to see that it is upright to ask and get help.'

A reason to accept the situation and see it as having no option is that parents do not see the urgency of self-care. There are several possible reasons, found in field study for this:
• They do not think about the possibility to collapse. Or they do but think it won't happen to them. One CSN mother shared about taking caring of her child at the cost of herself: *'You just do that, you don't think about it, but the consequences are pretty intense.'*
• Due to others who do not acknowledge the

unbalance nor see the seriousness of it, parents also relativize the burden. This possibly also explains why others barely ask the 'right questions' (often about the long term effect and what the parents actually need to be able to continue) to the parents
• Lastly, the parents often do not see the negative consequences for the child (getting grumpy parents, less attention and eventually being placed outside his/her home).

Also according to Verdonk, they are used to having no time for themselves out of instinct to have the best for their child, caused by being in a situation where there barely is an option to care for yourself. Other reasons are according to Verdonk: do not know what they actually need nor what the real burden is, and do not set their own limits.

Two found attitudes
Based on the previously conducted research (especially field research), two attitudes could be distinguished. In reality, it could be a combination of the two attitudes , often switching between the two or they switched from one to the other attitude.

Seeing no other options and surrender attitude
As a quote of one interviewed parent illustrates: *'I don't spend enough time on myself, there is no option for this if the children are at home unless they are in bed, but then I am exhausted.'*
One of the found attitudes of CSN parents, is surrender and thus accept the situation as the new normal: *'If you live long enough with an unbalance it becomes the new normal.'* So that it is part of the deal and there is no alternative as one CSN parent shared: *'The situation we were in is insane, but there is no alternative.'*

According to field research, this attitude could

be increased by:
• having a mind-set of being a victim,
• looking for the causes by themselves instead of the situation,
• still not being aware of the long term characteristic,
• not seeing the existing solutions as an option, not knowing where to ask for help,
• and not knowing what is actually needed.

Some of these parents will adjust their life enough to be able to continue the situation. Other parents do not adjust their life enough and are not able to hold on, which could lead parents with a burnout and the child being placed outside his/her home. This is undesirable for everyone, including the government (is more expensive).

Creative problem-solving attitude
The other found attitude of CSN parents based on field research, is to creatively search for solutions to increase self-care. It requires firstly accepting and seeing that their situation is unique and by knowing what you need to continue to be able to ask the government in detail for what is needed. For one parent she knew what she needed by dreaming out loud: *'When I could dream out loud what I wanted I gave the solution.'* Another parent saw asking help as a solution: *'You isolate yourself and I would like to ask for more help sometimes.'*
What appeared to help for the parents is setting limits for the time they care for their child, adopting a certain mind-set and setting limits. For example, this mind-set of a CSN father helped him to avoid the role of a victim: *'I don't believe in coincidence, things go the way they are and should be.'* Also *'Everything doesn't just happen to me, things happen and I just make the best out of it.'*
Long term thinking (could be in the form of a vision) is important while 'redesigning' their life with a solution focussed approach. This can lead to the desired result: A balance between caring for their child and caring for themselves. *'It is always about setting priorities: You pay a prize in the short term for doing well in the long term.'* Also, one CSN parent shared that long-term thinking is hard for CSN parents: *'It is hard for many CSN parents to think about and do things for the long term, because you need energy for it, short term effect of it is undesired, and thinking about the future is avoided (future is uncertain and unclear).'*

It must be said that the surrender attitude is also important for embracing the situation and the focus on the short term (it is always balancing between the short- and long-term focus). Probably, the best would be for CSN parents to find a certain balance between the two attitudes. However, following from the conducted research, CSN parents tend to adopt more of a surrender (and short-term focus) than a creative problem-solving attitude and therefore the project will aim for a game that stimulates developing a creative problem-solving attitude. Note that parents could also adopt a creative problem-solving attitude but still need to adopt a surrender attitude as well, because there are no more possibilities than already found.

Universal needs
During survival mode, according to field research, most participants were not aware of the fulfilment of universal needs, did not think about it nor did not know what they needed: *'Universal needs are something you don't think about if you're in the survival mode. It is just running for the lion behind you.'* One parent saw an order linked to time in the needs: *'In CSN parents groups I found acknowledgement from which I realized I need to have the competence to be able to care for my child and need to stay autonomous. Due to being autonomous, I got a purpose: I developed a long term vision in which I needed to stay autonomous and to achieve this I started setting goals.'*

Firstly, acknowledgement (via relatedness or belonging) for the situation by sharing their stories is important for the parents. Others acknowledging the burden of CSN parents, which helps CSN parents to acknowledge their burden as well. Besides talking with other CSN parents increases acknowledging the burden by getting confirmation that it is heavy and you are not 'crazy' and will feel less as a failure or guilty to ask for help. The second step is getting more competence to become more autonomous (these needs were (unconsciously) seen as one by the participants and was mentioned as the most important). This quote shows the importance of autonomy for her: *'Worst would be if as parent you cannot hold on anymore and you have to give all the care away. I want to sustain the autonomy, so my son has good care.'* She further explained with: *'I see children are placed outside their home sooner than they are*

note: the figure contains labels: Not aware of unbalance/ poor self-care; Often awareness grows gradually and takes many years; Aware of poor self-care; Perceived as no option for self-care; Creative problem-solving attitude; Acknowledgement -> Competence & Autonomy -> Purpose; No other option/ Surrender attitude

ready for and this is not good for them.'

By becoming more autonomous new purposes arise, because for becoming more autonomous a long term vision is required and to achieve this, goals must be set. Purpose was at the same time found aside from the described process, by doing something that is not focused on their child, like their job.

Solutions

As previously said, a trigger which could lead to the creative problem-solving attitude is a good conversation in which CSN parents get the right questions about; their burden, their unbalance, what they would desire to continue, and about the long-term. This may help to become aware of the long-term effect (instead of only focussing on the short-term) and set long term goals/vision (which can cost a prize in the short term). To develop this attitude they should realize that the situation requires a change and the price you pay if you do not take care of yourself, learn to ask the government for help in a detailed almost demanding way (so also knowing what you need) and a creative solving approach instead of surrender attitude. Setting limits for time spent on taking care of their child and adopting a different mind-set seemed to help parents, next to asking for help.

In short, **improving the situation firstly requires becoming aware of the poor self-care and consequences, making choices (for self-care and long term) and adopting the right balance in the two found attitudes**.

However, even for CSN parents with much experience balancing never seemed to become easy: *'You try to find a compromise during the years what is acceptable for your child as well as for yourself, but it is always balancing.'*

3. Serious Gaming

Main takeaways

As was underpinned in this chapter many CSN parents suffer from poor self-care which could have many causes or a combination of these. This often leads to CSN parents that live in a kind of survival mode to be able to keep all the balls in the air. Figure 4.1 (chapter 4) shows **the extended developing attitude process** of figure 2.16: the process most CSN parents go through about self-care, becoming aware of it or not and adopting the attitude of seeing no option to change the situation or a creative problem-solving attitude (or combination).

Creating awareness about poor self-care and having an option to change this and stimulating to adopt more of a creative problem-solving attitude to increase self-care is of high importance and therefore a relevant direction for the serious game, which can hopefully avoid these parents to collapse. It would be perfect if the parents feel comfortable to share their stories after playing the game (as appeared to be important).

3.1 Approach

This chapter consists of two parts: a literature study and field research concerning serious gaming.

This chapter answers the two last design questions (pink) concerning designing a serious game (see figure 3.1). These questions are split up in research questions and answered by literature research, reviewing examples of serious games, trying out serious games, talking with expert(s), being a facilitator of an online serious game I signed up for, and previously conducted research on the target group.
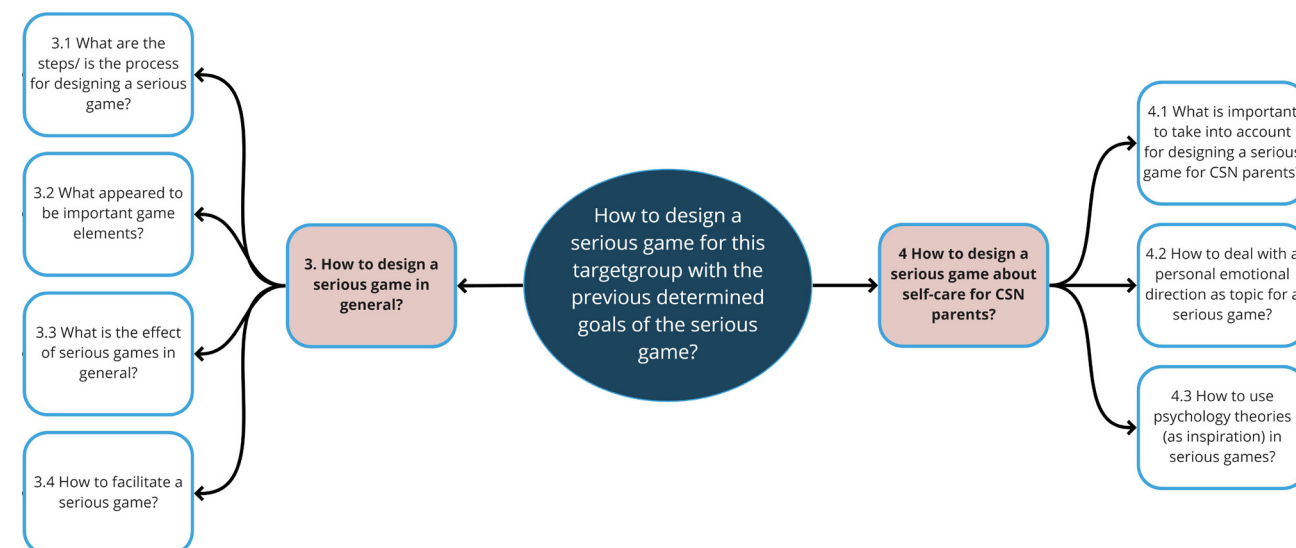
Figure 3.1: Approach analysis serious gaming.

3.2 Literature Research Serious Gaming

In this paragraph the PGD model (Visch et al., 2013), the Cookbook method (Siriaraya et al., 2018) and the fundamental building blocks of games (Vegt, 2018) are discussed. Next, the SDT is discussed in the perspective of game design and the MDA approach (Hunicke et al., 2004) is explained. Lastly, flow and other serious game elements are described. Most theories and models are explained more extendedly in Appendix J.

Models and theories serious game design

The PGD model

The PGD (Persuasive Game Design) model (Visch et al., 2013) is based on the central concepts related to persuasive gaming: gamification process, game worlds and behavioural change design.

Persuasive game design aims to create a user experienced game world to change the user's behaviour in the Real World. In the PGD model, a distinction is made between the real and the game world. When users are playing a game they start to experience a change from experiencing the Real World to that of a Game World. However, this change will be a mixture of both worlds, because 'Game Worlds and the Real World are at the (unreachable) ends of a continuum' (Visch et al., 2013). To illustrate this, daily activities are placed in this continuum where these possibly will be in figure 3.2.

In the PGD model is visualised that gamification can be used to create more of a Game World experience of our Real World experience and that the Game World experience can influence the user in the Real World experience by having a transfer effect. Thus to realize the aimed-for effects in the game the user experience should have a central role.

Gamification is the Design of game-elements applied to real-world attributes to create a user experienced game-world (Vish et al., 2013). Game-elements are explained as the motivational elements which are typical for game design. Examples are challenge, phantasy, competition, and exploration. Often these game-elements are rule-based - constituting the boundaries between the Game World and the Real World (Juul, 2005).
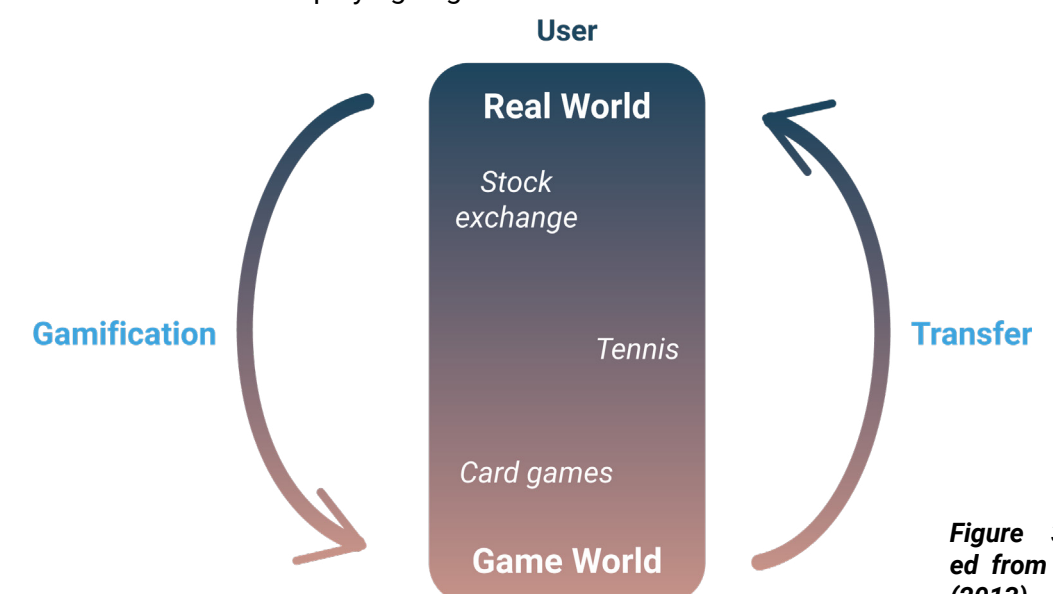
Figure 3.2: Adapted from Visch et al. (2013)

Transfer is the effect of user experienced Game World on forming, altering, or reinforcing user-compliance, -behaviour, or –attitude, in the Real World (Visch et al., 2013).

Important is that the created Game World is experienced as a **protective world** in which the actions of players have less serious consequences than in the Real World (magic circle).

As was discussed during the interview with serious game expert Niko Vegt (paragraph 3.3), it could help to create the magic circle if **the serious game is experienced as a very different world than the real-world** if the topic of the game is personal and emotional for the players. This is the case with the serious game of this project, so **much gamification** is needed. However, it is suspected that the more a user is transported towards a game world experience, the more difficult it is to accomplish a transfer effect. So **to achieve the transfer effect a good reflection moment is needed**.

Cookbook method
The Cookbook method (Siriaraya et al., 2018) is **based upon the PGD model** and offers a possible process to design a persuasive or serious game. It consists of steps, material or components which needs to be considered and techniques and tools.
The steps are:
1. Defining the **transfer effect**
2. Investigating the **user's world**
3. Persuasive game **design**
4. **Evaluation** of effects

This method was the main inspiration for the chosen approach of this project after the analysis phase. Step one follows from the design goal, step two from the analyses of the target group (literature and field research). However, after step two, step one was reviewed, adjusted and formulated into transfer effects. Then step three is comparable to brainstorming about and designing the game and step four is comparable to the evaluation of the transfer effects and design objectives.

The fundamental components of a gameful experience
The fundamental components (Vegt, 2018) of a gameful experience are **goals, rules, objects and freedom**. Each of the four components has certain factors which are important

to take into account by figuring out the level of gamification in a way that the transfer effect that is aimed for is not too hard to achieve. 'Combining these four elements often leads to complex systems and ambiguous situations, which could increase the interest in the game and creates the magic circle by experiencing strong emotions with game activities and feel completely immersed in the game world' (Salen & Zimmerman, 2004). This **magic circle can be seen as part of the freedom component** and suggests that in a gameful experience the consequences of actions in the game will only exist while playing the game (Huizinga, 1950). This is important for the learning part, because according to the podcast *serious games explained* the strength of serious games is that it **creates a space in which players are offered to freely experiment (**Manenschijn & Oude Veldhuis, 2020). This is due to knowing the fact that what happens in the game has no real impact on their real-world: You are allowed to fail.

SDT in gameplay
SDT (explained in the subparagraph *solution directions for self-care CSN parents*) consists of psychological needs (autonomy, competence and social relatedness) that drive individuals. This drives players in the game world as well (Deci & Ryan, 2000). However whereas people actively search for need fulfilment in the real-world, game worlds are explicitly designed to fulfil these needs, resulting in a game world typical immersive and satisfying experience (Przybylski, 2010).

In other words, these three needs are important to design a good serious game, which is immersive and satisfying. The satisfaction of these basic psychological needs facilitates intrinsically motivated behaviour (Deci & Ryan, 2000).

The state of flow in game design
The state of flow is explained as 'a fully absorbing and enjoyable experience in which people feel optimally challenged' (Nakamura & Csikszentmihalyi, 2002). So the state of flow is characterized by strong immersion. For an optimal game experience it is important that players reach the state of flow and some key elements are: clear goals, no distractions, direct feedback and continuously challenging.

The MDA framework
The MDA framework (Hunicke, LeBlanc, & Zubek, 2004), structures game components and consists of three levels:

Mechanics describes the particular components of the Game (Hunicke et al., 2004) like rewards and rules, also called objects. Examples are points, controls, stories and levels.
Dynamics describes the run-time behaviour of the mechanics acting on player inputs and each other's outputs over time (Hunicke et al., 2004). Can be seen as the 'system' of the game. Examples are time pressure, personalised characters and sharing information.
Aesthetics describes the desirable emotional responses evoked in the player, when s/he interacts with the game system (Hunicke et al., 2004). The possible aesthetic goals are: Sensation, fantasy, narrative, challenge, fellowship, discovery, expression and submission. Often games pursue multiple aesthetic goals.

The two possible directions
According to Hunicke et al. (2004) from the designer's perspective: Mechanics are used to give rise to dynamic system behaviour to achieve a particular aesthetic. However, from the user's perspective, it is the other way around: The user will experience the aesthetics firstly and through dynamics unravel the mechanics. There was chosen for this last approach during this project, because as was discussed: to realize the aimed-for effects in the game the user experience should have a central role.

Other Serious game elements
Other important elements that were included and looked at while designing the game were:
• Use of **storytelling**, to let people immerse (make things concrete and add details, like giving names and history).
• Creation of **suspension of disbelief**.
• Amount of given information should not be too much to stimulate exploration.
• **Good feedback system**.
• Use of **time pressure** to create urgency.
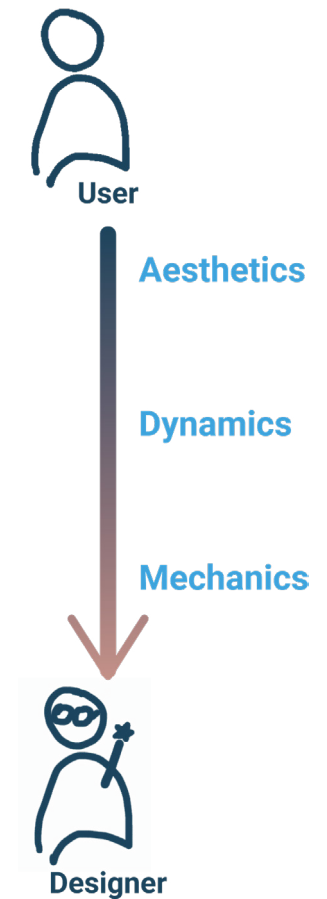These elements are further explained in Appendix J.

User

Aesthetics

Dynamics

Mechanics

Designer

Figure 3.3: MDA framework. Adapted from Hunicke et al. (2004).

Existing Serious games

Some of the serious games that were looked at are Happy zone, fish game and the maze game. These games were created during a serious game training provided by the TU Delft. There was chosen to analyse these games, because not only the game descriptions were available, but also the facilitators hand-outs. All the insights from these three games can be found in Appendix J and the main takeaways are:

- It is important to have a **good stimulating briefing with the main goal mentioned**.
- The Game World often consists of **storytelling with the use of a metaphor**.
- **Role descriptions** can consist of who you are and your aims, characteristics (which product you have), what activities you can do.
- Having a common responsibility within the game, but also individual tasks or aims.
- All games made use of different rounds and **rounds could represent a certain amount of time**.
- **Game principles** often used: Rewards, time limit, ownership, Limits/restrictions as rules and chance by experiencing uncertainty.
- - **Reflection questions** were like: how was it to..? What happened at ... moment? Did you ...? Was there...? Were there certain assumptions? Could you translate the game to your situation? How is it to make mistakes/choices?
- As **facilitator**: be a leader, manage time and be convincing.

Conclusion literature research

- The **PGD model** was important to keep in mind while designing, because the topic of the serious game is personal and emotional and thus the serious game must be experienced as a very different world than the real-world. This causes players to feel safe to explore. This strong gamification requires a strong transfer, so a good reflection moment.
- The **reversed MDA framework** is useful to design from the users perspective as is important for the aims of the serious game.
- Other elements to take into account while designing are described o.a.t. the fundamental components of a gameful experience and the SDT.
- The theory of flow illustrates the importance of conducting many tests.
- Storytelling (combined with a metaphor), suspension of disbelieve, good feedback system, amount of given information and the use of time pressure are interesting while designing.

3.3 Field Research Serious Gaming

In this paragraph first insights after facilitating two ideas for serious games are given, secondly an interview with game expert and designer Niko Vegt and experiences of players are discussed and lastly the insights gained after facilitating an online serious game for the serious game company Raccoon are given. This field research was conducted to gain knowledge about serious games in practise, how to facilitate these and how an online serious game looks like.

Serious game ideas tried out

In Appendix K are the outlines and more results of the games described. In advance of the games, the roles were via WhatsApp messages shared with the participant who had that specific role.

Game A: Survival mode experience and awareness of asking for help

The aim of the game was to experience stress (and ideal survival mode) and becoming aware of the option to ask for help. It was inspired by a quote of a CSN parent about keeping running and running until someone asks if you are all right and if it isn't too much.
Linked to idea I (see Appendix O).
One player (represents the CSN parent) had to fill a bowl in which more kruidnoten (small Dutch cookies which represent energy bits) left than got into the bowl than she could fill it (draining energy) due to other players (represent child) who empty the bowl. If she would ask help, someone would help her (asking help is hard for CSN parents).

Results and link with CSN parents

'It was hard and I experienced stress. Not stressed because there were less kruidnoten, but stressed to fill the bowl again.'
And she also admitted that if her role had taken longer she would have given up. The person who asked if she was doing okay and if it wasn't too much wasn't heard by the other players. **Maybe this is the same for CSN parents;**

they are so focussed on what is happening that they don't hear people who offer a hand.
One of the most interesting observation; she could not handle the situation with her capability set, because it was more work than she could handle so **she applied her resourcefulness to get creative solutions to handle the challenge with** (taking the bowl with her and covering it against herself).

Figure 3.4: Trying out serious game A.

Game B: Making choices while being stressed/in the survival mode

The aim of the game was to experience choosing between two people (of which one represented the needs of the parents and the other the needs of the child) who to care for while experiencing stress and if you choose only for one all the time you would lose (so it is about balancing the needs). The experience of being in the survival mode was increased by a timer with a loud alarm. It was linked to idea G (see Appendix O).

Results and link with CSN parents

About that the players knew that they did not know all the information they shared: *'It's my role so I just accept it.' 'I recognize it from having many deadlines and that you have to make decisions and keeping all the balls in the air in your life.'* Also, it made them feel powerless and lost; *'You never know when you do it right.'* and *'You don't know what is expected from you.'*
Insight: This reflects CSN parent's lives as well; they don't know what is expected from them as a parent by means of where stops the usual care for your child and where starts the special needs? Especially if parents' first child has special needs, they don't know what is usual for raising a regular child and what is not. Also here **players got creative when they**

discovered **that their set of capabilities is not enough** and they have to challenge their resourcefulness, as CSN parents do.

Key insights facilitating serious games:

- Having the game divided into rounds provides a structure for the players and provides possibilities to add time pressure.
- Having unclear goals or elements in the game creates confusion for the players.
- Clarity for the players about the important rules and role/task descriptions seems important for achieving the aims of the game, especially when roleplaying is part of the game.
- If players know they do not know everything, it seems that much information is treated as secrets.
- If it is important that players experience having to **make difficult choices**, it should be **avoided that it is possible to use a rhythm for making choices instead of consideration**.
- **If people cannot handle the situation, they come with creative solutions.**
- The objects used in the game should reflect the value that it represents (cookies were not perceived as much value as was intended).
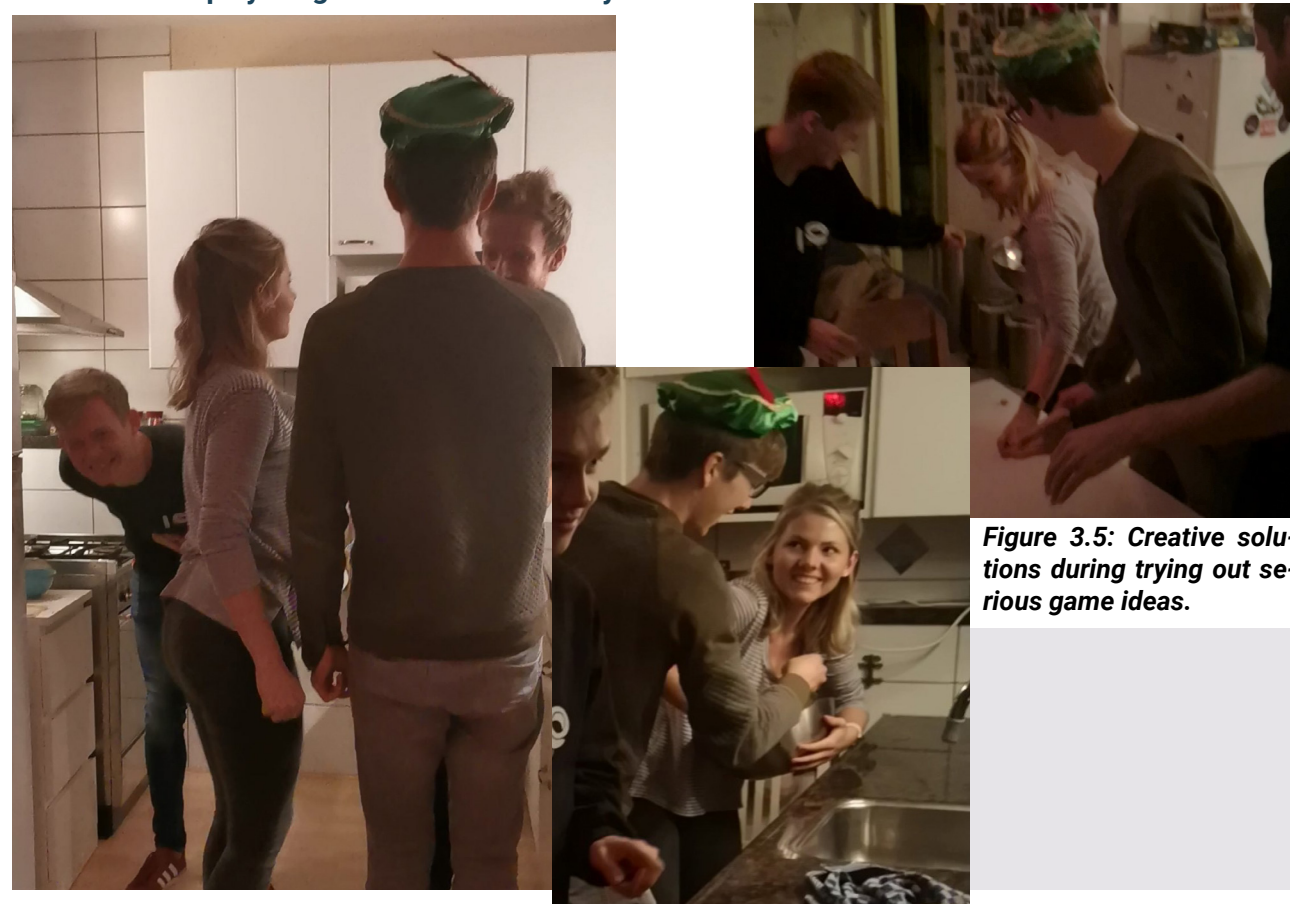
Figure 3.5: Creative solutions during trying out serious game ideas.

Talks with Experts

An interview with serious game expert Niko Vegt and talks with two players of serious games were conducted.

Expert: Serious Game designer Niko Vegt

- Important to have SDT and the fundamental components of a gameful experience in the serious game.
- MDA could be an interesting method to use while designing a game, especially from the user's perspective towards the designer's perspective.
- Raising awareness during the game about a certain topic is achieved well by **letting players experience and do things** instead of let them be a spectator of the information.
- Players must **be able to link it to their own lives** (could be in the reflection part).
- For **sensitive topics** like the game will have, it would be good that the **game is a bit separated from their own Real World** so they feel the freedom to play with it and do something with it.
- If the game is far from the Real World of the players, **more attention and effort is needed during the reflection moment** on evaluating the game to bring it to the player's lives (can also be seen in the persuasive game design model).

It is **important to have the right balance in certain elements** to achieve a proper **building up** and let players get into the **flow**, so they **learn and enjoy**. Balance in:
- **Real World (personal/serious) versus Game World (fun) of the target group**.
- **Matching interest** (style, shape, theme, topic) of the target group.
- **Matching the understanding** of the target group.
The best way to figure out these right balances is **much playing and testing**, because often a game is too complex to know how it will work out.

'A good game stimulates participants to play, try things out, explore and be able/comfortable to make mistakes. Players try things out more than they would do in their real life.' - Serious game expert Niko Vegt
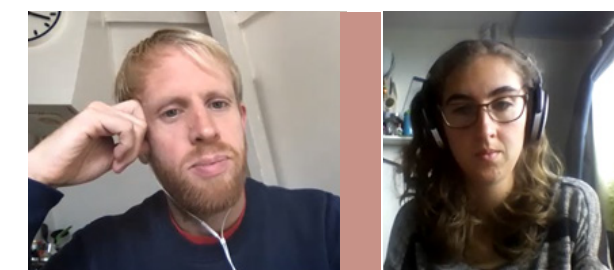
Figure 3.6: Online interview with Niko Vegt.

Experiences from players

- Serious games are effective by **experiencing what good is to do**, instead of people saying this: It is way more convincing.
- Compared to other games, serious games are often more independent of the behaviour of the players. You **can have more influence on the game**.
- Easy start/**quick win** motivates players.
- Often physical objects are added.
- Often players get a role in advance.
- Players often have different rules.
- Facilitators are seen as essential.
- Including **fun** is seen as very important.
- Serious games are experienced as **experimental: trial and error**.
- **Reflection moment feels like collective sense-making** of what happened and why and what it means for the real-world.

One player shared: *'Due to getting a role different than your role in real life, you are able to reflect on your real life by seeing it from another perspective.'*

For more interview results see Appendix L.

Facilitating of the online serious game: Expeditie Pensant

Two weeks in advance of my graduation project, I followed the elective course 'creative facilitation. To gain more knowledge about online serious games and to improve even more my facilitation skill, I applied for facilitating an online serious game. I had the honour to facilitate the online serious game expedition pensant for Het Opdrachtgeversforum in de bouw very well designed and organised by the company. In advance, I had a facilitators training, explanation video and a facilitators manual. There was a lot of storytelling involved, so I practised a few times. There was a website used for video calling (Hopin) and the serious game was created in the program Morse.

Figure 3.7: Serious game Expeditie Pensant

Most important learnings of online facilitating
The set-up
- If **reading out text, place it close to the camera**.
- If using a **second screen** (recommended) place it above the laptop screen, so you don't look much away from the camera.
- Balance looking at the screen with looking directly in the camera.

Facilitating
- Doing in advance 2 minutes power poses to gain extra energy and confidence to emit.
- Storytelling: Be aware of **speaking rate, take breaks and make use of intonation**.
- Important: Give a **warm welcome** (also by saying their names) and be **enthusiastic**.
- Always call the name if you ask a question and ask also questions to the more silent people.
- Trigger the players by **asking questions**/questioning their answers.
- If something goes wrong, build a creative story around it.
- Provide the feeling of time pressure if this fits within the story of the game.
- Give **hints** if players are stuck in by asking questions.

Conclusion field research

If players **can not handle the situation, they come with creative solutions**. There was chosen to create an **interaction vision**, because this is comparable to the aesthetics of the ADM framework and designing from the user's experience is important for the aims of the game. Game design is **much balancing and therefore much testing is required** to achieve a good game. Storytelling is often an important element and the right **attitude (enthusiasm, interest etc.) of the facilitator** is key in how participants approach the game.

3.4 Conclusion Serious Gaming

The main takeaways of this chapter are given in this paragraph per subject. As was explained, the Cookbook method combined with the PGD model and reversed MDA framework were combined into an approach for designing the serious game (see figure 4.4).

Key insights PGD model
- Considering the target group and that it is an emotional topic, it is important to have a **strong gamification**. This can be achieved by storytelling and use of metaphors etc.
- **Strong transfer** effect is needed due to the strong gamification, therefore a moment of reflection after the game is of high importance.

Other key insights
- **Design from Aesthetics to dynamics** to mechanics. Reason for the creation of the **interaction vision**.
- The four fundamental components in a game; **Goals, rules, objects and freedom**. Especially freedom is important.
- Create the **magic circle** to make the players feel safe while exploring.
- Psychology offers the theory **SDT** which shows the importance of autonomy, competence and relatedness in the game to provide motivation, and thus fun.
- Important to have a good **feedback system** for players during the game.
- **Time pressure** creates a feeling of urgency and makes people act as they would do in real life, which is desired in the serious game.
- Trust the players that they will explore what they want to explore in this way **they will learn what they want or have to learn**.
- A good **building-up** is important (**flow**).
- The **steps in the game are in line with the steps in real life**. However, are not too similar to maintain the magic circle.
- The game should **match with the interest and understanding** of the players and be **fun** (while also giving the players the feeling that they **are taken seriously**).

- **A lot of playing and testing** is important to create a good game (flow) with the right balances.
- To have a proper evaluation of the serious game, **requirements** should be defined.

Effect of serious games
- It creates a space in which players are offered to **freely experiment** and are allowed to fail.
- It is good at transferring information, **raising awareness and/or achieving learning goals**.
- Experiencing it yourself has a more **convincing effect** than hearing from someone else what to do/change etc.

Key insights Facilitating
- Due to being an emotional topic it is even more important to share in advance what the players can expect and that they are free to leave the game.
- Be clear in who has which role and in explaining the most important rules.
- Importance of storytelling to increase immersiveness.
- Approach players by looking at them (in the camera) while talking and use their names to make it more personal.
- Being enthusiastic as facilitator often results in enthusiastic participants.

Main Takeaways

As the main inspiration for the approach of designing the serious game, there was chosen for the **Cookbook method, combined with the PGD model and reversed MDA Framework (see figure 4.4)**. See paragraph 4.3 for more information and the **main takeaways translated into design objectives**.

4. Design Brief

4.1 Userworld and Transfer effects

The design brief follows from the analysis phase and was in consultation with Ontzorghuis. Also, various mind-maps and two H-boxes were created and used to shape it. This whole chapter can be seen as the conclusion of the analysis phase and shows the next steps of the project.

Why a serious game for this project

A serious game is useful for having **transfer effects** like transferring information, **raising awareness and achieving learning goals**. Besides talking about energy balance and self-care appeared to be hard for many CSN parents, due to this being a personal and emotional topic. A serious game is an easy way to first safely explore and develop skills and later have a conversation about the experience and their real-world experience, due to the explained **magic circle**. Moreover, in a gameful experience, players are more apt to overcome fears of embarrassment and failure. These are the same emotions CSN parents often struggle with. Lastly, it seemed hard for CSN parents to see their situation from a distance and different perspective. A serious game offers this possibility, by creating an environment that seems completely different than their real-world situation by using **gamification**.

Another reason to choose for a serious game is that experiencing yourself has a more **convincing effect** than hearing from someone else what to do/change etc. However, this experience should not become too confronting.

There was also chosen for a serious game, because it is **suitable as a workshop during retraite weekends**, by being a playful activity which is possibly more relaxing and fun than directly having a conversation about self-care. An opportunity is to play it together with health care professionals or other stakeholders as the municipality, so they **can empathise with the CSN parents** by experiencing their role and help with finding suitable solutions.

Why designing a serious game for CSN parents is relevant

The research conducted about the target group showed why many CSN parents suffer from poor self-care. In short, couples have already responsibilities in advance of having a child with special needs. Having this child which needs extra care comes with many extra responsibilities. This results in parents who have not enough time to take care of all their responsibilities and to take care of themselves if they do not have enough support. They prioritise these responsibilities over their own self-care, Moreover, they need more time of self-care to process the extra emotions (see chapter 2). This all leads to CSN parents that live in the survival mode to be able to keep all the balls in the air. Ontzorghuis expects that most CSN parents who sign up for the retraite weekend will be in this early stage of being a CSN parent.

Figure 4.1 shows **the developing attitude process**: the process most CSN parents were found to go through about self-care, becoming aware of it and adopting an attitude. Often it results in poor self-care and if parents fully surrender without finding solutions to improve the situation, could lead to parents finding themselves in a burnout with their child placed outside his/her home. See chapter 2 for more information.

Therefore, creating awareness about the poor self-care and having an option to change this and stimulating to adopt more of a creative problem-solving attitude to increase self-care is the root problem and therefore a relevant direction for the serious game, which can hopefully avoid these parents to collapse. This creative problem-solving attitude direction requires being resourceful.

Transfer effects

The design goals of the original project brief got iterated after the findings of the analysis phase. The iterated design goals were formulated into the following transfer effects of the serious game:

Within the domain of personal life and healthcare context, the serious game for CSN parents aims to:

1. Create awareness (mental experience change) **about the importance of avoiding an unbalance in energy** (in taking care of CSN parents themselves versus their child & responsibilities) **to increase self-care.**

2. Create awareness (mental experience change) **about having the option to increase self-care.**
- Expected is that the effect can be measured on the short term after the gameplay (30 minutes after gameplay, but could also take days after thinking back on the game).

3. Alter to or reinforce the attitudinal change towards a creative problem-solving attitude for providing self-care.
- Expected is that the effect can be measured during (Game World) and in the long term after the gameplay (months/years in the Real World).
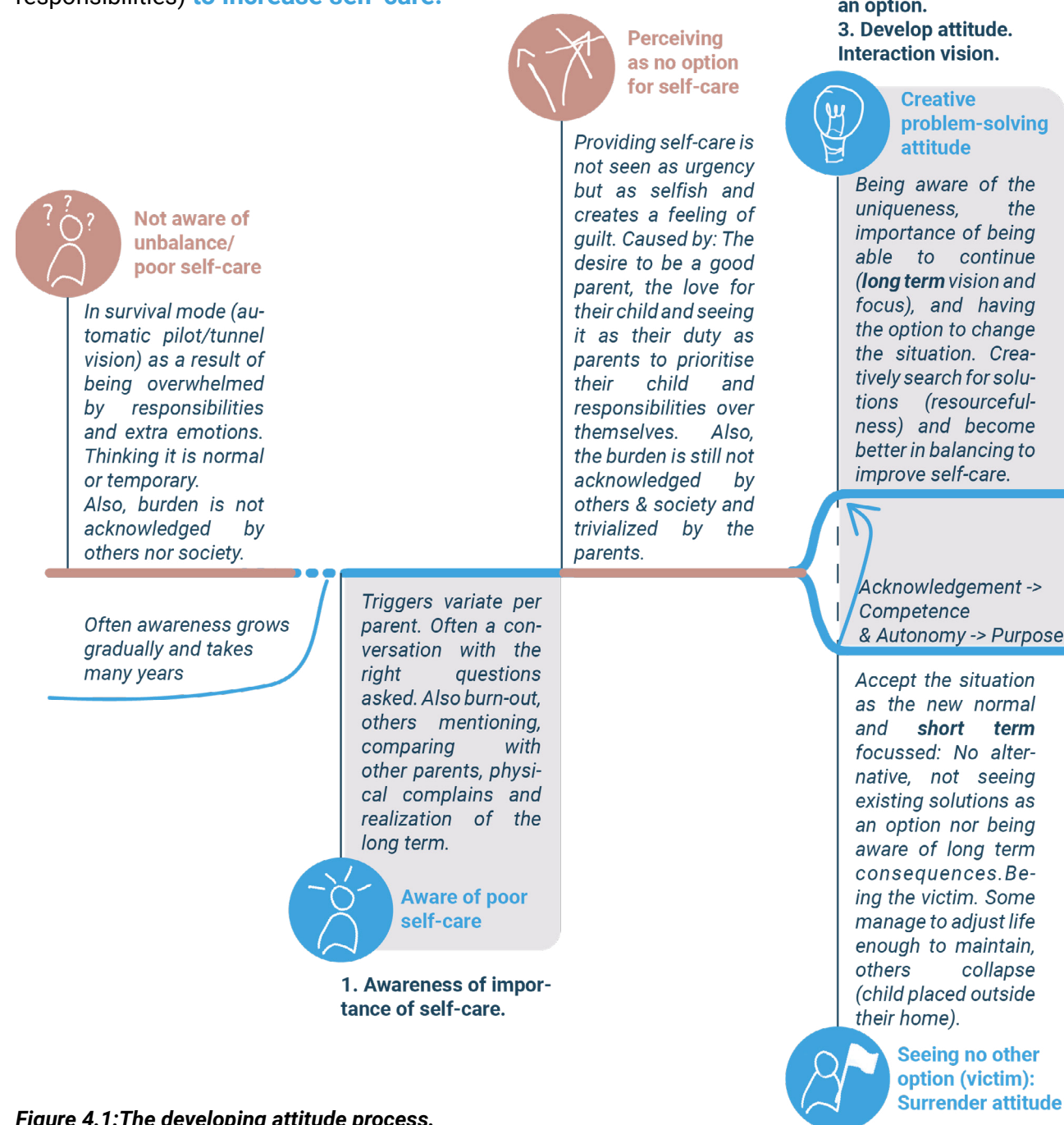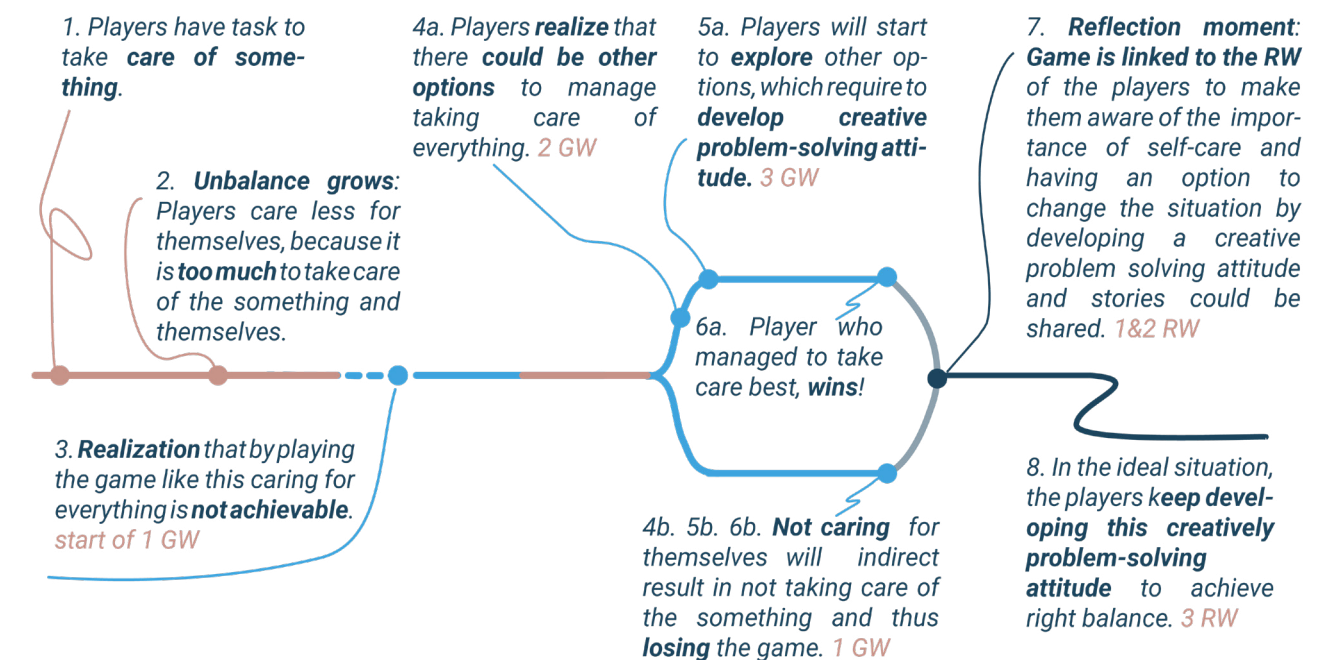

Figure 4.1: The developing attitude process.

Content within Figure 4.1:

Not aware of unbalance/ poor self-care
In survival mode (automatic pilot/tunnel vision) as a result of being overwhelmed by responsibilities and extra emotions. Thinking it is normal or temporary. Also, burden is not acknowledged by others nor society.

Often awareness grows gradually and takes many years

Aware of poor self-care
Triggers variate per parent. Often a conversation with the right questions asked. Also burn-out, others mentioning, comparing with other parents, physical complains and realization of the long term.

1. Awareness of importance of self-care.

Perceiving as no option for self-care
Providing self-care is not seen as urgency but as selfish and creates a feeling of guilt. Caused by: The desire to be a good parent, the love for their child and seeing it as their duty as parents to prioritise their child and responsibilities over themselves. Also, the burden is still not acknowledged by others & society and trivialized by the parents.

2. Awareness of having an option.
3. Develop attitude. Interaction vision.

Creative problem-solving attitude
*Being aware of the uniqueness, the importance of being able to continue (**long term** vision and focus), and having the option to change the situation. Creatively search for solutions (resourcefulness) and become better in balancing to improve self-care.*

Acknowledgement -> Competence & Autonomy -> Purpose

Seeing no other option (victim): Surrender attitude
*Accept the situation as the new normal and **short term** focussed: No alternative, not seeing existing solutions as an option nor being aware of long term consequences. Being the victim. Some manage to adjust life enough to maintain, others collapse (child placed outside their home).*

Timeline gameplay

Figure 4.2: The timeline gameplay.

Content within Figure 4.2:

*1. Players have task to take **care of something**.*

*2. **Unbalance grows**: Players care less for themselves, because it is **too much** to take care of the something and themselves.*

*3. **Realization** that by playing the game like this caring for everything is **not achievable**. start of 1 GW*

*4a. Players **realize** that there **could be other options** to manage taking care of everything. 2 GW*

*4b. 5b. 6b. **Not caring** for themselves will indirect result in not taking care of the something and thus **losing** the game. 1 GW*

*5a. Players will start to **explore** other options, which require to **develop creative problem-solving attitude.** 3 GW*

*6a. Player who managed to take care best, **wins!***

*7. **Reflection moment**: **Game is linked to the RW** of the players to make them aware of the importance of self-care and having an option to change the situation by developing a creative problem solving attitude and stories could be shared. 1&2 RW*

*8. In the ideal situation, the players k**eep developing this creatively problem-solving attitude** to achieve right balance. 3 RW*

See figure 4.2 for the timeline for the gameplay many players will go through and which matches with the previous shown developing attitude process and the transfer effects. The numbers show which transfer effect is connected and GW stands for Game World and RW for Real World. Note that not all players should have the same role and thus have this timeline.

In the Game World players will become aware of the importance of self-care and see that changing attitude helps to increase it, they will feel more confident in applying this in their real-life context. Stimulating people to develop a more resourceful attitude is a beautiful aim which fits the vision of Ontzorghuis, according to Marise Schot.

Remarks
- There was chosen to focus on developing a resourceful attitude instead of the focus on creating resourceful solutions for self-care, because what solution is needed can variate much per parent, every situation is unique and requires different solutions. Also, parents could be in a different phase of being a CSN parent and thus need different solutions.
- After the game, these transfer effects in the Real World of the parents possibly happen in the given order and will be similar to the developing attitude visual with its different stages.
- By aiming for these three transfer effects in the serious game and reflection after, it connects in some way to all parents, regardless of being in different phases in the developing attitude process. Therefore there should be considered that the effect of transfer will be different per participant, in means of that one participant could become especially aware of his unbalance (transfer effect 1) and another one could especially develop a new attitude (transfer effect 3).
- Desired side effects of the game are practical tips CSN parents give each other, ideas about who to talk with and parents discovering how they unconsciously deal with certain situations that influence their balance and how to use their own creativity to solve problems.

4.2 Interaction Vision

As was said, there was chosen to create an interaction vision that provides an idea of the intended interaction with and experience of the serious game.

The interaction with the serious game **should feel like experiencing a maze with a shift from**:
- Feeling **ignorant, uncertain, stressed, frustrated, and desperately**, because of having to make difficult choices which way to go, facing dead ends, seeing no way out and feeling stuck in small spaces.
- To experience **relief, empowerment and becoming more confident** after finding ways to break through the walls and thereby manage to take the fitting route and create space for yourself.

Figure 4.3: The interaction vision (www.gettyimages.nl).

The **maze represents the sometimes difficult journey** CSN parents experience, in which the **walls are illusionary walls created by CSN parents** themselves in their head (not aware of seriousness, not setting limits etc.) **and by society** (beliefs and physical obstacles like municipality policy, which do not have to be there). The parents could go through many walls if they are aware that these are illusionary walls they created themselves and that there are thus more possibilities out there. However, some walls will be unbreakable (e.g. there will be a limit in support that can be provided).

The **interaction with the serious game should be** comparable to/**a simulation of the real-world of CSN parents**, so CSN parents will recognise the situation. Therefore, the first part of the interaction vision with the given emotions includes how many CSN parent experience their journey in the first year(s) (until perceiving as no option for self-care of the developing attitude process). This shifts to experiencing the given emotions in the second part of the interaction vision, by making choices that result in better balancing life and creating time for self-care.

While looking at the MDA, the aesthetic goals of the serious game are the combination of challenge (game as **obstacle course**) and expression (game as **self-discovery**).

4.3 Design Objectives

From the analysis phase followed a list with Design objectives (see Appendix M). The most important ones are written below.

The game should:

Design objectives from transfer effects
1. **Create awareness about the importance of** avoiding an unbalance in energy to increase **self-care.**

2. **Create awareness about having the option to increase self-care.**

3. **Alter to or reinforce the attitudinal change towards a creative problem-solution attitude** for providing self-care as much as possible.

Other criteria
4. Be **engaging** by matching with the interest in the game environment (the style, and **fun** versus serious), understanding and interest in the topic (unbalance and self-care) of the CSN parents.

5. Be **immersive** by strong gamification (story with metaphor, good building up, game flow, good feedback system, SDT, magic circle, fundamental game components).

6. Create the experience of the **magic circle**, where players can freely experiment without having consequences in their Real World. (Due to the emotional topic, the **Game World should be different** than the Real World.)

7. **Simulate the Real World of the CSN parents**. For a good simulation the serious game should: Simulate within the serious game to experience emotions similar to the Real world of CSN parents: a shift from **ignorant, uncertain, stressed, frustrated, and desperately** to **relief, empowerment and becoming more confident.**
•   Have steps that are in line with the **steps** in their real life (see figure 4.2). So taking care of something/someone, feeling over-

whelmed by responsibilities, having an unbalance in which they poorly take care of themselves. These steps may remind players a bit of survival mode and having to make choices with often negative consequences for **short and/or long term**. The last steps are the steps of the transfer effects which are reflected by the universal needs **acknowledgement** (relatedness, belonging) and **autonomy** (competence). (See Appendix N for the relation between these universal needs and transfer effects.)
•   **Divide time** into steps with the same proportions as in the Real World.

8. Stimulate together with the facilitator to have an open conversation with reflection about the experience after the serious game for achieving the transfer effects by building the **bridge between the Game world and Real world**. Ideally, the game should evoke **conversations** about personal experiences and further possible solutions for each other after playing the game.

9. Be possible to play with **3-5 players**.
10. Have a duration of **60 minutes** inclusive reflection of 15 minutes.
11. Be an **online** serious game which can be easily **converted into a physical game** for the **retraite weekends** of Ontzorghuis at which **health care professionals or other stakeholders like the municipality, can participate as well**.

During the next phases more requirements were formulated into a list which can be found in Appendix M. Where possible concepts, prototypes, and tests were **evaluated on these requirements by observing** during, and **interview/reflection** after the game. The desired emotion shift during the game was also evaluated with the PrEmo-tool after the game.

Design approach

The main inspiration for the chosen approach for designing the serious game was the **Cookbook method**, because it **includes the PGD model and includes the method of the reversed MDA**: it starts with the desired transfer effect which is closely linked to the desired experience (aesthetics) and follows with defining dynamics and mechanics. The desired experience and interaction was translated into an interaction vision as input for the ideation phase. The Cookbook method also includes the steps of creating an understanding of the user's world and the evaluation of the game. The relations between the different chosen methods (see chapter 3 for descriptions of these methods) for the serious game design are shown in figure 4.4.

During the ideation phase the **transfer effect, requirements and interaction vision informed the selection of suitable mechanics** which are inspired by the analyses phase and the techniques and tools from the Cookbook method.
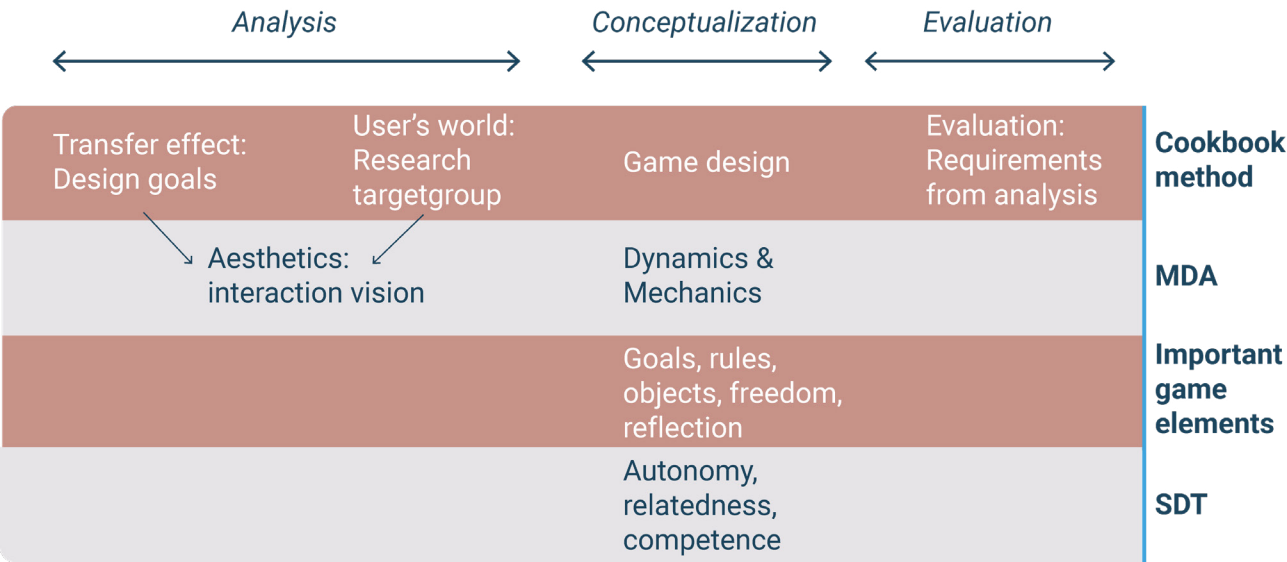
	Analysis		Conceptualization	Evaluation	
Transfer effect: Design goals	User's world: Research targetgroup	Game design		Evaluation: Requirements from analysis	**Cookbook method**
	Aesthetics: interaction vision	Dynamics & Mechanics			**MDA**
		Goals, rules, objects, freedom, reflection			**Important game elements**
		Autonomy, relatedness, competence			**SDT**

Figure 4.4: Design approach.

Main takeaways

This project aims to support CSN parents, by providing a serious game for the well-being of CSN parents, which has the following transfer effects:
  1. **Create awareness of the importance of avoiding an unbalance in energy to increase self-care.**
2. **Create awareness about having the option to increase self-care.**
3. **Alter to or reinforce the attitudinal change towards a creative problem-solving attitude.**
A serious game will provide the right circumstances (feel safe, possibilities to explore, immersed into a different world etc. for these transfer effects.
A timeline of the gameplay which correspondents with the developing attitude process was created as was an interaction vision created to visualise the experience of and interaction with the game. Lastly, design objectives were given of which the game will be assessed later in the process.

The Cookbook method served as main inspiration for the chosen approach for designing the game, combined with the PGD model and reversed MDA Framework (figure 4.4). In short, it consists of: 1) formulating design goals, 2) analysis target group (User's real-world), 3) review transfer effects based on findings, 4) brainstorming and designing and 5) evaluating transfer effects, requirements, and experience (aesthetics/characteristics of interaction vision).

Conceptualization phase

5. Ideation

5.1 Approach

As was explained, the method for designing the serious game was inspired by especially the Cookbook method and other methods as well (figure 4.4). Also, as was mentioned before the transfer effect, design objectives and vision are used as a starting point for the ideation upon the right game mechanics. The main mechanism of the serious game is a simulation of the Real World of CSN parents concerning self-care. In an online environment, it can be still a game with roles (video calling), board game, card game etc. Moreover, physical elements can be added that are send to the players' house previously.

5.2 Research Possible Platforms for serious games

Different online platforms which would be suitable for the serious game were looked into. The most important requirements are that it should enable interactivity between players, parallel video calling is possible during and after the game, easily accessible for players and it is an advantage if it does not require much programming.

Morse
The online serious game, which I facilitated during the analysis phase (Expedition Pensant), was created in Morse which was not interactive for the players. Interactivity is important for the serious game of this project by increasing immersiveness and engagement. Objects were sent home to participants beforehand which increased the fun.

Playingcards.io
It seems a promising platform, especially if you want to use cards in the game: it is possible to open cards and have cards in 'your hands'. Also adding a board is possible. However, it is not possible to replace the pawns or other objects for own created objects.

Invision
Invision is a digital product design platform that also offers real-time collaboration. However, it requires an account before it is possible to interact.

Mural or Miro
For these platforms, you do not have to create an account and it is easy to create a game context.

Miro is the platform that was chosen to design the serious game in, because it is the only platform which is accessible without an account and enables interactivity between players and offers many options to create content in.
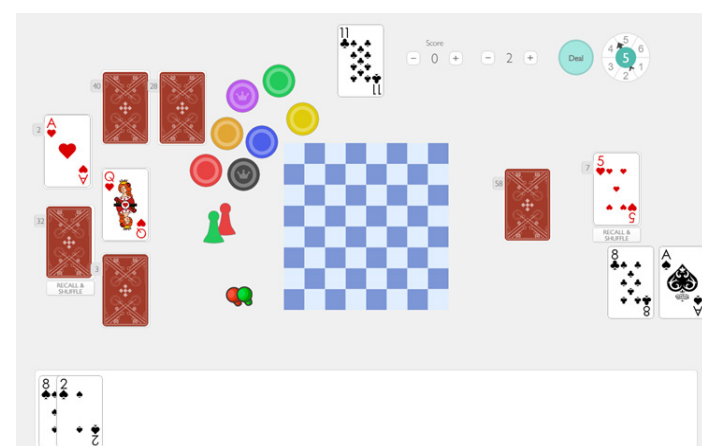

Figure 5.1: Platform Playingcards.io.

5.3 Brainstorm Sessions and initial Concepts ideas

Generating ideas already started in the second week of this project. During analysing the context and determining the scope, ideas arose which were written down immediately (for some idea sketches see Appendix O). Besides, as can be seen in chapter 3, some ideas were already quickly tested to gain knowledge about serious games and the direction. This paragraph describes a creative session with 7 people working in the healthcare sector, initial concepts in Miro and a co-creation with Ontzorghuis. In the co-creation, Onzorghuis also gave feedback on the initial concepts. The initial concepts were also inspired by the analysis phase and small brainstorms together with other creative minds. During and with the results of the co-creation, the initial concepts developed into concepts (see next chapter). After the session, individually further brainstorming was done by hitchhiking on the previous ideas and generating new ideas.

Per step in the gameplay timeline 'how to's' were formulated (see Appendix P for the full How-to's list). These were used in the creative session, co-creation, and individual brainstorms.

Creative Session

An online creative session was conducted via Miro (figure 5.2) and Zoom with seven people from the company Zuidwester. The participants their job is to train healthcare teams, focussed on disabled, to become independent. Besides, they are of the same age as CSN parents and many are a parent as well.

The session started with two association flowers to get inspiration for possible game worlds and metaphors associated with 'Caring for' and 'Playing with balance'. Insights were:
- **Balancing is about gaining control over the situation, thus autonomy**. The players need to develop the competence to create this autonomy.
- Being in balance is like floating.
- Balancing like a boat; **two components and holes in the boat** (sinking).

Secondly, a round with three 'how to's' was conducted. Ideas for making visible that you are losing were to **change the weights after each choice** and a bulb that **started full but gets emptier**.
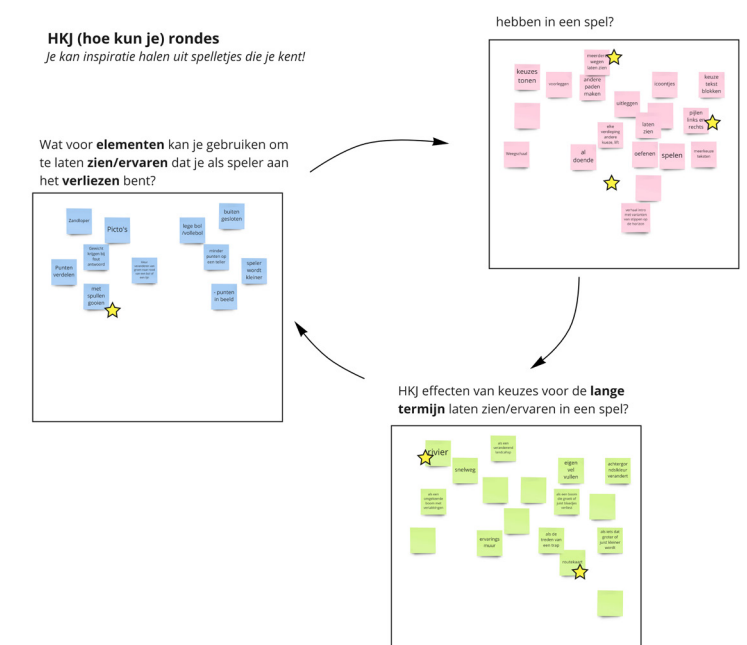
For more results, see Appendix Q.

Figure 5.2: Part of the brainstorm session with 7 participants

First concept ideas

Three initial concepts ideas were created after previous brainstorms (individually and a session). An important inspiration for these initial concepts were the serious game ideas that were tried out during the analysis phase. See Appendix S for sketches which further explain the initial concepts and a concept which was chosen to not continue with (it was expected that players would not feel responsible).

For each initial concept, a metaphor was chosen that was expected to let the players feel responsible to take care of something and see the purpose of it. Each initial concept is about making choices between something that represents the CSN parent and something that represents their child. Making these choices can be seen as changing the balances. During playing the games players are stimulated to take better care of that which represents the child, so there is less cared about the something that represents the CSN parent. In each initial concept caring less for what represents the CSN parents has negative consequences for the whole game (transfer effect 1).

Moreover, for each initial concept, it is impossible to manage taking care of everything unless creative problem-solving is used (transfer effect 3). However, firstly the players must become aware that there are more possibilities (transfer effect 2). The initial concepts stimulate coming up with creative solutions like asking help from others (passing on from the DDD-method) and having a long term focus as well, to increase the chance of managing and thus winning the game.

Initial concept idea A: The Nurse Game
The first concept idea (see figure 5.3) contains roles as nurses in a pandemic who have to take care of two different groups of people (visualised by two bowls):
- Younger group of people (represent the needs of the child).
- Older group of people (represent the needs of the parent).

Most nurses (represent society) get the role to prioritise caring for the younger group of patients (they are our future), which results in pressure on the older nurse who wants to take care of the older group as well. However, to take care of the older group as wel seems impossible for the older nurse unless s/he asks support from the player(s) with the assistant role. They do now know each other's role descriptions, so the older nurse does not know s/he is allowed to ask for help. However the assistent will give hints to the older nurse that s/he can ask for help. There are many rounds in which each person in his turn has to draw a card, the number on the card is the amount of heart (visualises the given care) you are allowed to move between the bowls (only in one direction per turn). Players are allowed to discuss the division of the hearts. To provide the feeling of urgency one rule is: If a round takes too long, one heart disappears.
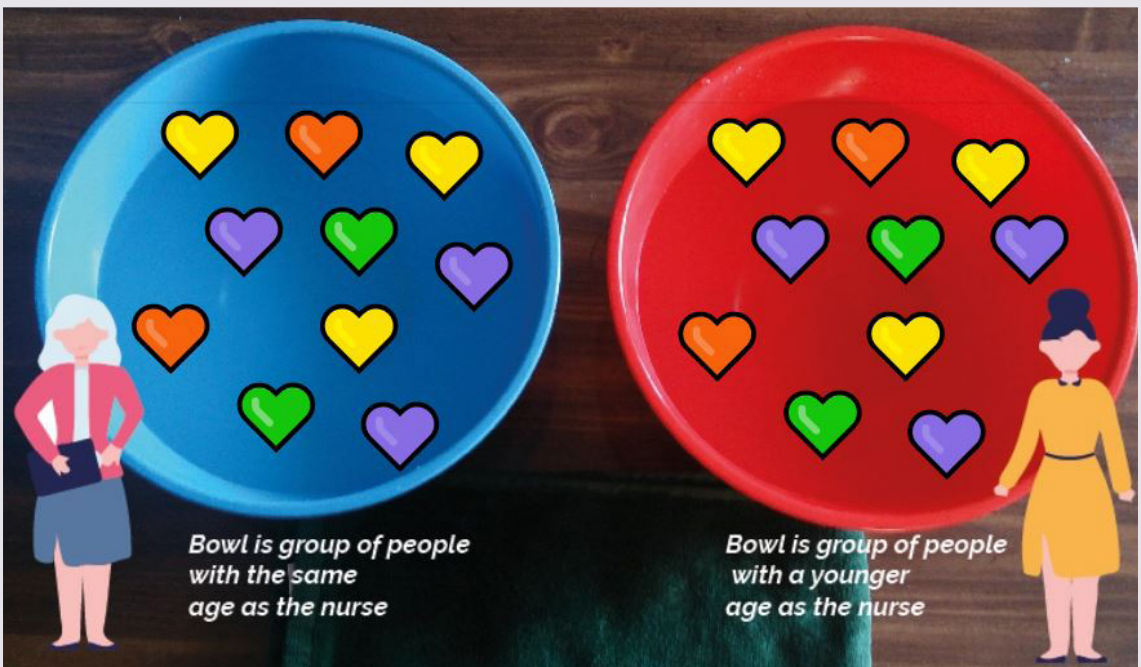

Figure 5.3: Initial concept A: The Nurse Game.

Initial concept idea B: The Farm Game
The second concepts consisted of every player being a farmer and having their own farm and their task is to take care of themselves and the village by giving energy bits. Players get energy bits by turning in the water, plants and pigs they created on the farm. The long term approach is awarded, e.g. by getting more energy bits for pigs (takes more effort to 'build' a pig) than water (almost no effort). So everyone has his/her own board (figure 5.4) and activity cards give unfortunate surprises.
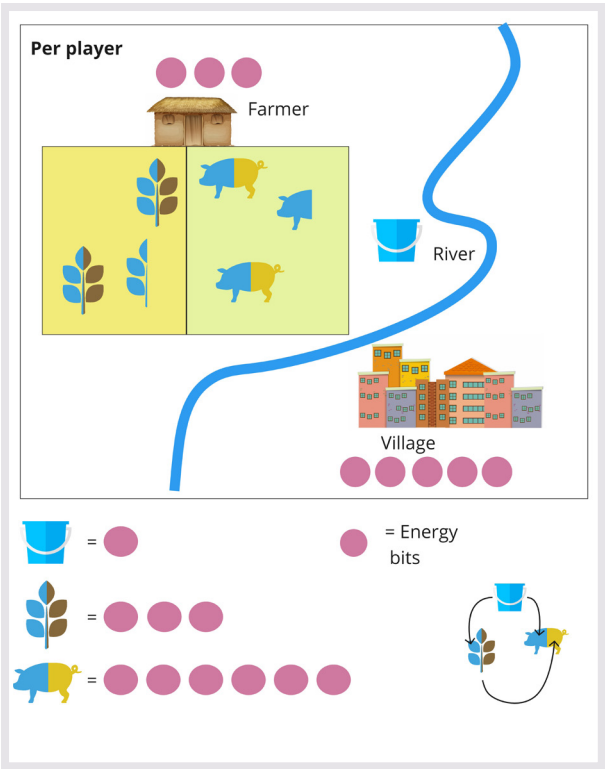
Figure 5.4: Initial concept B: The Farm Game.

Initial concept idea C: The Fishes in Bowls Game
Every player has two bowls: one with his or her own fish (represent themselves) and another with fishes of the neighbour s/he was asked to take care of (represent the child with special needs). The water level (represent the energy that is given) should be not lower than the fish, because than the fish will die. The water level can be changed by the dice, activity cards or by paying with three energy bits. However, in your turn, you can only change the water level of one of the two bowls. Moreover, an extra task is given (which can be dumped in the game) which requires energy bits as well.
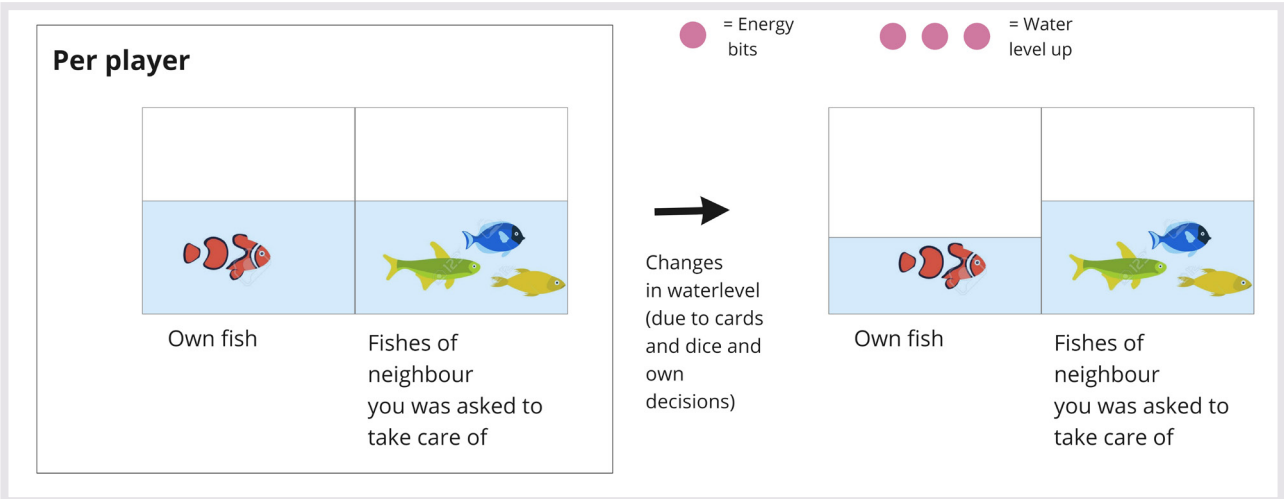
Figure 5.5: Initial concept C: The Fishes in Bowls Game.

Co-creation Ontzorghuis

A second creative session was conducted with Ontzorghuis (3 participants) of which partly consisted of discussing and further brainstorming on the concepts that were developed after the previous creative session. There was chosen for this session and approach to get insights about interesting directions, topics, ideas, and feedback on concepts linked to CSN parents (participants were experts) as well as Ontzorghuis.

Again association flower method was used to create a broad inspiration source for metaphors and ideas. One topic was 'dividing' to get inspired on how to divide the energy/tasks of the players. Interesting outcomes were: **Deleting/dumping to ease up and liquids**. 'taking care for' was another one to gather interesting metaphors of which interesting outcomes were **plants, you neighbours, and pets**. The last one
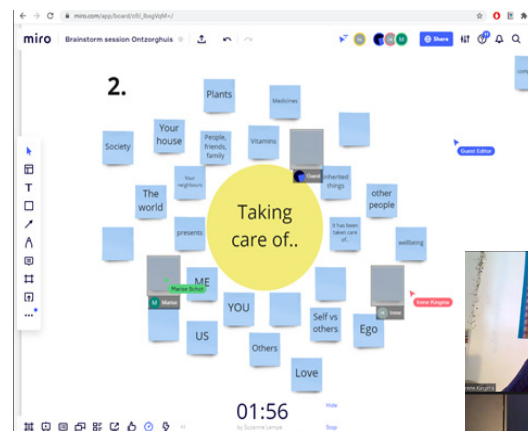

Figure 5.6: Co-creation Ontzorghuis.

was about 'Energy' to get ideas of how to present having more or less energy and some of the outcomes were fuel and **coffee**.

Ideas followed from the given how to's from the How to-list (and reversed brainstorming on these). Letting players realize (not too obvious) that they can try things out:
- Having a **role-model or getting a secret task**.
- (vague) hints could be given on cards or play environment.
- Encouraging and praising.
- Ask triggering questions.
- **Hints/things are hidden** under something.
- Give not much information or too much (overwhelming the players).

Insights for stimulating creative problem-solving attitude are: make players **feel responsible**, let them feel heard/listen to all ideas and **give them time to think**. Also, creativity could be stimulated by using bright colours, **rules that you should not take seriously**, and having to **work together.**
More results can be found in Appendix R and led to iterations of the initial concept ideas.

Main takeaways

- Generating ideas was a continuous process that had started from the beginning of the project.
- The **platform Miro was chosen** as the game environment, because it is accessible and easy to prototype and design in.
- With the inspiration of earlier ideas and the first brainstorm session, three initial concepts were created.
- These **initial concepts include a story with a metaphor** and aims for players to **feel more responsible for taking care of something/someone else than themselves** (transfer effect 1&2). Also **creative problem-solving**, including the **dumping** of irrelevant tasks (DDD-method), **passing-on** of tasks (DDD-method), and **long-term focus**, is needed to win the game (transfer effect 3).
- The initial concepts were discussed and brainstormed upon with Ontzorghuis, aside from the brainstorm on other elements that took place.

6. Concepts

6.1 Final Concepts

The initial concepts were further developed with the insights from the co-creation of Ontzorghuis and further brainstorming into the concepts and prototypes (Miro) that this paragraph shows.

Considered should be that regardless of being an online game, still physical objects could be sent to the homes of the players, as it possibly increases the immersiveness.

Concept A: Take care of the Furries

According to Ontzorghuis, the nurse game would be too close to the Real World of CSN parents in which they have already maybe even negative associations with nurses. The topic is more serious than fun.

Moreover, in the game it was unclear what the effect/impact was of moving hearts to one or the other group, and certain meaning could be added to each colour of the hearts.

Therefore instead of groups of patients, it became groups of cute hairy animals, called Furries to take care of (hearts), with needs (stars). Every player works in the same shelter where 'furries are brought to and picked up by new owners'. there are two categories: expensive and cheap furries. The player who has the role that s/he does not prioritise the cheap furries group is in the minority and s/he could ask for help. The players can use creative solutions to win the game.

Concept B: The Coffee Company Game

The feedback of the Ontzorghuis was that the Farm game could be too complex, because it is expected that something is possible quickly complex for many CSN parents due to their mental state caused by being a CSN parent. Also, there are already many farm games and the game could be a bit childish.

Inspired by the brainstorm session with Ontzorghuis, the farm was transformed into a coffee plantation and factory. For many, coffee represents energy and they can relate to it. The farmer of the initial concept B became the boss of the company and the village became the employees. The players are the boss and have the task to take care of themselves and the employees. Especially the long term thinking element is in this game by getting more coffee-plants for less water if you go for the big coffee plants. Besides, it was made less complex than the Farm Game, by only having coffee plants and water (and no pigs nor elements consisting of more parts).

Figure 6.1: Concept A: Prototype of the take care of the Furries Game.
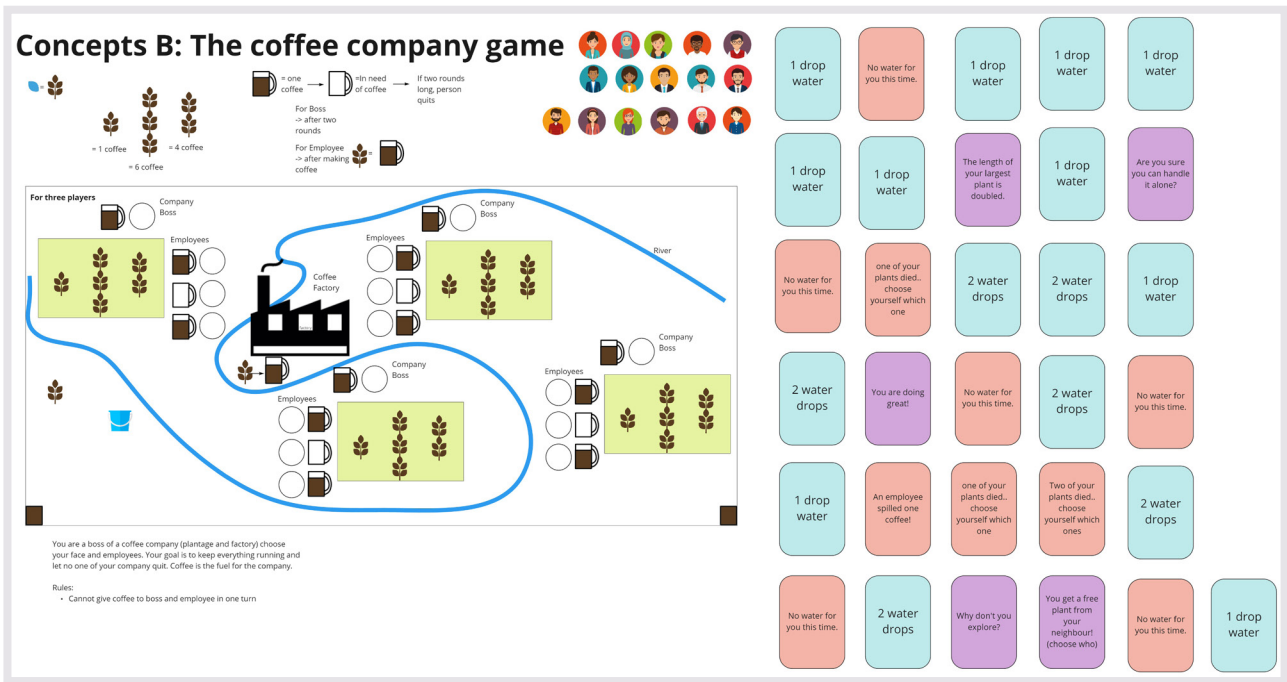
Figure 6.2: Concept B: Prototype of the coffee company Game.

Concept C: The Fishes Game

Ontzorghuis was fond of this concept, because of the simplicity of the fishes, they felt directly attracted to the fishes, and they saw the value in having different fishes (also each child with special needs is unique). To add a long term vision in this concept, it is possible to exchange energy bits for long term solutions e.g. a stone to put in the water so the water level decreases twice as less. Moreover, if the players do not care enough for their own fish, it will panic and make the other fishes panic as well, which results in a water level that decreases faster (factors are next to the bowl). To increase the value of the fishes of the neighbour, there is added to the story that these fishes are inherited. Lastly to make it more appealing, also other water animals than fish were added.
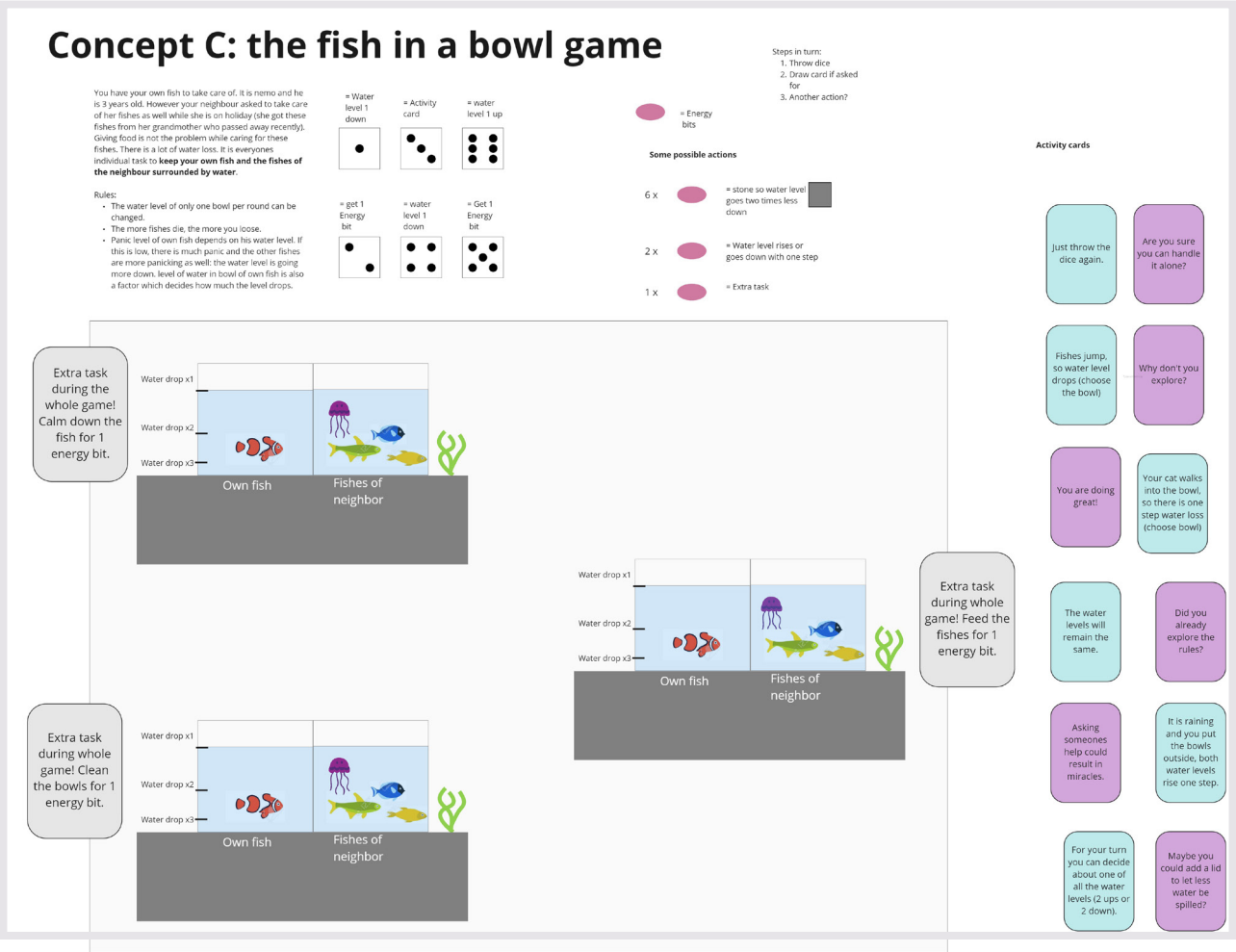
Figure 6.3: Concept C: Prototype of the Fishes in a bowl game.

6.2 Concept Testing

It is important to evaluate to what extend the concepts meet the design objectives (see paragraph 4.3). These included the transfer effects, creating a simulation of the real-world of CSN parents, and to be immersive and engaging for CSN parents. A story with metaphor is needed which matches with the interest (the topic and a balance in fun and serious) of CSN parents, makes them feel safe (magic circle) and the right balance in complexity (understanding versus challenging).

All three concepts were tested with the same group of 4 participants in one evening to make comparing the concepts easy. After testing, questions were asked to the participants to assess how much the design objectives were met. Moreover, to figure out whether the concepts matched with the target group and company, Ontzorghuis was consulted.
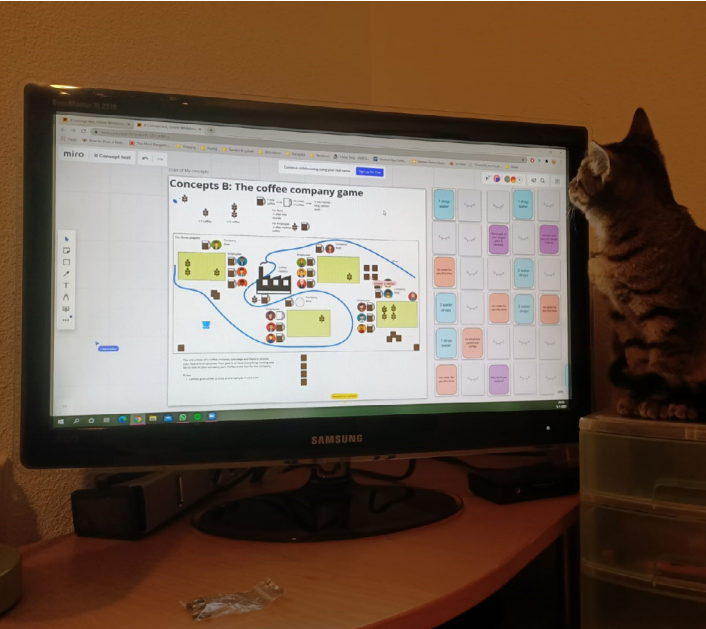
Figure 6.4: Picture made by participant during testing concepts.

6.3 Evaluation and Final Concept

In each concept, it was about taking care, which should be also the main theme in the final concept.

Moreover, the concepts are about managing the situation which was not achievable without caring firstly for yourself (what represented the parent) by developing a problem-solving attitude. This is comparable to the Real World of CSN parents in which they need to develop this attitude to be able to increase their self-care.

Evaluation concepts

All the concepts were experienced as fun and innovative.

In the concepts players could experience unfortunate surprises, as is present is the Real World of CSN parents. Also, the long term thinking and passing on mechanics were present in all concepts.

Choosing which concept to continue with, was especially based on the match of the metaphor with the CSN parents, because interesting mechanics of other concepts could always be added later on.

There was chosen to continue with the concept C, the Fishes game, because players got most challenged to take care in this game and also Ontzorghuis is fond of the fishes and expects that it fits CSN parents best, because of the urgency of keeping something alive. Concept A about the Furries is probably too childish and could make the CSN parents not taken seriously, and concept B was not enough about caring (so too far away from the Real World of CSN parents.

However, many game mechanics from the other concepts (shown at the right) were added as well. An overview with concept descriptions and evaluation per design objective can be found in Appendix T where the concepts are compared.

Chosen game mechanics to continue with and improvements

These game mechanics serve the design ob-

jects about achieving transfer effects, engagement and immersiveness.

Game flow

At the start it was easy and players got already something to start with. However, the games were too easy. Having limited time in your turn was experienced as good, because it made the game quicker. It was especially clear how to lose but not how to win, so **how to win should be more clear**. The goals of the different roles were not clear. Lastly, there was a lack of a positive end feeling. Because suddenly everything was possible.

Roles

Gives an extra incentive and feels like you have a secret mission. Ideas are to add abilities, make the roles even more different or have unsuspected roles. For others it gave confusion or felt too responsible. Adding roles would be interesting, but if the roles are misunderstood, it should not ruin the goals of the game. However giving a secret task could create interaction and fun, without the possibility of missing the aim of the game if the secret task is misunderstood.

Hints for exploring

Exploring was achieved and thus the magic circle seemed to be present. Activity cards seem to be the clearest hints. However, using hints on the boards felt like cheating, because it was so obvious and seemed to have a different purpose. So hiding the useful elements under other elements would be more fun and clear. If the exploring is stimulated by someone being a role model, s/he has an important position to let the game fail or succeed, so there should be another way of stimulation as well. How subtle the hints should be, to be not too obvious should be further explored.

Long-term thinking

Getting in the end more for something you previously worked hard for stimulated long-term thinking and most players saw the value.

As was explained, also having a long-term focus (part of creative problem-solving attitude, transfer effect 3) is important for CSN parents, because often they tend to focus only on the short-term (while being in the survival mode), whereas a balance between long- and short-term thinking would be best.

Cards

Drawing cards was experienced as fun. Pointing out cards was preferred over opening cards themselves, because there was more interaction. More activity cards with examples of creative solutions is desired as well as cards with hints to stimulate players to develop a creative problem-solving attitude (transfer effect 3). The card *'Why don't you explore.'* Made the players explore the whole board. Lastly, to improve the simulation of CSN parents' lives, there could be more activity cards with unfortunate events.

Passing on

The 'Are you sure you can handle it alone.'- card made players work together, which is a creative solution (transfer effect 3).

Dice

Was fun due to having more chance, feeling of having influence and interaction. In fish game, it was preferred to have less throwing the dice and more activity cards.

Dumping

The extra task the players could dump (transfer effect 3), made the game more dynamic, however the tasks were too close to the story so players felt too responsible and felt betrayed after discovering that it hadn't a function. Idea is to have the task less close to caring topic and closer to perfectionism.

The first transfer effect (creating awareness about the importance of self-care) **was not achieved** in all concept tests, **because the games were too easy** to reach the level that there was not taken care of the something that represented themselves/CSN parents (unwanted furries, boss, own fishes) that it has its impact on the something that represented the child and they did care most about (wanted furries, employees, fishes of neighbour). **The second transfer effect** (create awareness about having the option to increase self-care) **was achieved in concept test B (Coffee) and C** (fishes) as a result of the hints on cards. For **A** (Furries) a player misunderstood her role; she did not give the hints in a subtle way. **The third transfer effect** (develop a creative problem-solving attitude) **was achieved** in all the concepts, often by working together.

The duration of **playtime was 30 minutes**. It is expected that it could be extended to the desired 45 minutes as well, also because the facilitator decides when to help the players and when the game is over. Besides, it showed the **possibility to play with 4 players,** my expectation is that one player more would not make much difference, because it will only increase the chance to come up with creative solutions. During concept test A (Furries) and **especially C (fishes), players felt responsible to take care** of something/someone and there was an unbalance during the concepts. However, this unbalance was too easily fixed. During test C, the players did not feel more responsible for the fishes that did represent the child than those that represent the parent/themselves. So some important iterations should be made to achieve the transfer effects even more.

Main takeaways

- The initial concepts were further developed into concepts with the help of the **feedback from Ontzorghuis on the initial concepts**.
- **With testing, all concepts proved to be working and fun**.
- The concept about **taking care of the fishes** appeared to have the **best metaphor** because, there is an urgency, players felt most responsible and Ontzorghuis was most fond of this metaphor.
- **Therefore this concept was chosen** to continue with and **all mechanics of the other concepts that were found valuable** were chosen to continue with as well.
- **Iterations are needed** to achieve the transfer effects even more.

Detailing phase

7. Iteration cycles

7.1 Iteration cycle 1

Chapter 7 describes four iteration cycles along with four tests (including the final test). The most important insights are given and for more information and iterations, see Appendix U. This paragraph describes the test with the supervisory team and its outcome.

Iterations
The most important iterations following from adding valuable mechanics of other concepts:
• Adding your name and choose a face.
• More focus on activity cards.
• Energy hearts instead of bits.
• Hidden things on the board, which increase the feeling of exploring
• Secret powers for each player, to increase interaction and excitement.
• Time pressure water goes down if round takes too long.
• Goals and how to win more clear.
• Increasing positive end feeling by having the goal clear.

Test results
Participants: 3 adults (supervisory team). Beforehand secret powers were sent to the players by WhatsApp messages.

How did players experience having secret powers?
Having a secret power was liked (although needed a reminder).

How was the flow?
The introduction and explaining the rules was too fast and hard to follow for the players. The game was too easy: players started exploring out of boredom while waiting instead of out of need. The ending of the game seemed less random for the players.

Other insights
• Everyone did simply pay energy hearts for the extra tasks, although they did not see the function of it.
• One player shared the thought during the game while having no energy hearts: *'Shit, I have no energy.'* and realized that CSN parents will often feel like this.
• The CSN mother shared that *'the game felt too well-ordered, whereas in my life there is more pressure, stress, tension, unfortunate events and that everything comes at once'*.
• Players came with creative solutions (Figure 7.1). However, limits in creative solutions should be given by the facilitator if these solutions make the game impossible to lose, so the game can continue.
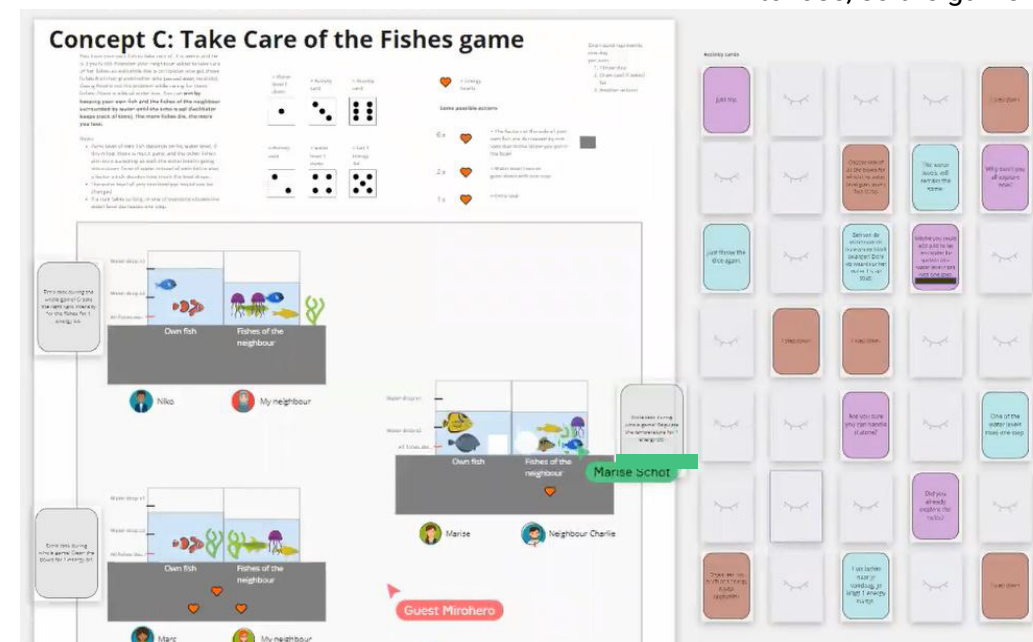

Figure 7.1: Creative solutions as multiplying plants and putting bubbles in bowls to raise the water level.

7.2 Iteration cycle 2

This paragraph describes the test with five friends and its outcome. In advance of the test an extra meeting with Marise Schot was done to get feedback.

Key iterations after brainstorms
The meeting with Marise Schot provided feedback on the game from the company's and CSN parent perspective. She shared that it had to feel more like you are busy all the time and therefore totally focussed on yourself only (missing hints) to create the desired experience.
Iterations to increase the pressure, stress, tension/ feeling lost were considered of which the following were chosen:
- **The water level is suddenly decreasing (done by the facilitator), especially when people look bored and are slow.**
- **More unfortunate events on cards.**

Also, in her opinion the rule that when the water level of your bowl is low, your own fishes have panic which results in a faster decreasing water level of all fishes, was too far-fetched and didn't make sense. *'The bowls should not be connected in such way, because the connection between CSN parent and child is experienced differently in real life.'* Moreover, one of the insights was that the players didn't care much about the fishes of the neighbour. These two insights led to a **key iteration in which every player has his own bowl (represents child) and there is a neighbourhood lake (represent CSN parent) which is a common responsibility for all players.** Players are told that they have to take care of their fishes. However, to do so they have to get water out of the neighbourhood lake (is the source). If this one is empty they cannot raise the water level in their own fishbowls and new water plants will not grow (because the lake is too empty and thus unhealthy), so every player needs the lake. The water level in the lake drops the quickest. The lake has two stripes: When the water reaches the first, no plants will grow anymore/fishes will disappear every turn so water level decreases.

Also, the idea to let players **personalise their fishbowl at the start** and introducing their fishes to other players was added to make the players even more focussed on their own fish(es) and increase the interaction between the players (like an icebreaker).
Lastly, after this meeting a version with only plants instead of stones and energy hearts was considered. However, an extra currency (Energy hearts) seemed to add more dynamics, it did not fit the story to pay a plant for the extra task and the game became illogical if the long term effect mechanism had to be included.

Other iterations
- Having a story around the introduction and rules to would make it more immersive and easy to understand. Also, one example turn is given by the facilitator.
- More cards in which you have interaction with other players/bowls.
- Energy hearts became Joeltjes (link to joule), because it seemed strange to give love to fishes.
- Big text that the game is over in the end.

Test results
Participants: 5 students.

How is the game with 5 players?
It worked well. With 5 players it is more waiting, however they stayed involved by having to adapt their water level themselves

Is the introduction (story, rules, introducing your fish(es) and personalizing bowl) clear and exciting?
Players thought of creative stories around their fishes and it caused interaction. Also the introduction with basic rules was clear and the demonstration was liked. Blindly choosing fishes gave a fun surprise. Instructions in short above the board ware clear and appreciated.

Are the stress-level and challenge increased?
Yes, participants felt nervous but there could

be added more time pressure, by having the water more often decreasing.

Are the transfer effects achieved?
Transfer effects were only evaluated during the reflection moment (short term).

The first transfer effect (creating awareness about the importance of self-care) **was reached**, illustrated by this quote:
'I was firstly much focussed on my own water level, but after reaching the first red line of the lake, I realized how important the neighbourhood lake.'
'In the end, it is also better for yourself if the water level is everywhere high.'

The second transfer effect (create awareness about having the option to increase self-care) **and third transfer effect** (develop a creative problem-solving attitude) **were reached** as well:
'Yes I felt responsible, but you didn't have much capacity to change it.' However, they mentioned that if they found solutions they applied it to the lake and many creative solutions were found like changing the rules about the dice (see figure 7.2).
Other learnings were formulated as: 'Create your own rules.', 'You are the boss about your own life.', 'Look a bit further.', 'Asking for help.', and 'Together you're stronger.'.

Felt the ending more like an ending with relieve and pride?
It was more challenging. Also more clear that the game ended by the text added (see figure 7.3). The game started with confusion and later despair came. 'It felt like a battlefield, so I felt relieved, proud and happy when we made it.'

Other insights
- They felt confused in the beginning, because they discovered that fewer rules are set and that you can change them. After a while, it became more fun. *'After a while, I discovered that you have to look a bit further through the rules.'*
- Choosing your own bowl gave many complications in Miro for moving the water by having for example accidentally two bowls or having the bowl not properly locked.
- One card explains 'you may..', the player realised this and asked whether she had to do it (players can choose what to do with it).

Figure 7.2: Changing the rules of the dice.

Figure 7.3: Clear ending: 'Time is up!' with cheering players.

7.3 Iteration cycle 3

This paragraph describes the test with three CSN parents and its outcome. The aesthetic appearance of the game changed.

Iterations
- Explanation that it is not a normal game but a serious game.
- More cards which increase the waterlevel were added so the water level can more often spontaneous decrease without players to lose quickly. Also there was chosen for less mentioning when it decreases spontaneously.
- Dices and rules are unlocked, so more solutions are possible.
- Stones were still not achievable; Moving stones takes 3 instead of 4 Joeltjes.
- More cards with hints and stakeholders like the municipality.
- The gameboard with elements aesthetically got a redesign (figure 7.4).

Figure 7.4: Redesign of the neighbourhood lake.

Test results
Participants: 3 CSN parents.

Do CSN parents see the link with their Real World?
- About blindly choosing the fishes. *'Yes, you also do not know what child it will if you bring a child to the world.'* Moreover, all of them gave the fishes the names of their children.
- They expected that their own bowls stood for their own family and the lake for their social network and support that is offered.

However, after my explanation, they thought it was logical *'Yes indeed it works like that in real life.'* Still, there followed an iteration that tried to create a clearer link between the lake and CSN parents (see paragraph 7.4).
- Also was talked about keeping everything in balance and the importance of coming with solutions: *'If we didn't have come with creative solutions we would have dried out.'*

Interaction vision comparison
- In the beginning facing the dead ends of the maze: Scared that the fishes would die and felt competitive to help others and make it till the end. The experience of one player did him remember of: *'Walking on eggs, you cannot do crazy things, because your water level is already low. Like you are balancing on the edge and always thinking: 'What will happen if I do this, what will happen if I open this door, or what will happen if there is a call from the hospital if you would translate it to my personal situation.'*
- They also experienced the uncertainty: *'I experienced the tension and not knowing how everything would further develop.'*
- After creative solutions/breaking through walls: fun, curiosity, stimulation. Thoughts like: 'What to do with it?', also relieve and increased trust to be able to move on. Enjoyable when the lake got a bit more water.
- End reactions per player: 'You all want to make it together, so I was relieved that we made it!' 'Felt happy to survive in the end.' 'Big relieve that no fishes died.'

Do CSN parents (who do not know each other beforehand) also explore and try things out enough to be able to win the game (or are more hints needed)?
No, they did not see it as an option to wildly explore and try out things, it was experience more like carefully scanning the game. They also often didn't know what to do with the cards with hints. This can all be caused by having only

three players of which one had no mouse and one wasn't very technical (according to herself). It is possibly also caused by having barely experience in playing serious games. Reading out loud the cards with hints again and telling that these cards were important seemed to help.

How was the balance between gaining water and evaporating water? (increased stress?)
In the beginning of the gameplay, as desired all water levels were slowly decreasing, however closer to the end, to let the players not lose the game, the evaporating of the water (done by the facilitator) occurred less.

Stone more attractive?
There was not paid attention to the stone; all Joeltjes were used to move plants.

Other test results
- They liked the game and thought it looked good, fun, nice and easy to play. (One player sent a message a few days later to share this again.)
- Again a clear shift in 'egocentric' focus on own bowl toward feeling responsible for all bowls and the lake.
- While looking at the SDT, autonomy and

competence was only a bit achieved, probably because the players didn't come with many creative solutions. With more players, this could be improved. Social relatedness was achieved by having interaction between the players and taking care of each other.
- There was one player without a mouse who could still play by having the facilitator taking over the actions and the player telling which card she chooses.
- None of the extra tasks was performed, maybe because these parents were in a later stage of being a CSN parent and unconscious got used to dumping unnecessary tasks.
- There was no card drawn which stimulated to work together, but players still worked together.

'The game is good, is well put together and well -thought-out. I enjoyed it and learned.'
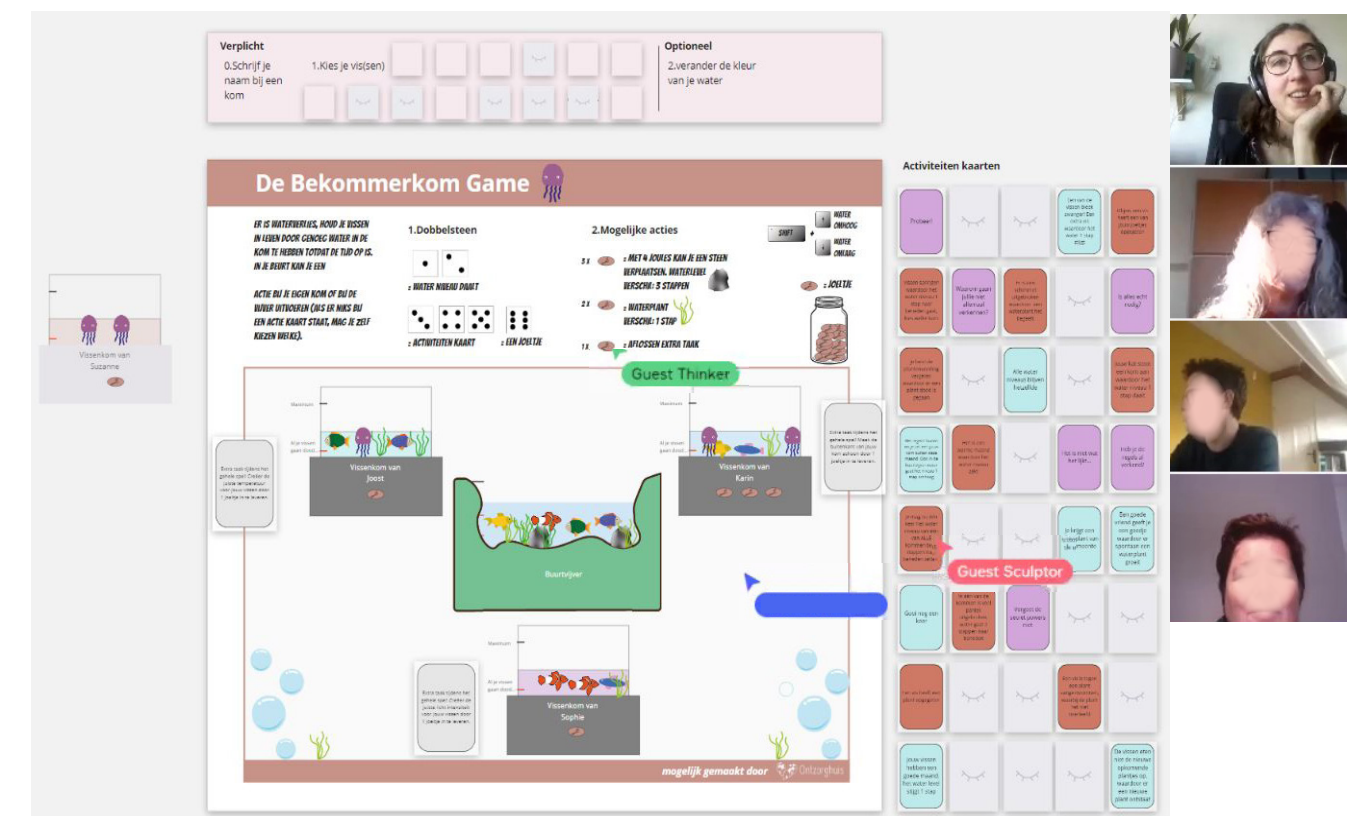- Response of a CSN parent a week after playing the game

Figure 7.5: New design with CSN parents.

Lessons found by CSN parents during reflection moment
- *'You have to think outside your own bowl.'* *(transfer effect 3)*
- *'While looking back at the card about exploring the rules, now when I take it to a higher level I realise that there aren't any rules or someone who makes these in real life (transfer effect 2).'*
- After reflection moment they understood it more. *'If I would play the game for a second time, I would already be exploring and working together from the beginning on instead of playing against each other.' (transfer effect 3)*

As is shown by the quotes, especially after the game the CSN parents became aware of the creative solutions to play together and to explore. In the previous tests the hints seemed obvious enough, however the target group possibly needs more obvious hints. If the players achieve more quickly during the game creative solutions they possibly will experience more flow and feel more confident by adopting a creative problem-solving approach. Therefore, one of the iterations is to have more obvious hints on the cards.

Long term effect
To figure out the long term effect of the game and whether it meets the desired transfer effect players were approached again after more than a week. They were asked whether they had thought about the game and whether they

do or perceive things differently (especially concerning self-care). They all responded and mentioned again that they liked the game and that the game triggered them to think. One player saw the game as a waking up call on different levels:

The game woke me up again; I have to take care of myself, otherwise I cannot take care of others. (transfer effect 1) I need to look and think outside the box (transfer effect 3): Sometimes the world is small, but there is more than you think.' (transfer effect 2)
Also the two other players reflected on self-care:

'I certainly do things differently, I tend to ignore myself for the kids. I had already realized that I am also important, but I now really take time for myself more consciously.' (transfer effect 1)

'The game made me think about in which ways and how I can provide myself bit more air and what to pay attention to. Beautiful! (transfer effect 1)

Lastly these two players shared that being creative to face challenges is important and it seems like they have found their way in this.
'We are lucky that we are by nature creative, because this is necessary with a family like this.' (≈transfer effect 3)

'Finding creative solutions is important, I am always searching for new solutions for complex challenges. There is no standard for that.' (≈transfer effect 3)

'It is beautiful how the metaphor of a lake is used and that there are things that give you 'air' and that you also can receive 'air'.
- Response of a CSN parents a week after playing the game possibly about the air-bubbles you could put in the water to increase the water level.

7.4 Final Test

This paragraph describes the test with four CSN parents (of who one is Marise Schot) and its outcome. The aesthetic appearance of the game had a final iteration. Especially the transfer effects and experience were evaluated during and after this test. This evaluation combined with earlier gained insights can be found in paragraph 8.1. In this paragraph, two for this test specific research questions are discussed.

Iterations
- Making more clear in the facilitator's introduction how much the water level changes by adding a plant or stone and saying that the stone is thus more favourable to stimulate players to aim for the stone (long term effect).
- Recommendation is to play it with more than three players to increase the chance that players get to creative solutions, by increasing the chance of having a player who dares to explore and decreasing the influence of a player with technical issues.
- More focus on that actions could be carried out on the neighbourhood lake as well.
- More stimulation of reading the activity cards out loud.
- Suddenly a free plant appears on the board.

- The stones and plants as clear external source with plants, Joeltjes etc. so the lake is less easily confused with the social network/society, municipality.
- Hints on cards are more obvious and one card is added with the hint: There are many possibilities.
- Improved graphics including many iterations (see Appendix U for another version and the colour palette). The graphics were not changed after this game and is thus also the final online design proposal (see next chapter).
- More story with details was added to the introduction to improve the immersiveness.

Test results
Participants: 4 CSN parents, of which one is Marise Schot. For the final test (figure7.5), a flyer was created to recruit participants (Appendix V).

Is stone attractive now?
The stone (long term thinking) is more attractive. A player considered to buy it, but adding a stone would raise her water level above the maximum. Instead of buying a plant, she decided to wait, which reveals long term thinking.
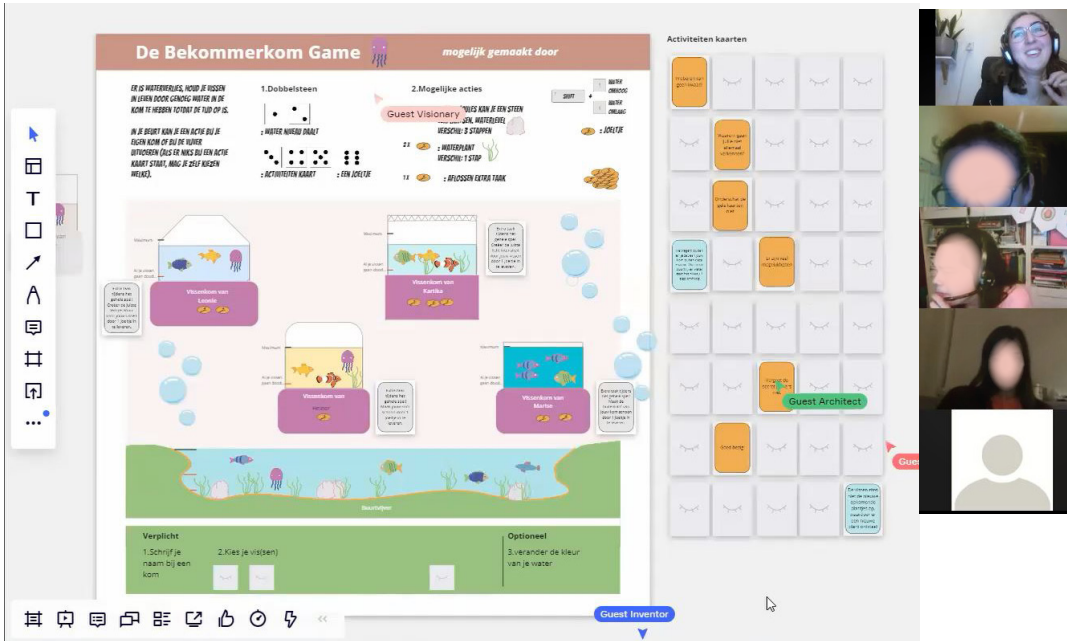

Figure 7.5: Final test with CSN parents.

Also long term effect could be observed by that some said they rather saved Joeltjes for later.

What is the effect of an appearing plant?
I let the plant appeared after they went discovering so they were positive surprised and took it. It would be interesting to add the plant in advance of experiencing exploring actions.

Other test results
- Players paid Joeltjes for the extra tasks and barely questioned it.
- New creative solutions: Adding a fish from the fishes the game starts with to another bowl and during reflection moment they got the idea to try to bribe facilitator next time.
- Suddenly a player asked the others *'What shall we do about the lake? Because it is almost reaching the red line. Are we responsible for the lake?'* I responded with that I couldn't tell. She added *'You should not only think about yourself, but also your environment.'* If you would take a closer look to what the bowls and lake represent she had actually said: *'You should not only think about your child(ren) but also about yourself.'*
- Round should represent two months instead of one to reach at least a year (six rounds with four players).
- Being together in this was valuable for parents. *'It felt good to share the suffering and background.'*

Long term effect
Two of the four participants responded to the questions (same as after the previous test) send after a week. Both shared that the game made them think. One player shared how she consciously tries to take better care of herself *(transfer effect 1)*:
'The game definitely made me think. I'm more consciousness exploring how I could take good care of myself in all the hectic of a child with special needs. I consciously try to spend

time on myself and park these thoughts about everything that should be done.'

Also one shared that she got more aware about balancing everything in her life *(≈transfer effect 1)*:
'After playing this game I realize more how difficult it is for me to keep everything in balance; myself, the arrangements, the conversations, etc.'

After the game, both players became aware of the option *(transfer effect 2)* that they could ask for more support *(transfer effect 3)*:
'My network knows how to find me, but I lost a bit how (or that) I could ask for support.'

'The game made me think about how I could find more support/collaboration in my environment.'

Main takeaways

- Aside from the concept test, the game was tested and **iterated four times**. Also, the **visual appearance got iterated** between the tests.
- The game was experienced as **fun and with a beautiful thought.**
- **Especially the transfer effects 1** (aware of the importance of self-care) **and 2** (aware of the option to change the situation) **were achieved**.
- Some CSN parents even gave fishes the names of their children.
- To come up with creative solutions **(transfer effect 3) seemed harder to achieve** for CSN parents compared to the first (creative) players. However, **discovering later that more creative solutions were possible also seemed to increase awareness**.
- After a week the players shared that the game made them think about self-care and for some about asking for more support.

8. Evaluation and Final Design

8.1 Evaluation

This paragraph evaluates the Bekommerkom game not only by evaluating the final tests with the design objectives but also taking into account the insights from the previous three tests. Questions to the participants were sent one day (final test) and one week (third and final test) after the test to investigate the long-term effect. These questions can be found in Appendix U and for the full evaluation and requirements of the Bekommerkom game, see Appendix M.

Evaluation participants

The concept tests and the first two tests were conducted with participants of academic level (and often were designer as well). It was valuable to test with creative people, because many new creative solutions were found, which could be stimulated in later versions of the game. The last two tests were more or less with the intended users and showed that more straightforward hints are needed and that playing with more players improves the game experience. These tests were essential for evaluating the transfer effects. The participants of these tests were in different phases and the game seemed to be valuable for all CSN parents, by at least letting them remember the importance of self-care. So, for CSN parents in a later stage, it still resulted in a small wake-up call. However, it is expected that most participants of the retraite weekend will be in an early stage of being a CSN parent. Only the last test was conducted with parents who possibly were in this phase, because it is hard to recruit this group. The moments the tests took place variated between afternoon and evening.

Evaluation Transfer effects

First transfer effect

In the first two tests, the first two transfer effects (see grey box at the right) were not achieved during the game, possibly because the game was too easy to play, resulting in the

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The transfer effects were:

1. Create awareness about the importance of avoiding an unbalance in energy (in taking care of CSN parents themselves versus their child & responsibilities) **to increase self-care.**

2. Create awareness about having the option to increase self-care.

3. Alter to or reinforce the attitudinal change towards a creative problem-solving attitude for providing self-care.

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minor concerns for the lake. In later tests with CSN parents, the first transfer effect seemed to be achieved: parents associated the fishes with their child(ren) (also due to the blindly choosing fishes activities) and some parents even gave the fishes the names of their children. One parent shared:
'Your own bowl with fishes represent your special children and the water for how much energy you have for them. Questioning can you still offer them what they need?'

As a result, the CSN parents prioritized their own fishes over the lake. They barely noticed the decreasing water level of the lake until it reached the first red line and they discovered that if they didn't take care of the lake they could not take care of their own fishes.
'We experienced a big shift in focus from our own bowls to also the lake; something had to change.'
'Funny how we were all focussed on our children/fishes and until we are alerted that we almost collapse, we remember oh yes I/the neighbourhood exists as well. So recognizable.'

From the beginning on, if the fishes of the lake got above the water level, players placed these below it (so they felt from the beginning already a bit responsible for the lake).
Remarkable was that it was hard for players to figure out what or who the lake represented.

'But what the lake represents makes me think, maybe the whole family? Or friends?'
They often linked the lake in the game world to all the other family members, social network/provided support instead of only themselves in their real-world. However, after explaining the link between the Game World and Real World, they agreed that it is indeed like that and logically. A main aspect of the game is to let the parents pay attention to themselves and this insights show that the parents are merely focussed on their child and network. This game was therefore even more a wake-up call that they forget themselves in the picture. *'Funny how easily the fishbowl symbolized for us our children, but that we didn't directly connect the lake to ourselves, very recognizable.'*

'It is a lesson that you definitely should not drain the neighbourhood lake.' Players shared to recognize this: *'That you are drained, and cannot do something about it.'*

Second transfer effect

After the game players shared: *'We first didn't know what to do with the lake, so everyone just focussed on their own bowl where it still felt you could do something about the water level.'*
However, due to the cards with hints or by accident players discovered throughout the game that more actions are allowed and thus became aware that there is an option to change the situation (second transfer effect). They also discovered that there were more possibilities as a result of the behaviour of the facilitator: *'The facilitator was vague about certain things, which made me think.'* So the second transfer effect was achieved as well.

Third transfer effect

The third transfer effect was achieved in all tests: players came with creative solutions. During some tests it was easily achieved and for some other tests, more stimulation from the facilitator was needed. During the final test, not that many creative solutions were found, but during the reflection moment players said *'We could have taken it out of the cards with hints.'* This could also be caused by the fact that they had most hints on cards already at the beginning of the game when these were not needed yet. So, the hints on the cards seem to be clear but they could have been more obvious.
Especially working together and finding elements on the gameboard were creative solu-

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tions that often occurred. Also during reflection moment, they shared that they realized that they should more often ask for help. *'We must also learn that right? More often ask for the help of others, dare to ask for help.'* Which is a solution which could help CSN parents. Players shared that if they would play the game again they would approach it differently (working together from the start etc.). Also after hearing some other possible creative solutions during the reflection moment made the players aware that there were even more options. This could also contribute to developing the aim of a creative problem-solving attitude in real life (third transfer effect).

Long term effect after one week

All CSN parents who responded one week after playing the game (5 out of 6) shared that the game had made them think/woke them up again. Especially about consciously taking time for/care of yourself (and that this is even more important during the COVID-19 situation) to be able to take care of others. Also, some realized that they should ask more for help. Two players shared that finding creative solutions/being creative is very important for the challenges they face. Lastly, one player shared that she should think and look outside the box.

Evaluation experience

In the reflection moment, the players were asked about their experience and one day after the final test players were also asked about the different emotions they experienced (with the support of the PreMo-tool) to investigate whether the desired interaction and experience were achieved. See figure 8.1 for the comparison between the emotions players experienced throughout the game and the emotions which the game intends to evoke during the gameplay to simulate the Real World of CSN parents (same as interaction vision).

During other tests also the urgency and thus stress was observed by comments during the game like: *'I am afraid soon many fish will die.'* Also, it was observed that when the players knew the game was over and they made it, there was relief.

Aside from these emotions, also **a feeling of searching was mentioned** which can also

	Start	Bowls get empty	Lake reached red line	Solutions were found	Game is over	Reflection moment
Player 1	Curious	Bit stressed	More stressed	Happy	Relieved	Realization I could have been more brutal
Player 2						
Player 3	Puzzled and bit frustrated (didn't understand)	What's happening?		Exploring, inviting	Satisfied	Satisfied
Inter-action vision						

The interaction with the serious game should feel like experiencing a maze with a shift from:

Feeling ignorant, uncertain, stressed, frustrated, and desperately

To experience relief, empowerment and becoming more confident
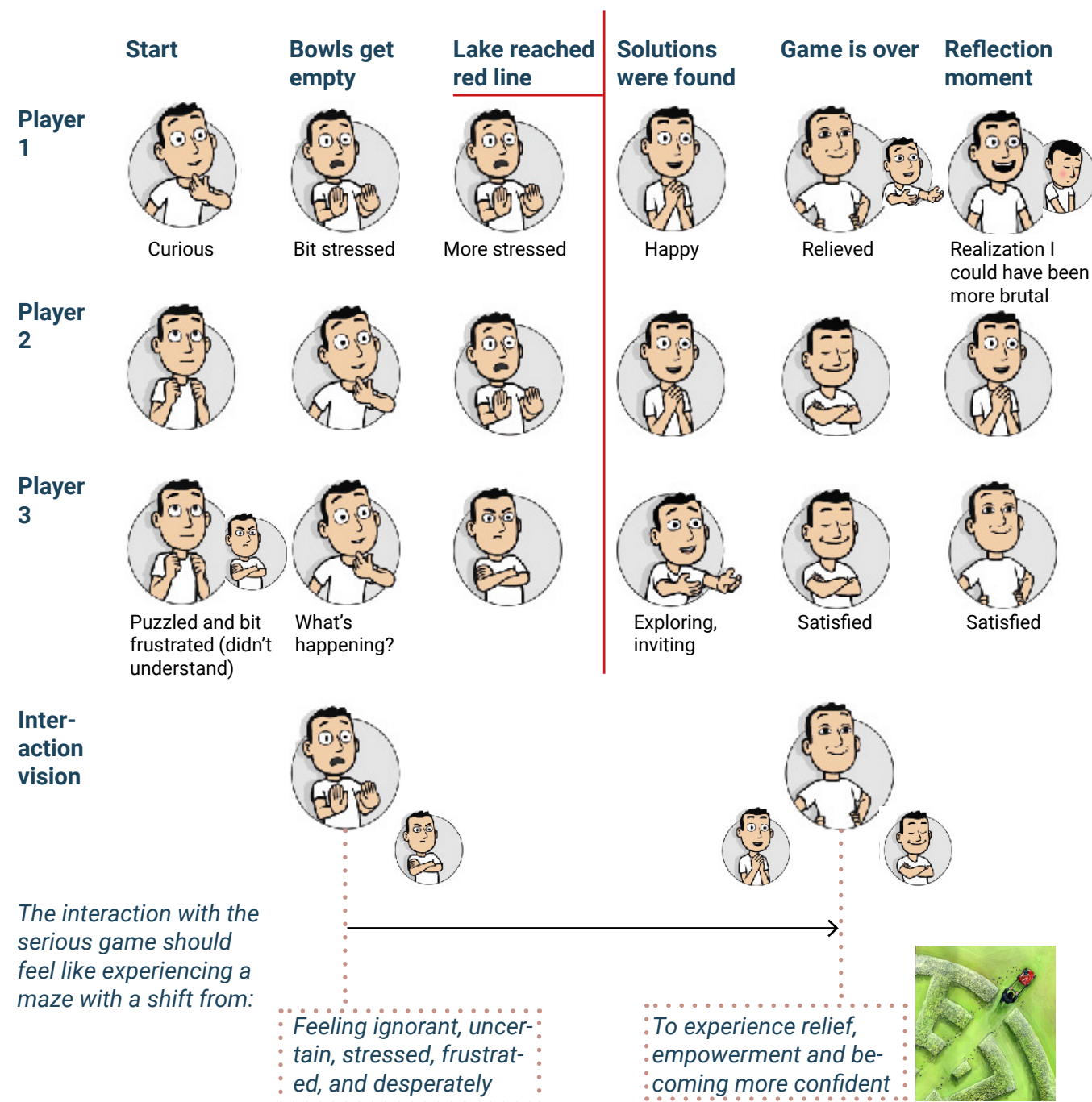
Figure 8.1: Emotions of players compared to the intended emotions during the game.

be seen in the journey CSN parents experience (and the maze). For example, one player shared: *'At the beginning of the game I was a bit lost.'* And another player shared: *'I recognized the search for balance. That it has to go well on many levels to survive it all.'*

In the reflection moment, players had shared to feel hopeless, powerless, frustrated in advance of creative solutions. Also that there was a **lack of guidance that remembered them of their lives**: *'I had the feeling we were creating the game ourselves, but didn't know how to. I would like to have a step-by-step plan, because we decided but did not know how to handle it. This is very recognizable!'*

Evaluation Other Requirements

Be engaging
There is a match found between the interest of the parents in the game environment (style and fun vs serious), **and interest in the topic** (unbalance and self-care). CSN parents felt responsible for the fishes and quickly cared about these: *'Fish theme is well found, I was*

quickly into the care-mode (Bekommer-stand).' 'The imagery fits well with the theme.'

During tests, there was an interaction between the players observed and players made jokes and seem to have fun. Sometimes there were small problems in Miro and a serious game playing in such an environment was new for all players. So sometimes the intervention did not **match with the understanding of the players** and this seemed to make it harder to make the step to develop a creative problem-solutions attitude. Maybe playing an online serious game does not match the target group as well as a physical game. On the other hand, it also adds to the simulation of the real-world of CSN parents; getting a child with special needs also puts you into a new world where much is unknown and has to be figured out yet.

Be immersive
Players shared that in the beginning they were sometimes so much searching for the aim and having questions that it distracted them from the game. **Flow seems to be achieved, but** as said, the **start is more confusing (so less flow) as represents the uncertainty of CSN parents' lives**. Later there is more frustration than the flow level, because this represents also the despair and situation which is not manageable within the given rules. This also makes a game good as it does with escape rooms. Players also made a comparison with an escape room experience. Much is based on chance, however the facilitator can influence the game as well (for example by lowering all water levels or adding a plant) so the game could achieve the desired outcome and the **facilitator has an influence on the flow** and thus immersiveness flow of the game. As another result of the mentioned tasks of the facilitator, the quality of the **building-up** is **also especially influenced by the facilitator**.
Besides the facilitator functions as the **feedback system** (aside from Miro) by answering the players what is allowed and what isn't. So the quality of the feedback system mainly depends on the facilitator.
The **story** of the game was iterated a few times and a player shared: *'The story was easy to follow and I was immersed into the story and game.'*
While looking at the **fundamental game components**, the game consists of objects, goals, rules and freedom. However, freedom and

rules are a special case, because the **players discover throughout the game that there is more freedom within the rules than previously assumed**.
Besides, while looking at **the magic circle**: During most tests, **players felt safe to explore and experiment**, possibly also caused by having a metaphor that was far from their Real World. However, **some players** did not easily try out things, due to rather take a **wait-and-see attitude**, because it was the game was new and other players unfamiliar. One player shared: *'I think you would get more out of the game if players are more prepared by appeasing them (let it wash over you).'*
Lastly, while looking at the **SDT**, **social relatedness was observed in most tests and autonomy and competence both depended on how much the players managed to come up with creative solutions** and thus could decide about their own actions and experience control. SDT is a good method to evaluate games or well-being, but this game is about firstly not experiencing autonomy and competence (comparable with at the beginning having a child with special needs). So, **evaluating this game with SDT is not appropriate**. However, evaluating the outcomes of the game for CSN parents could be evaluated in future tests with SDT and will reflect their well-being.

The bridge between the Game World and the Real World:
The **steps in real life are in line with the steps in the game in which acknowledgement and autonomy were observed** during the tests. For example, one player said about the water level of her own fishbowl:
'It was frustrating, the water level was only dropping, how to keep the level high? I noticed that I was more focussed on that than realizing that I could ask for help.' This quote shows the **similarity to the real-world of CSN parents**; being so focussed on their child that they do not pay attention to themselves or look for options to change the situation.

Other quotes about the game reflect the start of having a child with special needs:
'In advance, you do not know what you're doing, what is happening to you.'
'Before you know you're energy level is very low, because you are focussed on your child and then you notice maybe I should do it differently This is very recognizable: how I experience the

game is how I experienced having a child with special needs from the beginning. That you change your approach.'

Besides, the **need to find creative solutions in the game was also recognizable** for CSN parents: *'Finding creative solutions and being flexible is very important.'*

Lastly, making this link together between the Game and Real World appeared valuable:
'I thought it was very comforting to afterwards be able to make together the link to living with a child with special needs. It felt good to notice the understanding, recognition/acknowledgement and solidarity.'

Throughout the tests, first **acknowledgement** of the situation and that it required a change (after reaching the red line of the lake) and secondly growing **autonomy and competence** by coming up with creative solutions was observed.
Aknowledgment from each other/sharing the same burden was found during the analysis phase as important for many CSN parents. About the moment that all water levels were low and they were being together in this was valuable for parents. *'It felt good to share the suffering.'*

How the **time is divided in the game can be related to how it is in their Real World** (one gameplay represents more than a year and this is the time most CSN parents become aware of poor self-care. However, the **conversations after the games were mostly about the game and the metaphor** itself instead of the personal experiences and further possible solutions for each other or after the game. This is possibly caused by having more reflection questions about the game to be able to evaluate and improve the game, so there **was less room for letting participants advising each other**.

The tests proved the possibility to play with **3-5 players** and most tests were **60 minutes**. Some took a bit longer due to having the reflection moment (transfer effects included), but also taking time for evaluating the game requirements and interaction vision.

During designing the online serious game, the focus on how to **easily convert it into a physical game** for the retraite weekends of Ontzorghuis

was a bit lost. **It can be converted into a physical game, but it needs some adjustments.** See paragraph 8.2 for the physical proposal. Moreover, there was thought that it would be possible and valuable by having health care professionals or people from the municipality joining the game, however this was not tested.

The opinion of CSN parents about the Bekommerkom game

Other quotes which illustrate the **enthusiasm** of CSN parents after playing the Bekommerkom game:
• *'It is a miracle what is all happening.'*
• *In my opinion, it is an extremely ingenious game, very nice! I think there is a lot in it and you can see it was a lot of work.'*

Limitations evaluating

It should be considered that it is **unknown what the long term effect on CSN parents' lives is after more than a week** after playing the game. Moreover, there are more reasons why it is **hard to evaluate the first and second transfer effect**. Firstly **what would help to raise awareness is different for each** parent, according to Verdonk. The game was designed based on different found strategies (like asking for help and becoming resourceful), because there are more strategies offered in the game there is a higher chance that it contributes to every CSN parent in some way. Moreover, it is possible that CSN parents may be **in a phase in which they did not acknowledge that there is a problem at all** (possibly the very beginning of the process). In other words, players have to be open to possible learnings from the game, this could also arrive after the joint reflection moment. Lastly, it is about **awareness which is hard to measure** and **depends on whether CSN parents want to become aware or simply push away** the upcoming thoughts that lead to awareness. Note that the **players already knew the theme 'unburden'** when they signed up for the game and this can have influenced the transfer effects.

8.2 Final Design Proposal and Recommendations

This paragraph proposes a final design for the online version of the Bekommerkom game, together with a gamekit consisting of a facilitator's guide and hand-out (created online as well as offline). Secondly, a proposal for an offline version is given, which can be used during future retraite weekends of Ontzorghuis. Lastly, recommendations are provided for future development and testing of the proposed online and offline versions.

Final Online Design Proposal of the Bekommerkom game

See figure 8.2 for the final design proposal for the online serious game the Bekommerkom game. In this figure, the different objects are shown. The main mechanism is that **the game is a simulation of the real-world of CSN parents concerning self-care**. Other mechanisms, which can be seen in figure 8.2 are; gameboard, activity cards, (physical) dice, fishbowls, neighbourhood lake, plants, stones and Joeltjes. Also, the facilitator is important and s/he also knows more rules and judges about found creative solutions whether it is allowed or not. For the intended gameplay see figure 8.3 left below. In short, the goal for every player is to keep their fish alive (keep the water level high enough) until the time is up (expert arrives to take over). However, due to various kinds of reasons, all water levels decrease quickly and players do not have an eye for the neighbourhood lake, which is also important to keep their fish alive. The only way to win is to come up with creative solutions. Rules can be changed within this game and more is allowed than players think.
As was explained previously, it is important to make the real-life topic abstract in the serious game to feel comfortable and free to explore (magic circle). This was achieved by using fishes as metaphor, because these are non-human characters, many CSN parents associated their life in some way with liquids (drowning or empty) and these provide a playful and colour-

ful game context. Lastly, the game is meant to play only once.

Transfer effects
The game aims for three transfer effects. These together with the link of the game can be found in **figure 8.3** and are here explained again as followed:
During the game, players realize the importance of taking care of the neighbourhood lake (represents themselves) as well, after the moment that the lake reaches the first red line. The learning is that **by taking care of the lake (represents the parents) they can take care of their fishes (represents children)** as well (transfer effect 1). Via hints and the attitude of the facilitator, they **become aware that there is an option to change the situation** (transfer effect 2) and they can do so by applying creative solutions/**developing a creative problem-solving attitude**.
Many creative solutions are possible: building a story around why something is possible, ignoring or making the rules, dragging or founding objects, choosing yourself how to interpret the activity cards (for which bowl e.g.), work-

De Bekommerkom Game 🐙

mogelijk gemaakt door Ontzorghuis

Instruction with the most important rules.

ER IS WATERVERLIES, HOUD JE VISSEN IN LEVEN DOOR GENOEG WATER IN DE KOM TE HEBBEN TOTDAT DE TIJD OP IS.

IN JE BEURT KAN JE EEN ACTIE BIJ JE EIGEN KOM OF BIJ DE VIJVER UITVOEREN (ALS ER NIKS BIJ EEN ACTIE KAART STAAT, MAG JE ZELF KIEZEN WELKE).

1.Dobbelsteen

: WATER NIVEAU DAALT
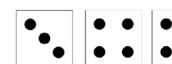
: ACTIVITEITEN KAART   : EEN JOELTJE

2.Mogelijke acties

3 X 🪙 : MET 4 JOULES KAN JE EEN STEEN VERPLAATSEN. WATERLEVEL VERSCHIL: 3 STAPPEN

2 X 🪙 : WATERPLANT VERSCHIL: 1 STAP

1 X 🪙 : AFLOSSEN EXTRA TAAK

SHIFT + WATER OMHOOG / WATER OMLAAG

🪙 : JOELTJE

Fishbowl of facilitator to show one turn: rolling the dice and possibly do an activity. S/he rolls six, so gets a Joeltje and moves with the two Joeltjes a waterplant from the neighbourhoodlake to his/her own bowl (adjusting the waterlevels).

Vissenkom van Suzanne

Gameboard

Airbubbles and loose plants that could be put in the water to increase the waterlevel (give some air).

Miro

Maximum

Al je vissen gaan dood...

Vissenkom van John

Extra taak tijdens het gehele spel! Creëer de juiste temperatuur voor jouw vissen door 1 Joeltje in te leveren.

A fishbowl per player

Maximum

Al je vissen gaan dood...

Vissenkom van Hannah

Extra taak tijdens het gehele spel! Creëer de juiste licht intensiteit voor jouw vissen door 1 Joeltje in te leveren.

Maximum

Al je vissen gaan dood...

Vissenkom van Tess

Extra taak tijdens het gehele spel Maak jouw kom schoon door 1 Joeltje in te leveren.

Maximum

All your fish will die...

Vissenkom van Sofie

Extra taak tijdens het gehele spel! Maak de buitenkant van jouw kom schoon door 1 Joeltje in te leveren.

Neighbourhoodlake with the original fishes, waterplants, and stones

Buurtvijver

Verplicht

1.Schrijf je naam bij een kom   2.Kies je vis(sen)

Optioneel

3.verander de kleur van je water

Players blindly choose fishes at the start of the game.

Players with laptop (with access to Miro and Zoom) secret superpowers and dice.

Facilitator prepares the game and guides the game by storytelling, supporting, and stimulating the players.

Activity cards

Het kindje van de buurvrouw heeft een waterplant uit de kom getrokken

Een van de vissen bleek zwanger! Een extra vis waardoor het water 1 stap stijgt

The neighbour comes to help taking care of the fishes, therefor the waterlevel increases with one step

Vissen springen waardoor het water niveau 1 stap naar beneden gaat, kies welke kom

Je bent de plantenvoeding vergeten waardoor er een plant dood is gegaan

Alle water niveaus blijven hetzelfde

12 blue cards to increase the waterlevel with stories which also stimulate transfer effect 2 and 3.

Did you already explore the rules?

Je krijgt een waterplant van de gemeente voor jouw kom

12 yellow cards with hints (increasing awareness that there are more options and stimulating creativity, transfer effect 2 and 3).

Weet je zeker dat je het wel alleen aankan?

Een vis heeft een plant opgegeten

The municipality does not clean the neighbourhood lake, therefore one fish dies

De vissen eten de nieuwe opkomende plantjes op, waardoor er een nieuwe plant ontstaat

15 red cards to decrease the waterlevel. Experiencing unfortunate, unexpected events as CSN parents often face. There are more red cards, because the waterlevel should decrease so players become aware that something has to change.

Figure 8.2: Final online design proposal of the Bekommerkom game with objects.

1 week in advance

The estimated preparation time is 60 minutes.
1. Prepare Miro board.
2. Send an email to the players with Zoomlink and information (email templates are provided).
3. Go through this board, the facilitators hand-out to understand your role and action as a facilitator and the aims behind the game.
4. Practice with the board in Miro and the story in the hand-out.

12 hours in advance

1. Send an email/WhatsApp to every player with their secret superpower and a reminder for the dice.

Playing the game

Players roll the dice and perform action (could be moving plants, opening an activity card etc. and thereby changing waterlevels). So now and then you spontaneously lower the waterlevel. Make sure no player will lose.

Introduction of the game

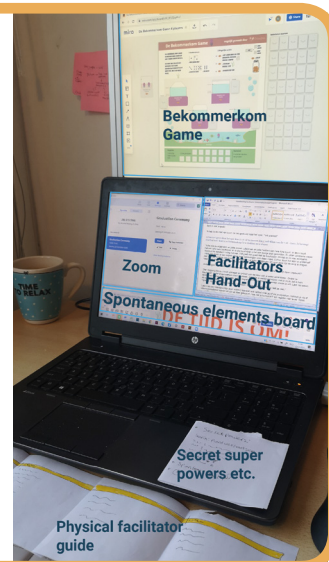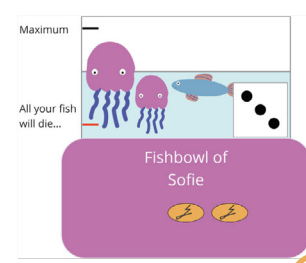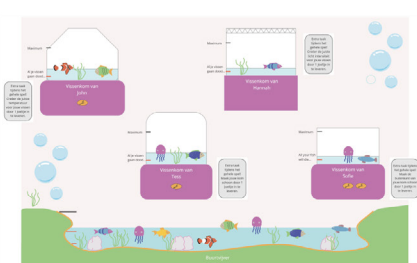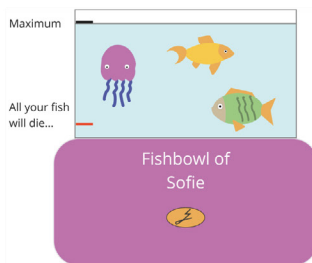1. Have the recommended set-up (see above) with everything accessible.
2. Follow the text in the hand-out.
3. Every player chooses fishes.

1. Players have task to take **care their fishes (child) by avoiding the water level (health) to drop by adding plants and stones from lake which requires Joeltjes (energy).**

2. Taking less care of the lake (parent), because all water levels drop much and care for **own fishbowl is prioritised.**

4a. Players **realize** that there **could be other options to raise the water,** due to receiving hints on activity cards *transfer effect 2*

Why don't you explore the rules?

5a. Players will start to **explore** the options of the game, which require to **develop creative problem-solving attitude.** *transfer effect 3*

7. Reflection moment: Game is linked to the **Real World and stories could be shared.** *transfer effect 1&2*

3. Realization after reaching first red line of lake that **it is not possible to take care of the fishbowl (child) if there is not cared for the lake (parent).** Not possible to take plants/stones out of it anymore, because the lake became too unhealthy. *transfer effect 1*
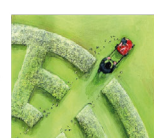
6a. Taking care means winning!

4b. 5b. 6b. **Not caring** for the lake **(parents)** will indirect result in not taking care of the fish **(child)** and thus **losing** the game. *transfer effect 1*

8. Players could **keep developing this creatively problem-solving attitude.** *transfer effect 3*

Shift in experience players

Frustrated, stressed, desperate (facing dead ends/not knowing where to go).

Relieved, empowered and confident after the breakthrough (the walls).
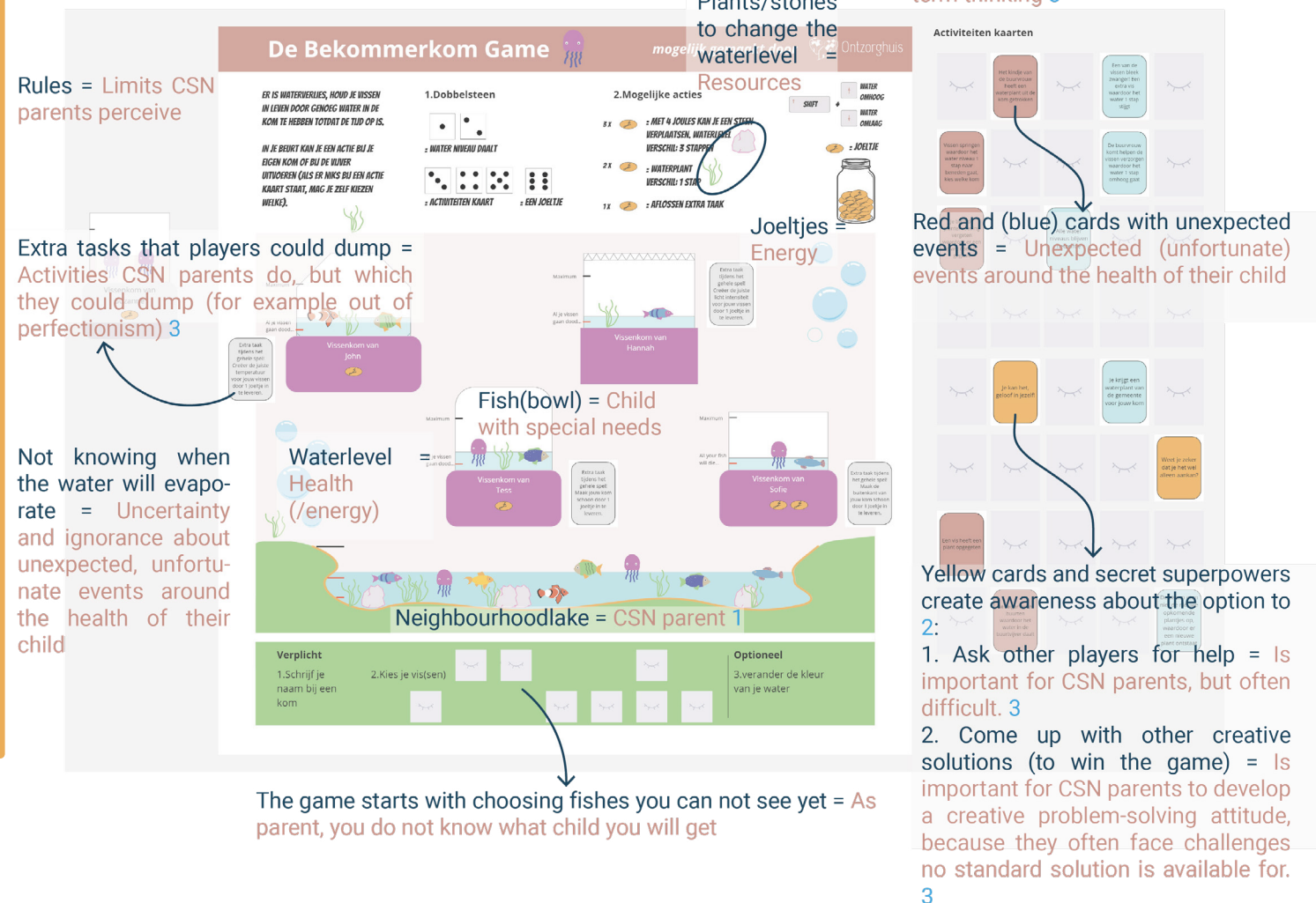
Attitude facilitator

Enthusiastic, active, empathic and comforting. At the start more: acting ignorant and barely responding when players are questioning things in the game.

After the lake reaches the first red line, attitude changes to giving hints where needed and thereby stimulating their switch to develop a creative problem-solving attitude.

Reflection moment

Make sure that there is an open conversation without your own interpretations and roughly explain the metaphor. The aim is that players start to see the link between their lives and the game and reflect on it (achieve transfer effects). For possible questions to guide the reflection see the Hand-Out.

Game elements and Metaphor

Plant = Short-term thinking
Stone = Long-term thinking 3

Plants/stones to change the waterlevel = Resources

Rules = Limits CSN parents perceive

Extra tasks that players could dump = Activities CSN parents do, but which they could dump (for example out of perfectionism) 3

Not knowing when the water will evaporate = Uncertainty and ignorance about unexpected, unfortunate events around the health of their child

Joeltjes = Energy

Fish(bowl) = Child with special needs

Waterlevel = Health (/energy)

Neighbourhoodlake = CSN parent 1

Red and (blue) cards with unexpected events = Unexpected (unfortunate) events around the health of their child

Yellow cards and secret superpowers create awareness about the option to 2:
1. Ask other players for help = Is important for CSN parents, but often difficult. 3
2. Come up with other creative solutions (to win the game) = Is important for CSN parents to develop a creative problem-solving attitude, because they often face challenges no standard solution is available for. 3

The game starts with choosing fishes you can not see yet = As parent, you do not know what child you will get

Gameplay and Metaphor

In the game, players get plants and stones out of the neighbourhoodlake with Joeltjes and add to their own fishbowl. This causes the waterlevel of the fishbowl to increase and that of the lake to decrease. Also water disappears (evaporating). Players only focus on their own bowl and do not see the decreasing water level of the lake. All waterlevels keep dropping and players feel searching, frustrated, desperate and stressed. Understanding the importance of the lake and to come up with creative solutions are needed to stop this process and win the game. Everyone wins the game and experiences relief and self-confidence = CSN parents often give a lot of energy and attention to their child at their own expense, which can cause their (mental) health to deteriorate. They especially have an eye for their child and 'forget' themselves. In addition, energy also slips away (due to additional emotions). They are searching for what to do and to get the right balance in their lives. Maintaining the current situation in this way is impossible and evokes frustration, despair and stress. It is important for them to take good care of themselves 1 in order to take good care of their child and therefore firstly be aware of the option to change the situation 2. To change the situation and face unique challenges, a creative problem-solving attitude is desired 3.

| Bekommerkom Game environment |
| Link with the world of CSN parents |
| Link transfer effects |

Figure 8.3: Adapted version (shorter) of the facilitator's guide and explanation of the metaphor.

ing together/asking help, ignore/dump the extra task and more. All of these solutions were found during the tests.

Link CSN parents

The metaphor and thus the simulation of the real-world is visualized and explained in figure 8.3 (at the right).

The unclear rules and the unfortunate surprises of events on the activity cards represent the uncertainty in the lives of CSN parents; they don't know what will happen next and what their journey will be. The facilitator acts as life; sometimes solutions are effective and sometimes not. This could be experienced as unfair, which is part of CSN parents lives as well. These mechanics also represent the challenges that many CSN parents face.

Another link is that CSN parents **feel the pressure of themselves and the society that they should be able to take care of their child**. In the game, this is seen by that other players do not take care of the neighbourhood lake (CSN parent) but only of their own fish (child) and if every player is doing so, you probably feel peer pressure (society) to take especially care of your own fish as well. Also, it seems the straightforward way to win the game as it seems straightforward to take care of your child as best as you can.

To improve the link between the Game World and the Real World of users, there must be a correct link between time. Therefore, in the game, **one round represents two months.** A game will take at least a year (6 rounds if four players), which is more relatable to CSN parents whose awareness about self-care often takes at least more than one year. Lastly, the facilitator shares at the start of the game that the events and rules in the game are based on the lives of CSN parents.

The municipality and social network of CSN parents are also involved in the story of the game (on activity cards). For example, the municipality didn't clean the lake, so a fish died, which represents the municipality not paying much attention to the well-being of CSN parents. Another example is getting a plant from the municipality for your own fishbowl, because the municipality is often mostly focussed on the children.

Story

The story is especially told at the start of the game and players get more immersed in it by blindly choosing their own fishes. However, the story is present during the whole game (in the activity cards and by the commentary of the facilitator). To immerse more in the story and receiving the hints on the cards, the players are asked to read the cards out loud. This will possibly also result in more interactivity and make them more confident to try out things.

Reflection moment

In the reflection moment after the game, there should be a balance in the amount of given explanation/declaring and not giving everything away, so players are free in how to interpret and probably will take home (conscious or unconsciously) what they need to learn. So, the reflection will consist of an open conversation in which is talked about the experience and the metaphor and some intentions are shortly explained. Possible questions are: 'How was it for you to play this game? Does it remind you of something?' To guide the reflection properly and explain the simulation, a facilitator is needed.

Facilitator

There is a facilitator needed to guide the players in the desired direction for best achieving the transfer effects during the gameplay and reflection moment. For example, by communicating what is possible and what is not during the game (hinting that there are more possibilities). In advance, the facilitator will receive a physical **gamekit (figure 8.4) which includes a facilitators' guide and a hand-out** (with a link to the online gamekit). Both facilitator's guide and hand-out can be found in Appendix W, a summary of it can be seen in figure 8.3, in which

the yellow line with text describes the role of the facilitator. The online gamekit with all the links can be found here: https://miro.com/app/board/o9J_lSqDqwo=/. The guide for the facilitator includes the different phases of the intervention, necessities, aims, tips etc. The hand-out is iterated after each test and contains the text the facilitator can say (full story) and optional questions to guide the reflection moment.

The actions which the facilitator should do in Miro during playing the game is to change the water level of the neighbourhood, so now and then lowering all the water levels spontaneously and opening cards players point at.

The **attitude of the facilitator** is important (bottom left of figure 8.3). As facilitator style, especially guidance of the process and maybe emotional support should be provided by the facilitator.

Also, the facilitator should be able to **estimate** (by feeling) **when to lower all the water levels and when to give hints** (and how obvious). How much the water level goes down is much based on chance (the activity cards and dice). However, because the facilitator can spontaneously lower the water levels as well, the game can be influenced to have the desired result: reaching the first red bar of the lake and enabling players to come with creative solutions in time without anyone losing the game. Also, by lowering all the water levels, time-pressure is created. This gives the players a feeling of urgency and therefore they will act more like they would in their real life. It is recommended to not lower the water in the first round, to avoid players to shut down due to time-pressure (then being creative is harder). By providing the time-pressure, the facilitator influences much the speed of the game based on what s/he thinks the players need in this balance.

Important during the game is to provide the right balance between giving support and stimulate the players, without giving away all the secrets of the game.

Link Ontzorghuis

'*Made possible by Ontzorghuis*' is put on the board. Besides the facilitator also mentions this at the beginning of the game.

Style, appearance and aesthetic expression

Ontzorghuis and seemingly all players were enthusiastic about the appearance of the Bekommerkom game. It seems that the right balance in aesthetic expression between looking playfulness/fun and that players feel taken seriously is reached. So applying the same style also to the physical Bekommerkom game would possibly do good. The colour pallet (figure 8.5) was chosen with the help of Adobe Color Wheel (2021) and includes aside from cheerful colours to create a fun experience, the colours of Ontzorghuis.

Technology

The game (a version for four and a version for five players) was created in the online tool Miro for which some elements were previously shaped in illustrator, due to limitations of Miro. Personalizing the bowl by adding fishes makes players get familiar with Miro. Having to adjust their own water level keeps them involved and pointing cards and the possibility to explore and easy double elements made it more interactive. Lastly, the tool appeared not complicated in its use and was easy to access. Having the Bekommerkom game online has some considerable advantages. It is easy to join for parents and due to having others and a facilitator involved, parents maybe feel more hesitated to cancel.

Examples of the positive impact of the game
- Being together in experiencing the game, was valuable for parents. '*It felt good to share the suffering.*'
- Realizations like: '*We also must learn that right? More often ask and dare to ask for help.*'

Figure 8.4: The physical gamekit and facilitator with physical gamekit.

Figure 8.5: Colour pallet for the Bekommerkom game

Adjustments for the physical Design

Materials and technology

Thick cardboard can be used for the playboard including the water. Next to the water are printed lines which show the size of the steps and the water level can be changed by putting a tab at the side up or down (see figure 8.6). Also, thick cardboard should be used for small boards with fishes on it, so blindly choosing the fishes is still possible. Thin cardboard is advised for the activity and extra task cards (printing). To have another material as well with two appealing sides, the Joeltjes, plants and stones could be made of plastic (3D printing).

Instead of a facilitator suddenly putting down the water level, an alarm is set with an unknown duration. Instead the players only hear a ticking sound in the background. This is inspired by the Dutch game 'dobbelen' and adds the feeling of being in a hurry and uncertainty.

Everyone gets in advance in short a card with their secret super powers on it.

Different creative solutions

Some creative solutions are not possible anymore after transforming the online into a physical version, however new solutions will be possible as well. The facilitator could, for example, hide plants under the playboard or the table. A creative solution could be taking a fish from the box of the game to increase the water level. Or players could hold the playboard in such a way that the water levels will drop as a result of gravity.
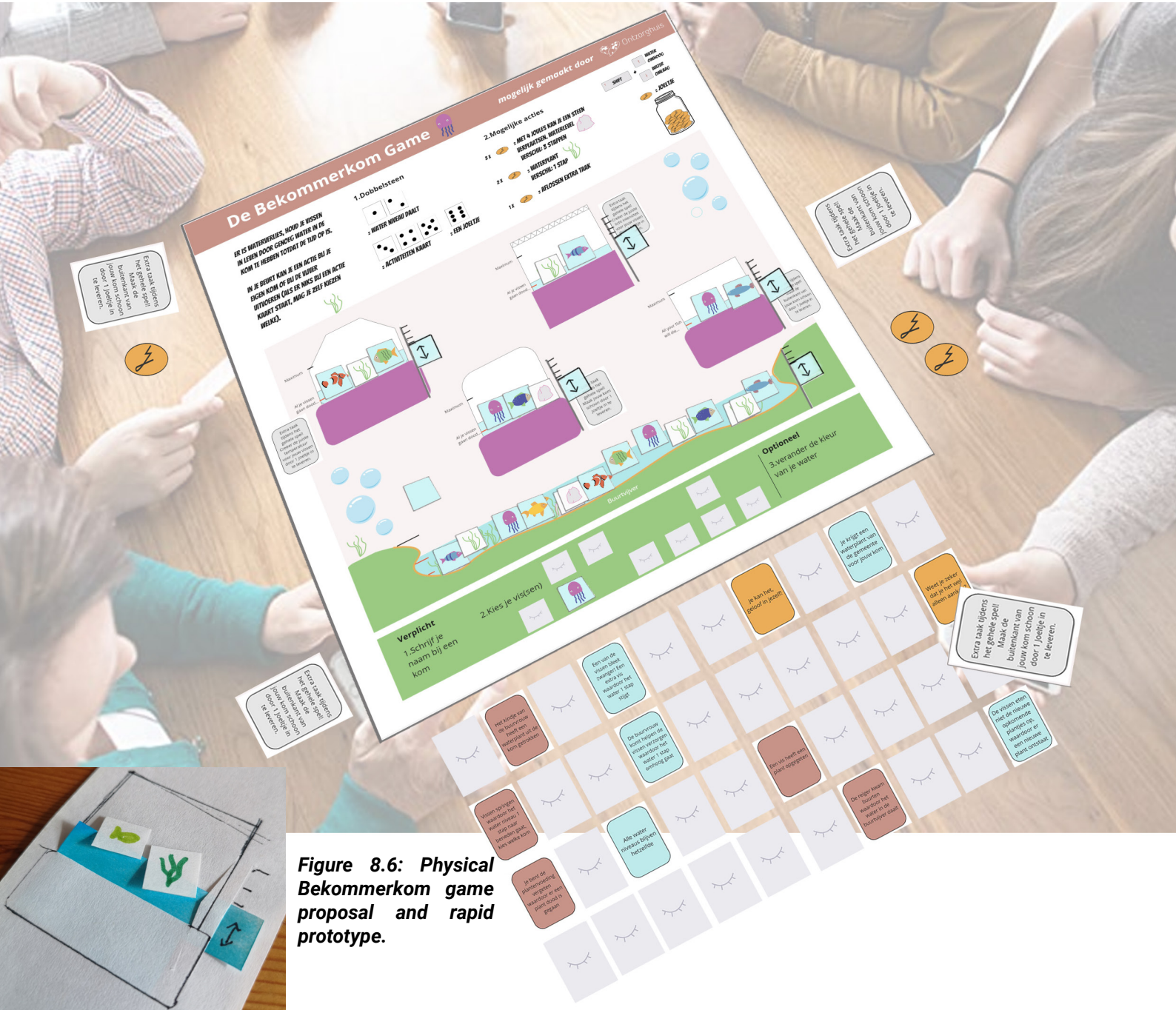

Figure 8.6: Physical Bekommerkom game proposal and rapid prototype.

Recommendations

Recommendations for playing the game

- During most tests, there was more explanation and analyses during the reflection moments than is recommended. This approach was consciously chosen to evaluate to improve the game. However, if the game is implemented there should be **more focus on how players experienced the game and having conversations in which advice is shared**.
- To assure achieving the third transfer effect, it is **recommended to have a higher minimum of players (than three)** or have more straightforward hints when played with the minimum amount of players. With more players, more creative solutions will possibly follow.
- For the game, **it is best if the players already know each other** or at least already met (to feel comfortable to explore). This was also shared by players. So for example, the game could take place on the Sunday of the retraite weekend.
- If there are technical problems (which seem to occur once per game until now (CSN parents are not that familiar with Miro and Zoom)), there is less time to play the game. Therefore **I recommend reserving 1.5 hours** for the whole Zoom meeting. Also, because with four players it takes longer to have low water levels and turned activity cards with hints than expected.

Focus for future testing

- **More testing, especially with CSN parents** after which the **long term effect** of the transfer effects on the Real World of CSN parents is evaluated (could also be with SDT). Moreover, more testing is important, because it was only tested with seven CSN parents in total and could differ a lot (phase, circumstances, culture, age, etc.).
- **How to stimulate the parents to talk about their personal experiences and further possible solutions** for each other during the reflection moment could be further explored.
- A future step could be to **involve health care professionals or other stakeholders like the municipality** and let them join the game. How suitable and valuable it is to have them participating in the game should be tested as well as how to increase the value. Expected is that with their participation, they **gain more understanding of the situation of the CSN parents (they will possibly experience comparable emotions) and could together brainstorm on future solutions**. However, it is recommended that there are also CSN parents as players to make the link with the real-world even more clear and attach personal stories to it where possible.
- It is recommended to have a **shorter introduction of the game**. Therefore, in the final proposal of the game, the part of introducing fishes to each other is removed.

Recommendations for further development

- For the final test, a flyer was created (Appendix V) which could be used (and a bit adapted) as an invitation for future plays.
- To enable CSN parents to take even more of a creative problem-solving attitude, it could be investigated **how to enlarge the magic circle** (having an offline version will already help) and have more straightforward hints (on the activity cards). What also had proven (in the last game) to help is that **one player knew the aims of the game and acted as a role-model** in showing possible solutions and asking certain questions which stimulated other players to explore as well. In future gameplays where the facilitator is inexperienced in facilitating this game or if a it is desired that many creative solutions are found (transfer effect 3), it is recommended to have one player who is a buddy and functionates as a role-model.
- For further development, there could be looked into how to let players experience more breakthroughs within the game. After the final test the **sentence 'There are many possibilities and you can use your creativity. The facilitator will tell you whether something is allowed or not.'** is added to the hand-out to increase the number of break-throughs. It could be tested what the effect is of having this hint on the playboard as well.
- For the **physical version, it is recommended to make prototypes** from cardboard and do tests.

Other recommendations
- To protect the intervention from being copied, it is recommended to **register it somewhere** and add the Ontzorghuis logo on promotional material.
- To be appealing, It is expected that the game should be **presented for CSN parents as an unburden activity in which they can learn about themselves**. And **for non-CSN parents as a fun and beautiful way to get introduced to the world of CSN parents and indirectly also learn about themselves** (they possibly will recognize the experience/emotions in some way). Because the game is a metaphor, it can represent different things/persons for each individual and therefore every player could learn from it in some way. For example, during my graduation my own fishbowl could represent my graduation project and the lake for myself: while working on the game sometimes I realized that I focussed much more on my project than myself.

For more recommendations and ideas see Appendix X.

9. Conclusion and personal reflection

Main takeaways

The **desired experience** (to simulate the situation of many CSN parents) **and all three transfer effects seems to be achieved**. However, the **third transfer effect** (developing a creative problem-solving attitude) **less strongly occurred and recommendations are given** to improve this. Furthermore, the game was considered **engaging and immersive**. Also, other recommendations were provided.

For the final design an **online serious game, the Bekommerkom game**, is proposed. Besides, a **physical version is suggested, but this needs more prototyping and testing**. The Bekommerkom game **requires a facilitator** who can guide the game and reflection moment. **A gamekit consisting of a facilitator's guide and hand-out** was created to prepare the facilitator. Lastly, it is **recommended to play the game with at least four players and have a total duration of 1.5 hours**.

9.1 Conclusion

This paragraph provides the conclusion of this project and the opinion of Ontzorghuis about the Bekommerkom game and its future.

As this project shows, many CSN parents struggle with poor self-care or at least finding a balance between taking care of themselves and of their child.

Therefore, the **assignment was: to design a serious game for parents with children with special needs** and which firstly creates awareness of the importance for the parents to take care of themselves and secondly give suggestions on how to take better care of themselves (based on psychology) to be able to take better care of their child. The serious game should be playable during retraite weekends within the constraints of the COVID-19 measurements.

However, **due to COVID-19, there was no opportunity to create a physical serious game** that can be played during the retraite weekends, thus an online version was created that could easily be converted to a physical design. These multiple focus points resulted in more complexity while designing the game, however, with the new circumstances in mind, it created more value for the company. A workshop for one retraite weekend was prepared, but unfortunately, the weekend was cancelled due to COVID-19.

For the analysis phase, to understand the issue of self-care for CSN parents, five CSN parents and an orthopedagogue were interviewed along with literature research. Also, serious gaming was researched by literature and field research. With the insights of the analysis phase the previous design goal of the assignment was translated in the following transfer effects: 1) Create awareness about the importance of avoiding an unbalance in energy to increase self-care, 2) Create awareness about having the option to increase self-care, and 3) Alter to or reinforce the attitudinal change towards a creative problem-solving attitude for providing self-care.

The first Lo-fi prototypes were still in real life played and consisted of a bowl with small cookies. During the project, the game environment changed from real-life to the online platform Miro. Three concepts were developed and tested and in collaboration with Ontzorghuis one was selected. The Bekommerkom game was created after four iteration cycles with different prototypes and four tests. The last two tests were with CSN parents. Based on the reactions of the players and observations I can conclude that **the Bekommerkom game is evaluated as successful in achieving the transfer effects and other design objectives**. To achieve this, both a well-prepared facilitator and a video call service (e.g. Zoom) are required.

Also, **Ontzorghuis is enthusiastic** about the Bekommerkom game. As Marise Schot shared: *'The concept behind the game is good and working.'* Moreover, the biggest validation is what Marise Schot said about the **future** of the Bekommerkom game: *'We can further develop this game this year and would be great to educate facilitators for this game and develop the game in a physical version for future retraite weekends.'* Aside from some small points of improvement, there are already plans to play the the game again with the board of Ontzorghuis with Marise Schot as the facilitator using the gamekit for the first time. Playing the game **made the players think and reflect on their life**. Many shared to **do things differently concerning self-care and thought about possible solutions** to improve their situation (like asking for help). For me, this is the **most beautiful result I could wish for.**

'Beautiful to notice that - now that I have been able to think about it longer - I see the link with my own 'informal care life' better and I am curious how this game can be used as a tool to reflect on it and discover patterns (and maybe come up with new options and strategies).' - One of the CSN parents a week after playing the Bekommerkom game.

9.2 Personal Reflection

First of all, I learned more than I imagined beforehand and I am satisfied with the final result. Especially because it was a fun and interesting journey. With this project, I did prove that I am capable of conducting a design process with the focus on users and in collaboration with a company. As said, my dream is to add meaning to people's lives by increasing their (mental) well-being and this project gave me the opportunity to do this, which made it so beautiful. In the rest of this paragraph, I further reflect on my personal learning ambitions (in bold) of this graduation project.

Learn to dive into the lives of the target group and at the same time having an overview
In the beginning, my trap in the project was that due to my big interest (target group, serious games and psychology) I wanted to dive into too much and too deep which led to chaos and much information. This led to more work and thus time loss. As a result of doing everything extendedly, I did everything half, because of the feeling to move on. In future projects, I will ask by everything 'Do I need this? What for? Is it important to do this now?' and will finish something before starting something new.

Learn more about integrating psychology with design
I learned much about integrating these fields, however in the end I did not use as much psychological theory as I learned about during the analysis phase. I wanted to use universal needs more in my design. However, I discovered during the contextmapping that the framework was too complex to directly ask people. This may have resulted in participants meaning the same, but refering to a different abstract term. I learned that the best way of integrating these fields is to ask questions, analyse and then relate to the psychological framework instead of letting participants face difficult psychological frameworks. Moreover, it is important to use psychology to support, inspire and evaluate your design process, instead of using it as a starting point.

Learning about serious games
I learned much about the theory behind serious games as well as in practice. I also learned that already early in the process playing and facilitating games, provides many insights in an easy and fun way that contributes to the design process. It was beautiful to see how a serious game could open the conversation for such a personal and complex issue as self-care.

Become more of a leader
When I started this project I did not facilitate much, however in this project I facilitated two online brainstorm sessions and six online serious games aside from leading the coach meetings. I still do not feel like a natural leader, but definitely more.

Improve contextmapping skills
It was the first time that I made a sensitising booklet and I learned much about what is important while creating one and its effect. Besides, I improved my interviewing skill in many ways by not following the whole structure, but asking the questions throughout the story of participants. Using empathy and improvising rather than following structure, I improved my skills in handling emotional topics with emotional people.

Dynamic working
I used more resources than my laptop, namely a logbook and post-its. However, in future working (and if there are no COVID-19 circumstances), I would also like to experiment with working at different places, because this could increase my creativity.

Main takeaways

I **learned much** about CSN parents, serious gaming, psychology, contextmapping, and facilitating. It was a **beautiful project and I am satisfied with the result**.

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