UNIVERSITY OF TWENTE.

Faculty of Electrical Engineering, Mathematics & Computer Science

Play to Design

Nefeli Kousi
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Supervisors:
dr. ir. E.C. E.Dertien

University of Twente
Faculty of Electrical Engineering,
Mathematics and Computer Science
Carré (building no. 15),
room C3431
Hallenweg 23
7522NH Enschede
The Netherlands

Preface

I started working on this thesis out of fascination for social robotics and especially for the potential impact an embodied social agent could have in a medical setting. The opportunity to work with children and especially with day case operations has been not only an interesting research area but also meaningful to me. This thesis has also become a very fitting mix of art and technology. A combination of storytelling, theatre, machines, games and medicine. Attempting to combine them was a difficult and beautiful process. I have been very lucky and privileged to work with Dr. Edwin Dertien who has spearheaded research within the realms of theatre and robotics, the 4TU project and all of the collaborators who have been vital for this research, the amazing Impronational improvisation theatre team of UTwente who graciously offered to work with me, and of course the scouting group St. Jeroen Bambi which helped us conduct our final evaluation with children. Today, looking back at the process of this thesis and at the day case operations I underwent myself while writing it, I feel even more connected to its goal. Hospitalisation and especially surgery, I can report, can be a scary, lonely and helpless experience - especially at the times right before and after a surgery. I distinctly remember waking up after my operation confused, alone and feeling pain that I could not place the source nor the reason for. Putting myself in the shoes of a child who might be too shy to ask questions or too young to understand their reply I see the need for a reassuring and supporting presence unrelated to the medical side of things. It is my great hope that this research will help explore and define new and effective ways to give children a good friend, confidant and helper who can support them during this time. And that it will effectively reduce children's suffering from pain or fear of pain.

Summary

In this thesis, the subject of applying social robots to pediatric pain management is examined. This work aims to explore the potential use of social robots as supportive agents for patients and provide a data collection point for social and behavioural information aimed at more accurately measuring pain in pediatric patients. While, at the same time, exploring ways to introduce the child patients to the robots and allow them to express their personal needs when it comes to the design and personality of the robot.

Through rigorous literature (See chapters 2 and 3) investigation and analysis, including an examination of state-of-the-art pain management techniques, existing robots and co-creative methods, this research embarked on a comprehensive exploration of the subject. The findings were informed by the selected design lens of Familiarity, Trust, Ownership, and Agency. Through the literature review, storytelling and role-playing games emerged as the most suitable methods for co-creation with children when it comes to this robot's personality.

Based on these findings, three experiments were run using different methods (See chapter 4). First, in collaboration with the Eindhoven University, children's and adult guardian's needs were explored in a co-creative session using low-fidelity prototypes. Then, improvisation theatre was used as a generative process to explore different character archetypes for the robot. Finally, the co-creative kit designed for this work using storytelling, role-playing games and low-fidelity prototypes was created and tested with child participants.

Material kits were created to support these sessions (See chapter 5). For the first session, pre-shaped robot parts were designed and produced. Materials for the new method, utilising storytelling while offering limited options for customising, were created for the last session. These choices were then mapped to the robot's behaviour, allowing for a faster and easier customisation process, better suited to the hospital's schedule.

A kit was put together based on the above research and exploration. The first part was a "choose your story" comic-book to access the main story and make choices while using as little written language as possible. A set of mini-games was created allowing participants breaks, in which they can have a small victory. Finally, a set

of pre-printed robot parts that would allow the children to put together the robot's appearance were built.

This work aimed to explore the potential and potential limits of applying a robot in paediatric pain management. The results of early tests, as well as the experiments that were performed (See chapters 6 and 8), show that mobile and expressive social agents are more suited to collecting data about the interactions with users. In that regard, honest and open interactions with the robot are needed. This research sheds some light on how establishing a good introduction and appropriate relationship between the child and the robot is crucial for allowing the child to express themselves freely. Establishing the robot as a supportive, non-judgmental and voiceless (incapable of speech) agent, similar to an animal, can help in this regard.

At the same time, reducing fear, stress, and helplessness have also been important goals for the design of this robot. Including the child in the design process of their unique individual robot and allowing them to help the robot in the story was aimed at feelings of ownership (in the sense of "my friend" not in the sense of "mine") and empowering the child. Testing the kit with healthy children has given promising results as far as ownership and agency are concerned, with participants identifying the robot from the story to be distinct from others and unique to them.

In summary, this thesis explores the use of social robots in pediatric pain management. It emphasises the importance of trust, familiarity, ownership and agency in co-creating assistive robots with children. Subsequent chapters detail our novel approach using storytelling and role-playing games to engage children in designing their medical robot companions and the insights gained from first sessions using it. This work sheds light on the potential and limitations of integrating social robots into pediatric healthcare, aiming to improve the well-being of young patients during their experiences with surgery.

Contents

List of acronyms

AAT   Animal Assisted Therapy

ICT   Information and Communication Technologies

FLACC   Face, Legs, Activity, Cry, Consolability

CHEOPS Children's Hospital of Eastern Ontario Pain Scale

PPPM   Parents' Post-operative Pain Measure and Comfort

ED   Emergence Delirium

ECT   Electroconvulsive Therapy

ADLs   Activities of Daily Living

SDK   Software Development Kit

NLP   Natural Language Processing

Chapter 1

Introduction

In recent times, several ways to distract, relieve and prepare children for medical procedures have been explored, including media, VR, animals, toys etc. (Kim, Chiesa, Raazi, & Wright, 2019). In this work, the design space for a social robot companion which will help assess a child's perceived pain, in addition to external physiological measurements, is explored. Pain assessment is difficult because pain is complex and mostly self-reported. Assessing pain levels for children is posing extra challenges related to verbal communication, cognitive understanding of their situation, limited experience with pain, shyness, trust and status.

There are additional known contributors to perceived pain such as anxiety and fear. To ensure proper collection of behavioural data, as well as patient reports, this thesis attempts to explore ways to position a robot as a trusted peer to whom the child can confide in and who can provide an interactive distraction for them.

1.1   Aim of the Project and Project scope

The aim of this project is to explore the design space of a social robot, as a way to both more accurately measure and relief patient pain and anxiety during paediatric post-operative care. This research project will attempt to explore aspects related to such a design: the nature of pain, pain management in a medical setting, the technologies and methodologies relates to pain management and the possible role of social robots in this context. It will also attempt to research participatory design and storytelling design as the main ways to design this social robot. Since the child and robot will spend very limited time together, a discussion about possible child-robot introduction and interaction methods will follow, such as: storytelling, improvisation and play.

The playful narrative creation will be explored as a way to ensure that the child is feeling comfortable and will honestly express their feelings to the robot. Addition-

ally, methods for involving the child in the design of the robot, such as participatory design, will also be analysed.

The scope of this study includes children from 5 to 10 years of age. This study focuses on day case operations, meaning the patient arrives in the hospital in the morning and, having completed the operation, leaves in the afternoon or evening. At the same time, the scope of this study is narrowed down further to children in the cultural and geographical area of the Netherlands. As this is an exploratory study with limited participants, the scope is defined to include children without any mental or physical disabilities that would prevent them from communicating properly. Finally, taking into consideration the time limitations for the completion of this work, only physically healthy children outside of a hopital setting will be included.

Within the context of the framework of this study (see 1.4) a collaboration with the Radboud University Medical Center was formed. Therefore, this work will be based on the preoperative preparation and postoperative care process that is used in the Radboud University Medical Center.

1.2   Objectives and Research Questions

The goal of this thesis is to explore the design space for a social robot used in pediatric pain management. Through exploratory design and participatory techniques this thesis will attempt to answer the questions:

- How could a robot be designed, to help measure pain in child patients using social cues alongside physiological measurements?

- Which elements of the robot design can help child patients feel calm, reduce their fear of the unknown and avoid negative results such as Emergence Delirium (ED)?

- How could the introduction between the child patient and the robot be handled in order to ensure effective collaboration between the two?

- Which aspects of the robot (embodiment, personality, modalities) are practically possible and useful, to be designed or customised by the child patient?

1.3   Report organization

The remainder of this report is organized as follows. In Chapter **??**, the physiological and social aspects of pain and pain management will be explored. The chapter will focus mainly on the context of pediatric surgery and hospitalisation. Then, in

Chapter 3, initial research, tests and related work will be presented. In Chapter 4, the methods used in the three experiments run for this work will be detailed. In Chapter 5, the design for the materials as well as the kit created in this work will be presented. The chapter will also explain the connection between the materials created and the robot design that can be produced using them. In Chapter 6.1 the results of the three sessions run will be detailed. Finally, in Chapter 8, conclusions and recommendations are given.

1.4 Framework

This research has been conducted within the 4TU.NIRICT Institute under the "Robots for pain management in children" project. 4TU.NIRICT is the Netherlands Institute for Research on Information and Communication Technologies (ICT) and comprises all ICT research of the universities of technology in the Netherlands. The project is defined as (*Robots for pain management in children*, n.d.):

"This project will develop technological solutions that include wearables for measuring physiological signals related to sensation and fear of pain and child-robot interactive behaviors for pain detection and accurate diagnosis. AI algorithms will be used for both pain detection and selecting adequate robot behaviors.

Reducing children's suffering from pain or fear of pain with non-pharmacological interventions can have many benefits. Pain distraction, self-exploration of pain in movement therapies, and explanation of predicted severity of pain are established as promising methods for managing pain associated with children's medical procedures. The project builds on two ongoing collaborations between TU/e-VU on pain and stress detection through physiological measurements and collaboration between TU Eindhoven, Twente University, and Radboud Medical Center on developing child-robot interactions for pain management. The over 10 years TU/e-VU collaboration resulted in developing the "Smart sock", i.e., a sock with embedded sensors that connects to a mobile application to visualize the pain and stress-related signals, which facilitated two Ph. D. projects.

The 4TU funding will help develop robust and personalized prototypes, integrated system solutions, and novel child-robot interactions enhanced by combining physiological signals and human expertise in pain detection and management. The project will serve as a steppingstone for further collaboration and future projects between the mentioned universities."

Physiological and social aspects of pain and pain management

2.1 Pain

Pain can be present in any medical intervention. Poorly managed pain can affect many aspects of a treatment, from patient adherence to the probability of seeking future treatment (L. Cohen, Cousins, & Martin, 2013) (L. Cohen MacLaren, 2008) and in the case of children, it can lead to negative consequences later in life (Drendel, Kelly, & Ali, 2011) (Babl et al., 2012). At the same time, pain is a quite complex state. In contrast to other data, like heart rate and oxygen saturation, that can be physically measured, pain has physiological, social and physiological components. The very definition of pain has been a subject of debate. One of the latest definitions of pain states (Raja et al., 2020):

"An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage," and is expanded upon by the addition of the following six key notes and the etymology of the word pain for further valuable context.

- Pain is always a personal experience that is influenced to varying degrees by biological, psychological, and social factors.

- Pain and nociception are different phenomena. Pain cannot be inferred solely from activity in sensory neurons.

- Through their life experiences, individuals learn the concept of pain.

- A person's report of an experience as pain should be respected.

- Although pain usually serves an adaptive role, it may have adverse effects on function and social and psychological well-being.

- Verbal description is only one of several behaviors to express pain; inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.

2.2   Current pain measuring techniques in paediatric care

In order to successfully mitigate pain without over prescribing analgesics, an accurate measurement of pain intensity is necessary. Measuring pain in a hospital setting is mainly done by self-reporting and/or observational reporting.

In the case of children's post-operative pain measurement, different methods and scales have been created. Self-reporting scales, such as: Visual Analogue Scale, Coloured Analogue Scale, Faces Pain Scale-Revised and Numerical Rating Scale-11 (Sánchez-Rodríguez, Miró, & Castarlenas, 2012) exist. Additionally, there are observational pain measuring scales such as: Face, Legs, Activity, Cry, Consolability (FLACC), Children's Hospital of Eastern Ontario Pain Scale (CHEOPS), Parents' Post-operative Pain Measure and Comfort (PPPM) (Von Baeyer & Spagrud, 2007).

Observational scales attempt to provide medical professionals, parents and carers with a numerical value representing the child's pain. At the same time, they provide a protocol for assessing pain when patients can't self-report, or a way to confirm the outcomes of self-reporting scales. The validity of both observational and self-reporting scales has been the subject of various research projects and reviews. The FPS-R, FLACC and PPP methods have been recommended by numerous reviews (Chan et al., 2021) (Tomlinson, Von Baeyer, Stinson, & Sung, 2010). It is worth noting that the results of such studies have not gone without challenge for their quality of results (Andersen, Langius-Eklöf, Nakstad, Bernklev, & Jylli, 2017), their cognitive validity (Tsze, von Baeyer, Bulloch, & Dayan, 2013) the capacity of the scales to differentiate between pain and their non pain-related distress (Crellin, Harrison, Santamaria, Huque, & Babl, 2018).

In recent years, more effort has been put into understanding the experience of pain from the child's perspective using drawing (Ebrahimpour, Pashaeypoor, Salisu, Cheraghi, & Sadat Hosseini, 2019) (Thomas & Jolley, 1998) and storytelling (Pope, Tallon, Leslie, & Wilson, 2018b) (Pope, Tallon, Leslie, & Wilson, 2018a), as well as the digitisation of existing scales (Sun et al., 2015).

2.3   Preoperative anxiety in correlation with the experience of pain

In (Perrott, Lee, Griffiths, & Sury, 2018) the experiences of children before, during and after surgery have been reported to be similar to those of adults. Reported feelings include thirst and hunger, drowsiness, a sore throat, and the pain of the surgery. The children were also reported to be commonly anxious/afraid of anesthetic, procedure, or needles/cannula. The mental state of a patient undergoing a painful operation can influence their perception of procedural pain (Chieng, 2014), as well as their memory of the procedure (Rocha, 2009). The correlation between anxiety and pain has been well documented (Fincher, Shaw, & Ramelet, 2012), (Wright, Stewart, Finley, & Buffett-Jerrott, 2007). Tools have been created for assessing paediatric patient anxiety, often with the aim of alleviating pain e.g. (Clatworthy, 1999), (Fortier & Kain, 2015). A lot of the work has focused on preparing the patient and their parents by informing them of what is going to happen (Brewer, 2006), thus reducing their fear of the unknown (Huntington et al., 2018).

2.4   Emergence delirium/agitation and postoperative maladaptive behaviors in correlation with preoperative anxiety

Another possible impact of preoperative anxiety is its possible impact on postoperative emergence delirium and postoperative maladaptive behaviors. Emergence agitation or ED is an acute state of confusion during recovery from anesthesia, it includes disorientation, hallucination, restlessness, and purposeless hyperactive physical behavior that can be violent and/or harmful for the patient and the medical staff involved (Munk, Andersen, & Møller, 2016). According to pediatrician Jose Ignacio Malagon, ED can also affect the parents of child patients, as seeing their child in such a state without being able to intervene can be very distressful. The condition has been observed on adults (Munk et al., 2016) as well as children (Dahmani, Delivet, & Hilly, 2014), (Nasr & Hannallah, 2011) and can have clinically significant consequences (Lee & Sung, 2020). Emergence delirium has been associated with a number of negative results, including prolonged hospitalisation and even higher chances of morbidity (Lee & Sung, 2020). The pathological origins of emergence delirium are still unknown (Lee, Choi, In, & Sung, 2019). Additionally, ED has been observed in patients regardless of pain intensity (Kuratani & Oi, 2008). Therefore,

preventing ED is mainly done by limiting the environmental and psychological contributing factors. Medications are given to reduce ED such as dexmedetomidine, ketamine, propofol, clonidine, midazolam, fentanyl, and sufentanil (Dahmani et al., 2010), all of which have different levels of effectiveness and side effects. In children, several environmental factors have been proposed to cause ED (Kuratani & Oi, 2008), including high levels of anxiety regarding unknown environments such as the hospital, events such as the surgery/anesthesia and people such as medical staff. In (Lee & Sung, 2020), several risk factors for ED in child patients are proposed: Preschool age (2–5 years):

- Pain

- Patient familiarity with the hospital: no previous surgery, hospitalization or high number of previous interventions

- Behavioural factors: poor adaptability, attention-deficit hyperactivity disorder, patient pre-existing behavior, psychological immaturity

- Anxiety: preoperative anxiety, parental anxiety

- Environmental factors: patient and parent interaction with healthcare providers, excessively rapid awakening (in a hostile environment)

- Medications: lack of premedication (with midazolam), paradoxical reaction to midazolam stated in child's medical history, type of surgery, use of inhalational anesthetics with low blood–gas partition coefficients (e.g. sevoflurane and desflurane)

2.5   Timeline of patient in Hospital pre- and post- operation

This study will focus on paediatric post-operative care, more specifically, day case operations as they are conducted in the Radboud University Medical Center. In order to understand the experience of a typical patient, an interview with Prof. Jose Ignacio Malagon Calle MD, PhD, pediatric anesthetist in the Radboud University Medical Center, was conducted. Additionally, a visit to the clinic provided extra information via observation.

In the context of this study, understanding the steps taken for a paediatric patient to be accepted, admitted, have their surgery and return home is important in order to find the points where a robot can be used and be useful both to the patient and their carers.

The patients for day case operations are usually able to return home the same day. A typical patient's timeline in the hospital could be:

- **3-4 weeks before the operation:** The patient is examined by a doctor and referred to a surgeon.

- **2 weeks before the operation:** The patient is examined by a surgeon and is referred for surgery.

- **2-5 hours before the surgery (morning):** The patient arrives at the hospital with their parents and gets admitted to the day case surgery unit, where they are prepared for surgery. The patient is placed on a bed where they will remain for the rest of the day.

- **1h hour before the surgery (noon):** The patient arrives to the OR on their bed, with their parents, nurses and staff. In the OR they get under anaesthesia at which point the parents and supporting staff leave the room and the surgical team begins the operation.

- **right after the surgery:** The patient, still under anaesthesia and on their original bed, is transported to a recovery room for 30'-1h until they fully wake up.

- **1h after the surgery (afternoon before 16:00)** The patient is transported to the day case surgery unit (which closes at 16:00), or if the patient is in need of longer observation, the hospital ward, where they can stay overnight or for up to 1-5 days.

- **2-4h after the surgery:** The patient is released form the hospital, given that observation is no longer needed.

From the timeline above, it is obvious that the patient has only a few hours to adjust to a new and stressful environment before their surgery commences. The patients are constantly accompanied by their parents and are in the presence of nurses and other support staff.

As seen in the figure 2.1 there are 2 types of beds available for the paediatric patients. The bed on the right of 2.1 is the model used by the majority of patients. The sides of the bed are foldable in order to secure the patient while they are being transported from the Day Case Surgery unit to the OR and from

Figure 2.1: Beds used in paediatric surgery.

there to the Recovery room and back to the Day Case Surgery unit. The beds can adjust the height and angle of the mattress by pressing a button. In Figure 2.2 the OR can be seen. It is a spacious room, equipped with medical machines. The paediatric patients arrive here in their beds, with their parents and carers, and are put under anaesthesia.

After the operation is conducted, the patient is transported to the recovery room seen in figure 2.3. The recovery room does not have assigned beds, only monitoring equipment and nurse's desks. The beds arrive and leave with the patients. The patient will most probably have no memory of this room, as they are transported to the day case surgery rooms, right after they wake up from anaesthesia. The day case surgery rooms seen in figure 2.3 are rather similar to the recovery rooms only

Figure 2.2: OR rooms.

slightly smaller and operating until 16:00 to accommodate the needs of the Day case surgery patients. In case a patient needs longer monitoring they are transported to the ward which is also rather similar in structure. The day case surgery rooms are served by only one shift of nurses, meaning that the patients who arrive there in the morning, will be guaranteed to meet the same nurses once they return after their surgery.
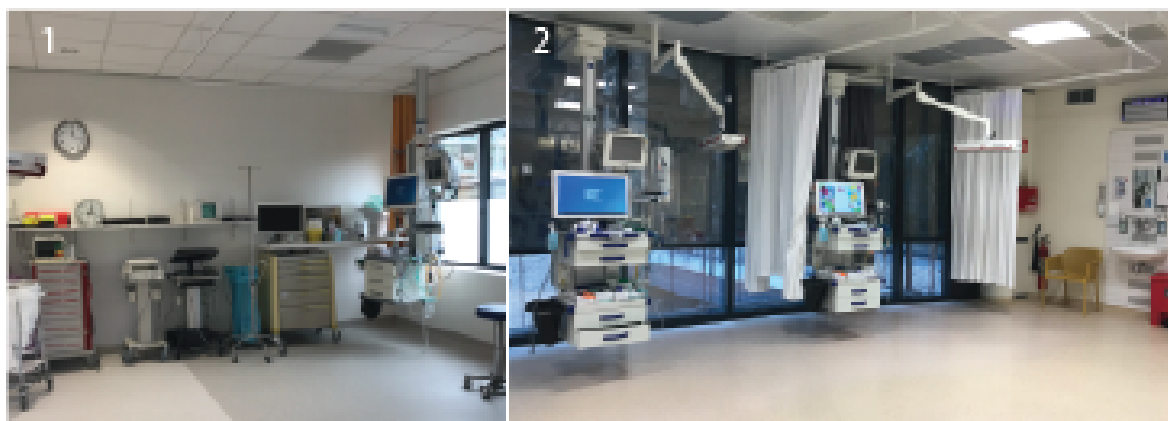
Figure 2.3: 1: The recovery room. **2:** The day case surgery room

<div align="right"># Chapter 3</div>

Analysis

3.1 Technologies used for pain management in paediatric care

It is possible to categorise children's pain management into pharmacological and non-pharmacological methods. In the context of this study, non-pharmacological methods as detailed in (Sinha, Christopher, Fenn, & Reeves, 2006) are explored.

In recent years, efforts are actively being put towards applying different technologies in paediatric pain management, especially multimodal techniques (Miller, Bucolo, Patterson, & Kimble, 2008), such as distraction, guided imagery, hypnosis, relaxation techniques, biofeedback, transcutaneous electrical nerve stimulation, and acupuncture (Rusy & Weisman, 2000) (Vincent, 2007). This study will focus on distraction techniques (Babaie, Shirinabadi Farahani, Nourian, Pourhoseingholi, & Masoumpoor, 2015). The literature strongly supports the efficacy of distraction techniques, which vary based on the child's age, temperament, and interests. Some studies go as far as to refer to distraction as "one of the key interventions" for pain management (Schechter et al., 2007).

Research includes passive techniques like TV, music and media (Bellieni et al., 2006) (L. L. Cohen, Blount, & Panopoulos, 1997) (Cassidy et al., 2002) (Gandhar, Deshpande, & Borude, 2016) (Landolt, Marti, Widmer, & Meuli, 2002), (Caprilli, Anastasi, Grotto, Abeti, & Messeri, 2007) (Whitehead-Pleaux, Baryza, & Sheridan, 2006) in which children are allowed to be distracted only by auditory or visual stimuli. These techniques rely a lot on the personal preference of the child and have been applied mostly on short procedures such as vaccinations or venipuncture. These techniques have not been shown to contribute greatly to the patients fear, nor have they been tested on longer treatments. Puppets have also been researched (Dehghan et al., 2017) (Suzan, Şahin, & Baran, 2020). Notably in (Dehghan et al., 2017), the puppet was used very similarly to a social agent. The puppet in question,

Red Hat, was a popular character in the country where the study was conducted, adding the element of familiarity. Puppets seem to have a calming effect on children, especially when interacting directly with them. Finally, the separation of the puppet character from the adult attached to it, might be difficult, since they are physically attached. These findings are nevertheless encouraging for the potential of a robot social agent in the same context.

Tactile interaction including electronic (Bucolo, Mott, & Kimble, 2006) and analog apparatus (Zengin & Yayan, 2021) have been shown to be effective at distracting patients. These findings are very encouraging for the application of three dimensional agents in this context and simultaneously hint at potential designs which include tactile interaction.

Finally, toys have also been researched, both a familiar plush toy (Ullán et al., 2014) as well as an activity kit, which was new to the child (Ballard et al., 2017). These toys have been shown to help the child express their emotions and focus their attention on something positive, before and after the surgery.

In conclusion, a plethora of techniques have been studied. While most studies suggest that more research is needed and their application has been limited, they also show promising results. Using experiences including sound, tactile interaction and theatre-like play, which involve the child and an independent agent has been shown to reduce preoperative anxiety, fear and pain.

3.1.1   Toys and books used in preoperative preparation

Although a plethora of work has recently been put into exploring the use of toys and medical playthings in child patient preparation for medical procedures, the techniques are established. Nurses have used dolls, puppets and drawings to effectively explain to child patients what will happen to them for a long time (Azarnoff, 1990). Recent studies have worked towards testing the exact effects of different forms of play and determining where/how it can be best applied in a medical setting.

Studies have looked into replacing waiting rooms with play areas in the hospital with considerable success (Weber, 2010). Having a selection of toys available for patients while their guardians are briefed about the procedure has also been researched (Ghabeli, Moheb, & Nasab, 2014). These two cases demonstrate that even unsupervised access to playful/distracting activities can alleviate patients' and guardians' anxiety levels.

Novel and fun experiences such as being transported to surgery in a toy car have been shown to relieve preoperative anxiety in preschool children undergoing surgery to a comparable degree as the oral medication midazolam (Liu et al., 2018).

In some studies, non-toy objects, such as transparent anaesthesia masks, have

been shown to reduce anxiety during anaesthesia when given to children to play with during a pre-anaesthesia visit (Aydin et al., 2008). Providing preoperative education to children and their guardians helps them familiarise themselves with the instruments/procedures they will experience during their procedure. Such educational programs often use toys such as teddy bears (Coşkuntürk & Gözen, 2018) to demonstrate the tools/processes. Different studies have included role-play using dolls and medical equipment (comprising toy doctor kits and actual medical materials) alongside informational material and coping strategies to create learning sessions for child patients (West, Christopher, Stratton, Görges, & Brown, 2020) with a positive impact on the child's anxiety. In addition to bear dolls, puppets and improvisation with peers have also been used for medical play (Grissim, Kirkendall, Jones, & Boles, 2020), demonstrating good effectiveness. The results of using a proxy such as a toy to practically show and explain the anaesthesia/operation procedures to child patients are very promising in the related works.

The use of storybooks is also being explored in preoperative preparation. Reading stories is a popular method amongst nurses because of its high effectiveness, low cost and the possibility to involve the guardians as well (Litke, Pikulska, & Wegner, 2012). Storybooks and, more specifically, picture books have been applied in various medical procedures, including day surgery (Nilsson, Svensson, & Frisman, 2016). Additionally, plenty of high-quality content is readily available, ensuring pediatric units can build sound libraries catering to many age groups and undertaking different procedures relatively quickly. Books such as "The Tale of Woody's Tonsils" (Tunney & Boore, 2013) have been explicitly written for research, while books portraying heroes undergoing medical procedures have been published publicly (e.g. Read at Home: First Experiences: At the Dentist (Hunt, 2007), Franklin Goes to the Hospital (Bourgeois, 2011), A Sleepy Tale: My First Surgery (Bourgeois, 2011)). Amongst the volume of work, illustrations are favoured since they present information in a way that children can understand better (Litke et al., 2012). Work is also being put into making books more exciting and eye-catching using 3-D pop-up elements (Macindo et al., 2015).

In conclusion, both informative preparation sessions using story/picture books and demonstrations using toys/medical playthings have been shown to be effective in reducing anxiety in children undergoing medical procedures, and they have also been successfully used in the field for years.

3.1.2 Animals used in a medical setting

The use of animals in human care can be traced back to ancient times (e.g. the serpent-wrapped staff of Asklepios, ancient Greek/Roman god of medicine, which

still symbolises the practice of medicine today (Wilcox & Whitham, 2003)). In other parts of the world, Shamans called upon the magical/divine powers of animals (Eliade, 2020) to perform rituals and heal the sick. Today, mainstream medicine does not consider animals mystical nor divine (despite popular images and comical depictions of cats claiming to be gods, which can be found circulating various online websites). They have nevertheless been systematically used in patient support and even treatment for quite some time. The modern re-emergence of animals used in care can be traced to 1980, and the (Friedmann, Katcher, Lynch, & Thomas, 1980) study found pet ownership to have life-prolonging effects in heart attack sufferers. Since then, animals have been used in many settings in long- and short-term patient interactions. According to the Handbook for animal-assisted therapy (Fine, 2010), animals and, more specifically, pets can positively impact recovery regardless of age. Animals, Fine explains, can "top up" social support from humans, provide a free of social judgment/embarrassment/awkwardness avenue for venting frustrations and emotions or even create opportunities for the patient to socialise with other humans. According to Fine, animals create their category between humanity and inanimate objects by being animate and exhibiting behaviour patterns. Humans can "make pretend" that the animal understands them while maintaining their understanding of the animal's non-human state. This nominal existence between conscious and unconscious, expressive and unaware, has positioned animals in a unique spot to assist patients and medical staff alike.

3.1.3   Animals used in preoperative and postoperative care

Animals have been successfully recruited and trained to assist with various medical conditions/situations, both chronic and acute. This study will focus on examples of Animal Assisted Therapy (AAT), involving preoperative and postoperative care, focusing primarily on pain and anxiety relief.

In (Havey, Vlasses, Vlasses, Ludwig-Beymer, & Hackbarth, 2014), AAT has been shown to reduce the need for pain medication in adults post-operation. In (Sobo, Eng, & Kassity-Krich, 2006) short-term Canine Visitation Therapy significantly reduced acute postoperative pain in children. In (Barker, Pandurangi, & Best, 2003), Barker suggests that AAT can help patients deal with fear or embarrassment before a therapeutic procedure that is fear-inducing or stigmatised, like Electroconvulsive Therapy (ECT). In (Kaminski, Pellino, & Wish, 2002) hospitalised children who participated in a pet therapy program were shown to have enhanced heart rates, more positive guardians' ratings of the child's mood, and display of positive emotions such as joy and interest. Finally, in (Feng, Lin, Zhang, Jiang, & Zhang, 2021) meta-analysis has found AAT to be beneficial for controlling pain in children and

adolescents, although no significant benefit for anxiety was found.

In a newer study, a similar effect has been shown without the use of an alive animal (Foerder & Royer, 2021). A stuffed animal was compared to a living dog with similar results in reducing adult preoperative anxiety. While the stuffed animal was not as effective as the living dog, the effect was significant. It can be concluded that based on related work, animals and animal-like things can potentially reduce perceived pain and relieve anxiety in children. Furthermore, animals and animal-like things could offer an ice breaker or serve as social glue between child patients and adults in the hospital.

3.1.4 Non-human interactive agents used in related work

In (Schechter et al., 2007) Schechter describes distraction as "introducing a stimulus with previous positive associations (e.g., favourite toy), evoking behaviours that are incompatible with pain behaviours (e.g., laughing at a movie), and reinforcing non-pain reactions.". According to this definition, interactive elements can be effective for distraction as they require attention and cognition from the patient (Wohlheiter & Dahlquist, 2013) (Law et al., 2010). Therefore, interactive agents should be more effective in managing pain as long as they are age-appropriate for the patient. Children above the age of five have better selective attention skills than younger ages (Espy, 1997), although selective attention begins to develop at the age of 3 (Ruff, 1998).

Research in non-human interactive agents used in distraction techniques for pain management includes electronic toys (Dahlquist, Pendley, Landtrip, Jones, & Steuber, 2002), animal-assisted interventions (Barker, Knisely, Schubert, Green, & Ameringer, 2015) (Y. Zhang, Yan, Li, Wang, & Ma, 2021) (Sobo et al., 2006), video games (Wohlheiter & Dahlquist, 2013) (Dahlquist et al., 2007) (Law et al., 2010) and virtual reality (Malloy & Milling, 2010) (Dascal et al., 2017) (Kipping, Rodger, Miller, & Kimble, 2012) (Das, Grimmer, Sparnon, McRae, & Thomas, 2005).

All of these works show beneficial effects for the children involved, although frequently mentioned limitations are the hard-to-predict personal interest of the child and the cost of both material and spatial and human resources needed from the hospital in order to apply them. Hygiene can also be a concern regarding alive animals in a hospital setting. The same concern is raised when reusing materials such as soft or hard toys electronics and paper products. Quick and effective sanitation is another important factor in the implementation of such interventions.

3.2   Use of social robots in related work

Robots stand out as one of the most promising technologies for helping hospitals in and out of operating rooms (Rao, 2018) (Kawashima, Kanno, & Tadano, 2019). From logistic and transportation needs (Ozkil et al., 2009), (Ozkil, Dawids, Fan, & Sorensen, 2007) to patient care and rehabilitation (Kyrarini et al., 2021) many robots have been applied in medicine. In (Kyrarini et al., 2021), survey robots used in a hospital setting are divided into five categories:

- Care Robots

- Hospital Robots

- Assistive Robots

- Rehabilitation Robots

- Walking Assisting Robots

Care Robots are defined as providing patient care or assisting people in patient care. These robots are rather diverse in embodiment and capabilities. Most use cases involve monitoring and helping elderly patients by reminding, supporting or motivating them or even offering physical help by manipulating items and assisting with movement. Other uses include diagnosing and assisting in educating children with mental disorders, such as autism.
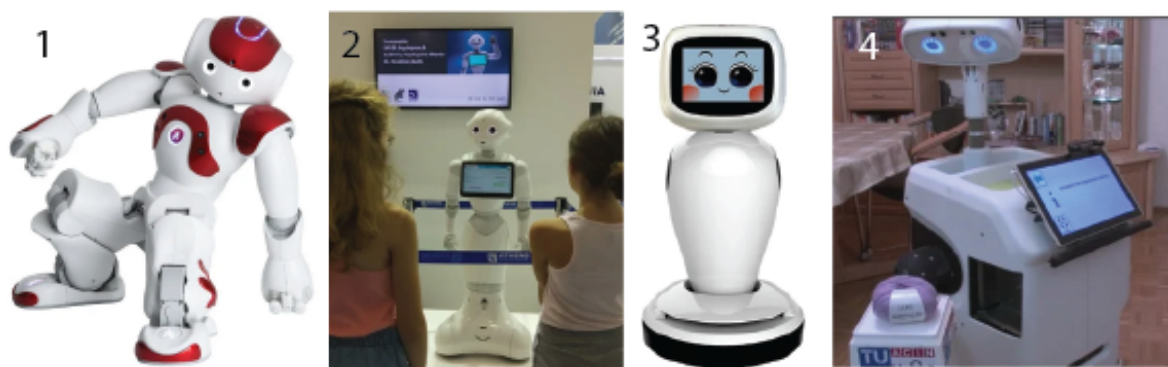
Figure 3.1: 1: The Nao robot. Source: SoftBank Robotics **2:** The Pepper robot. Source: SoftBank Robotics **3:** The Hobbit robot. Source: (Fischinger et al., 2016) **4:** The James robot. Source: `https://robots.nu/en/robot/ james-robot`

Many Care robots tend to have a humanoid embodiment. A torso with a head that features a face representation, often using LED lights or screens, is often chosen

for them. Robots like Nao, Pepper Hobbit and James, see Figure: 3.1, are primarily geared towards social interaction with high expressiveness and low physical abilities.

Hospital Robots are defined as robots that are designed to function under the direct control of nurses, with the sole purpose of assisting them with logistical and non-critical tasks so their attention can be dedicated to the patients. Robots like Care-o-Bot, Lio, HOSPI-R and YuMi Figure: 3.3 fall in this category. These robots are more versatile and robust but less expressive. Hospital robots are also designed to protect nurses and other staff by taking over hazardous tasks for example lifting patients or delivering medicine in times of crisis, such as the COVID-19 pandemic.

Figure 3.2: 1: The Care-O-bot robot. Source: Fraunhofer IPA **2:** The Lio robot. Source: FP Robotics **3:** The HOSPI-R robot. Source: Panasonic **4:** The YuMi robot. Photo: ABB

Some robots, such as PARO and Huggable, are meant to support patients emotionally using a cute and relaxing appearance in combination with vibrations and other feedback. These robots have fewer sensors and features than assistive robots and limited facial expressions. This can be explained by the limited use cases for which they are applied (namely, being a bedside companion), nevertheless, they have been shown to be effective within those use cases. These robots are also predominantly zoomorphic.

Figure 3.3: 1: PARO robot. Photos: Carlton SooHoo **2:** The Huggable robot. Source: MITMedia

Assistive robots are designed to help people with paralysis or other disabilities to perform Activities of Daily Living (ADLs) or work. Robots such as the Wheelchair Mounted Robotic Arm (WARM) or the FRIEND, see Figure: 3.4 1 and 2, are designed to be mounted on wheelchairs and assist with everyday activities such as manipulating objects and moving. These robots are simpler in their embodiments, often comprised of just one arm. Rehabilitation robots such as the ReoAmbulator and ROBERT are designed primarily to aid humans with physical impairments while rehabilitating their upper or lower limbs. These robots tend to be exoskeleton-like since they must wrap around the limbs needing rehabilitation, see Figure: 3.4 3 and 4.
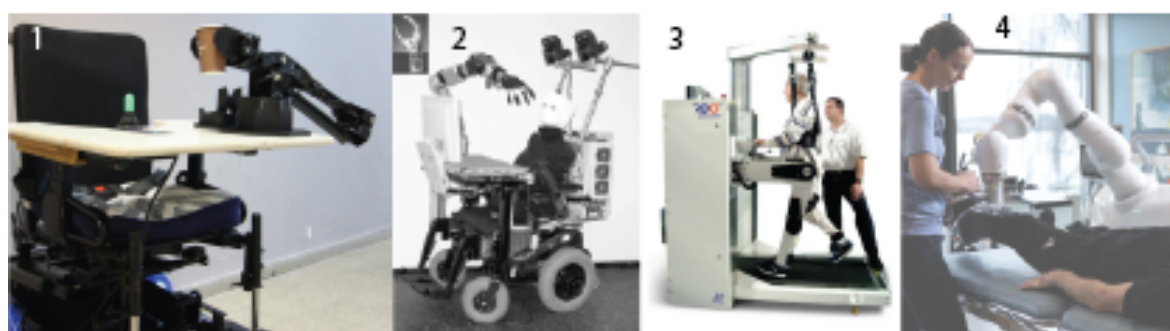
Figure 3.4: 1: The Wheelchair Mounted Robotic Arm robot. Source: Ahlstedt engineering **2:** The FRIEND robot. Source: (Volosyak et al., 2005)

Walking assisting robots are designed to help people with limited movement in everyday functions. These robots vary from walker/cane structures to smart prosthetics.

This study focuses on care robots.

3.3 Social robot embodiments strengths and weaknesses in related work

Building upon the research in 3.2, it is possible to explore the application of a robot in preoperative preparation, surgery, or postoperative care for child patients. A robot could be a puppet for nurses and medical staff to explain the medical procedures to the child, join in play sessions, provide comfort/distraction similarly to an animal and become a judgement-free confidant for the child's feelings. The following paragraph will examine the pros and cons of using a zoomorphic embodiment in this context.

In the first role as a doll/puppet for showcasing, there's an initially clear advantage to using anatomically correct human puppets, which feature accurate human features, as demonstrated by related work (Grissim et al., 2020). However, many

storybooks mentioned in chapter subsection 3.1.1 use anthropomorphic animals like tortoises or dogs. A zoomorphic design can still effectively demonstrate procedures, like placing a mask (on a muzzle) or an IV (on a paw).

For the playmate role, embodiment isn't critical; children engage with dolls, stuffed animals, and objects similarly. What differentiates a robot from a mere toy is its social behaviour and movement. A robot can also respond with independent motion or other cues, which can help it transition from being just an object to "make-believe to be alive" agent.

Using a humanoid robot presents challenges, primarily because it sets the expectation for human-like interactions, such as speech. Internet-dependent natural-processing algorithms, vital for this, are vulnerable to interruptions. An unexpected silence could distress a child. Recording clear voices for Natural Language Processing (NLP) isn't straightforward either, given complications like background noise or simultaneous conversations. In unpredictable environments, relying solely on NLP for communication becomes precarious. As of 2022, NLP's limitations with strong accents and child speech are well-documented, exemplified by children's humorous interactions with devices like Amazon's Alexa (Now!, 2018). By contrast, zoomorphic or object-like robots sidestep these problems, as they don't come with the same conversational expectations.

The expectation of a robot's silence could enhance its role as a non-judgmental confidant. Intuitively, a silent being is less likely to betray confidences. This is supported by observations during the design of (Temiz & Tekirdag, 2011) at Utwente, where children entrusted secrets to toys, even writing them down. Kate Darling's experience, cited in (Darling, 2021), adds another dimension: her daughter spoke to a robot which, unbeknownst to the child, was set to relay the conversation to the guardian, contrary to the role of a confidant. These examples demonstrate not only the level of confidence that a zoomorphic embodiment inspires but also that maintaining trust and ethical boundaries, especially within the context of medical monitoring devices can be challenging.

For the final role, that of comfort/distraction provider, a case can be made that the best embodiment is the most engaging one, which would be very child-specific. In related works, a selection of toys (Ghabeli et al., 2014) or books (Nilsson et al., 2016) were used, to ensure that some will appeal to each child. When it comes to robots the cost of owning and operating a number of robots can be prohibitive. In this case, appealing to each child has to be assured in a different way. Involving child patients in the design of their own robots might be an effective way to achieve that.

In conclusion, the best embodiment of robots aimed to help with preoperative preparation, surgery, or postoperative care for child patients is a customisable zoomor-

phic robot. This type of robot can adapt and appeal to multiple children, affords communication via body language and offers a non-judgemental and low-status presence in a stressful situation.

3.4 The Miro-e robot

Miro-e, see Figure 3.6, is a small and compact robot designed with a zoomorphic form factor. Specifically, the Miro robot is designed to have a resemblance to a number of different animals, such as cats, dogs, mice, rabbits, bats and chickens. The robot has a rounded and compact body with a smooth finish and features two large expressive eyes with physical eyelids and two extended ears on top of its head.
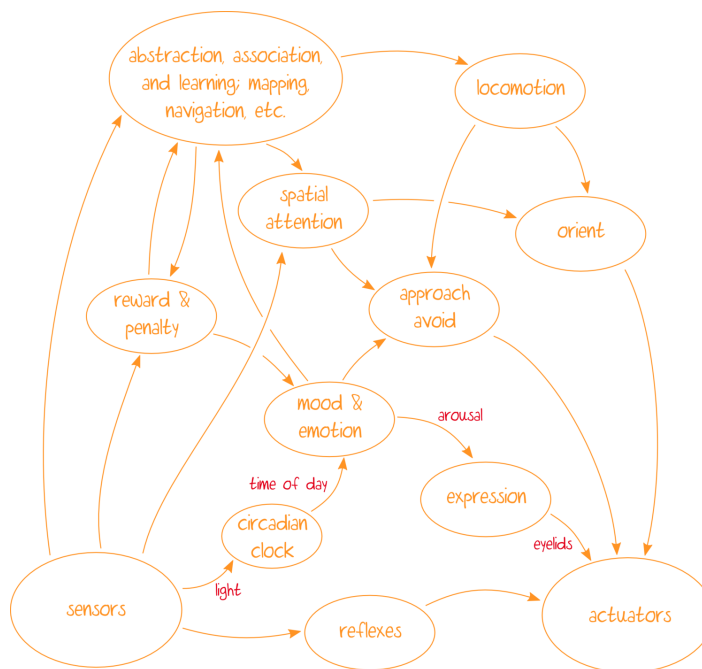
Figure 3.5: Miro-e brain's model. Source: www.miro-e.com

The basic "brain" of Miro-e is modelled after pet animal behaviour, see Figure 3.5. It is made to take into account the time of day, keep track of its own mood, communicate emotions, map its surroundings and learn from user input. Most importantly, it already has a basic structure on how it moves and behaves. Miro-e has an extensive library of emotional states based on two primary dimensions: arousal and valence. Arousal refers to the degree of stimulation the robot is experiencing, ranging from excitement to boredom. Valence refers to the pleasantness or unpleasantness of the robot's emotional state ranging from happiness or excitement to sadness or anger.

This robot has been used in several studies involving emotional expression as well as supporting children in education. In (Ghafurian, Lakatos, & Dautenhahn, 2022) Moojan Ghafurian explores the potential for emotional expression of the Miro-e robot. Through this work, Ghafurian designed eleven expressions: happy, sad, excited, fearful, angry, disgusted, surprised, calm, bored, annoyed and tired (see 3.1), all of which were recognisable to participants more often than not. The following six expressions: happy, sad, excited, surprised, calm and tired were particularly recognisable. Additionally, the robot was mostly reported to be perceived as gender-neutral.

Figure 3.6: Miro-e. Source: www.miro-e.com

The designs depicted in this study utilise light, sound and movement to express different emotions. Although they were tested isolated, these examples show the possibilities offered by the Miro-e robot to express a distinct personality, by utilising some of these expressions as its default posture and others as a response to stimuli.

	Eyes	Neck	Head	Ear	Tail	Color	Movements
Happy	Almost open	Moving up & down, moderate speed	Forward	Angled forward	Up, wagging left and right widely	Orange	Slight movements to left and right. Slight head movements between up and forward
Sad	Half closed	Down	Down	Angled outward	Down, still	Light brown	Head tilting left and right. Head slowly moving down. Slow rotation of body to side
Excited	Fully open	Moving up and down very fast	Up	Angled forward	Up, wagging left and right widely and fast	Red	Movements to left and right. Fast head movements between up and forward
Fearful	Half closed	Half down	Up	Angled inward	Moving up and down slowly	Pale, blue/ grey	Sudden backward movement. Left and right ears moving fast
Disgusted	Half closed	Centre	Forward	Angled outward	Up, still	Green	Head moving to side and half down, eyes closing, moving backwards
Surprised	Fully open	half up	up	Angled forward	Up, still	Quick change to white	Looking forward and suddenly raising head, opening eyes fully, and wagging tail
Calm	half open	up	Halfway up	Angled forward	Halfway up, slowly wagging left and right	Green	Moving head to left and right slowly and with delays in between
Bored	Half closed	Half down	Down	Angled inward	Down, wagging left and right slowly	Light gray	Moving head slowly down and back to the forward position
Annoyed	Almost open	Half down	Forward	Angled outward	Up and down slowly	Blue	Sudden head movements to sides
Angry	Fully open	Half down	Up	Angled outward	Up, still	Red	Sudden forward movement and then going slightly back
Tired	Almost closed	Down	Down	Angled outward	Down, still	Purple	Occasionally moving head up and opening the eyes. Gradually going back down and closing the eyes

Table 3.1: Miro-e Affective Expression Design as seen in (Ghafurian et al., 2022).

Miro-e has also been applied in experiments regarding teaching programming using robots. Specifically in (Błażejowska, Gruba, Indurkhya, & Gunia, 2023) the

expressive capabilities of Miro-e were utilised to give affective feedback to students. The study used an application to monitor the student's facial expressions and allow Miro-e to adapt responses based on the valence and arousal values of the student's current state.

This study also demonstrates a simple technical manner in which Miro's personality can be changed based on the child's emotional state. Additionally, in this work, the robot's core personality has also been manipulated by external applications.

In conclusion, Miro-e could be potentially used as a customisable Helper robot either by manipulating its core personality or by building an external application to monitor its behaviour.

3.5   Miro-e Robot's suitability for this project

In this paragraph, a case for the suitability of Miro-e as the Helper robot will be made. Equipped with a range of sensors, including cameras, microphones, and touch sensors, that allow it to interact with its environment and respond to user input, Miro-e is easy to program and capable of expressing emotions. The robots' behaviour can be influenced in real-time, using a smartphone app. Additionally, it offers a range of pre-programmed movements, as well as the ability to add custom tasks and behaviours using its open-source Software Development Kit (SDK). The platform allows for Python, C++ as well as a block-based code to be written and applied to the robot.

Miro-es' design is safe to use in the hospital and on the hospital bed. Its hard plastic and compact design ensure it won't interfere with any cables or tubes. It's also suitable for playing on the floor and following the child around. The robot's neck could be considered a potential safety concern, therefore it is safeguarded by a collar to prevent injuries.

The robot features a battery life of 12h on standby and 6h on active mode, which covers the needs of a day care operation, especially keeping in mind that the robot should remain inactive during the operation (see 2.5).

The smooth form factor also lends itself to customisability. It allows for simple fabric costumes to be made, cleaned and reused efficiently. The body, head, ears, and tail can be attached to each other using velcro, making the costumes modular. The location of the robot's wheels allows for such a costume to be taken off and on without blocking them.

3.6   Initial tests using Miro-e

Before attempting to design the helper robot based on Miro-e, a series of tests were run using the Miro-e coding platform and simulator. The online coding platform offers block-based and Python based programming. This platform was used to run three tests: positioning self next to target, ability to curve path, ease of customising Miro-e through the platform and speed of emotional reaction.

Through the initial tests using the Miro-e coding platform and simulator, the robot could recognise and position itself in relation to an item in a variety of different ways. The path taken can be determined through the robot's coding platform. It's worth noting that Miro-e's eyes/cameras have blind spots in their field of vision, which should be considered when programming the robot. This issue can be overcome by positioning the robot to one side of the child most of the time, or by using an external camera system (similarly to (Błażejowska et al., 2023)) when complete visibility directly in front of the robot is necessary.

To evaluate Miro-e robot's emotional reaction speed, Python code was compared with the Miro-e block-based platform. While the latter is user-friendly and will receive future support from Consequential Robotics, making it a practical choice for hospital staff, the study found both methods comparable in reaction speed. However, Python code showcased a wider emotional range and smoother motion transitions. For example, transitioning the robot from a Happy to an Excited state while in motion (see table 3.1) was more mechanical using the block-based code. Although slower reactions can aid child-robot interpretation, the block-based motion lacked the desired fluency for this research. Despite the Miro-e Platform's accessibility and swift adaptability making it preferable to be used by hospital staff, initial tests indicated it lacked the necessary tools for the desired personality and customization of Miro-e.

Finally, while updating and programming the robot, its reliance on an internet connection via WiFi for various features became apparent. This need poses a challenge in operating rooms, where a wireless connection or the addition of an extra machine such as a router might not be permitted.

3.7   Participatory design (co-design) in related work

In (Burkett, 2012), Burket defines Co-design as "Co-Designing: collaborating, including and designing WITH people that will use, deliver or engage with a service or product." This technique, rooted in social sciences, has been pivotal in product development. Since the 20th century, designers have increasingly involved children in co-design processes. In this way, children can add their complex and unique experience of being a child to the design process, an insight that adult experts cannot

fully grasp on their own.

Lately, researchers have been using design research methodologies such as co-design with children to develop pre-operational pain and anxiety management tools, as well as medical teaching materials as can be seen in (Ingadottir et al., 2022), (Aufegger, Bùi, Bicknell, & Darzi, 2020) and (Vrancken, De Gryse, & Spooren, 2021). The methods that were used, included surveys, workshops, ideation and prototyping. In later studies, it is observed that children are included from earlier stages of the design, other than solely as testers near the end.

With works such as (Druin, 2002), (Druin, 1998) and (Druin, 1999) Druin pioneered the field of co-designing robots for children with the design of PETS and electronic teller of stories in 1999 (Druin et al., 1999). Since then, co-design has also become quite popular as part of robot design studies, such as in the design of robot things (Zaga, 2021) and the creative robot Yolo (Alves-Oliveira, Arriaga, Paiva, & Hoffman, 2017). As of today, there is still a lack of research for robot designs aimed at pain/anxiety management for children.

In this study, participatory design techniques will be used to include children in the design process. In the next paragraphs, after exploring the use of storytelling and play in therapy, storytelling will be examined specifically as a participatory design method for robot design involving children.

3.8   Storytelling and play in children therapy

Verbal storytelling with characters and play serves multifaceted roles for children, from self-understanding and situational experimentation to learning from others' experiences. This power of storytelling is exemplified in therapeutic contexts, as seen in the Creative Characters technique (Brooks, 1993) (Brooks, 1981). Here, displacement and metaphor reframe anxiety, enhance cognitive focus, and foster mastery and competence. The metaphorical story mirrors the child's real-life challenges, allowing lessons from the narrative to be applied to actual situations. Similarly, in the Mutual storytelling technique (Brooks, 1993) (Gardner, 1971), storytelling is used to help children better grasp real-life situations and vicariously learn from their character's experiences.

Creative Characters uses the struggles that the child is going through as inspiration for developing characters (usually animals) and allowing them to face their struggles through stories as a means for the child to learn how to cope. Mutual storytelling is heavily involving the child by eliciting a self-created story from them and then analysing it, thereby creating a new educational story for them. For the purposes of this study, the struggles that the child patient will face are set (hospitalisation, unfamiliar environment and people, pain, helplessness), therefore the

Creative Characters method will be used for story creation.

3.9   Storytelling in robot design: the 21st century robot approach

Traditionally, robots are crafted by interdisciplinary teams comprising developers, designers, and mechanics. Several social robots, like Pepper, Nao 3.1, and Miro-e 3.6, are designed for post-production customization and are versatile across various scenarios. However, this build-first approach means the robot's inherent design and capabilities heavily dictate its potential personality and functionalities.

Contrarily, in the book (Johnson & Winkelman, 2014), Johnson advocates for a story-first method. He penned several sci-fi tales about "Jimmy the robot" (see figure 3.7), using narratives to establish Jimmy's personality prior to any design. These stories guided children in visualizing and drawing Jimmy's physical form. Subsequently, university student teams brought Jimmy to life based on Johnson's narratives and the children's illustrations.

Robot stories are not something new; Isaac Asimov, one of the "Big Three" science fiction writers of the 20th century (Freedman, 2013) would debut his Robot series in 1954, arguably influencing robot design in fiction and reality to this day. What Jonson has done differently, is to use the story/narrative as a design method, defining not only the embodiment but mainly the personality of the robot. Effectively, instead of asking, "How does Jimmy move/sound/produce light?" in the build-first approach, he asked "How would my robot move/sound/produce light in this situation?".

Figure 3.7: Jimmy Source: 21stcentury-robot.com

Johnson's approach to robot design, focused on storytelling, is especially appealing for co-designing with children due to its simplicity. It fosters creativity without demanding technical expertise. However, while children can visualize their own version of the robot, Jimmy's personality is detailed in the stories and it sets a predetermined expectation. The robot will always act like a Jimmy.

For the purposes of this study, inspiration is drawn from the 21st century robot method, specifically the definition of a personality based on stories.

3.10 Improvisation as a design method

Originating from Italy's Commedia Dell'Arte in the fifteenth century (Tom & Deborah, 2008), Improvisation Theatre is a spontaneous form of the art where actors create scenes without a script, often adhering to the "Yes And" principle to collaboratively build scenes.

Its ability to quickly generate and test ideas has found applications in psychology (see section 3.13), as well as different art forms such as literature. Improvised writing has been successfully used in literature classes (Lenters & Smith, 2018) to "engage students' minds and bodies in multi-modal story building, following a posthuman assemblage theory approach to literacy learning.".

Generative improvisation has been used in robot design for some time now (Zaga, 2021), (Sirkin & Ju, 2014), (Li et al., 2019). As Sirkin mentions in (Sirkin & Ju, 2014): "Embodied design improvisation is a generative and evaluative technique to elicit tacit knowledge about embodied experience. It incorporates storyboarding, Wizard of Oz prototyping, domain expert improvisation, video prototyping and crowdsourced experimentation.".

Although improvisation has been successfully used in robot design, improvised storytelling/writing has not been explored to the same degree.

3.11 Improvisation in games

Examples of collaborative, improvised story writing can be found in tabletop role-playing games (TTRPG) (Acharya, Mateas, & Wardrip-Fruin, 2021), where players build a collaborative adventure based on a theme. Players create a characters for themselves, complete with embodiment, personality, backstory and belongings.

In robot co-designing with children, where specific creative barriers (technological capabilities, available robot models/parts, time available for customisation/production) have to be established quickly and efficiently, TTRPG games pose a viable medium. Additionally, when attempting to design the embodiment and personality of a not currently existing (in the reality of the child) character, such as a robot, TTRPGs have many successful examples.

Most well-known TTRPG games offer maps and preset adventures players can experience. Role-playing games are based on improvisation, although they are not purely improvised. While TTRPGs incorporate improvisation, they have set rules governing actions and outcomes. In every TTRPG team, there is a person who has special privileges during the improvised scene. The storyteller possesses advanced knowledge of the story, knowing or creating its mysteries. This predetermined aspect distinguishes TTRPGs from other improvisation techniques.

The rigid rules of TTRPG games also act as a scaffold and common language for the player's imagination. As Mendoza writes in (Mendoza, 2020), "They may use the scaffolding of setting, plot, or genre to create a character, much in the same way theatre exercises such as "bus stop" use a narrative convention – in this case, characters waiting for a bus at the titular stop – but like similar theatre exercises they have a large spectrum in which to place their characters.". In robot design, exploring the meaningful adventures and hardships that players have to navigate alongside, or as the robot, could also prove helpful in targeting specific parts of the design (embodiment, modalities or personality).

TTRPG games present a myriad of potential non-player characters, enabling players to engage on a profound personal level. These games, typically group experiences involving at least two participants (Cragoe, 2016), often foster friendships among players, even if they've never met before. The shared in-game experiences serve as a pseudo-history, with in-game character behaviors influencing real-life relationships (Cragoe, 2016). Such dynamics can also be observed with non-player characters, as players frequently form deep emotional connections. This suggests that TTRPGs could effectively facilitate a rapid development of pseudo-history between a child and a robot, even if they haven't interacted previously.

3.12 Complexity and boundaries

In this chapter, the considerations and boundaries that are integral to shaping the foundation of this project will be thoroughly explored. Adhering to the core requirements of the 4TU project framework, the use of a pre-made robot, allowing for collaboration across three distinct universities, was established. After the core research established in sections 3.6, 3.5, 3.4, 3.3 and 3.2 the Miro-e robot was chosen for its zoomorphic design, offering excellent customisability and expressive potential. The robot's streamlined design facilitates easy modification and sanitation, and its design, inspired by various species, ensures adaptability from one animal representation to another.

Another essential aspect is the robot's ability to communicate with carers, providing them with crucial information about any significant changes in the child's mood or other social cues. As part of the 4TU project, an external application is being developed for this very purpose.

This robot aims to collect sociological data about the child's pain levels, a lot of which will be self-reported. Additionally, there are a lot of social agents in the hospital who can collect such data, namely the hospital staff and the child's parents, all of whom are authoritative figures there to assist the child. The robot will therefore have to take a unique role in order to be in a position to collect the data that they

cannot. Balancing the familiarity, trust and status of the robot will be paramount to achieving this goal. Using Miro-e's zoomorphic embodiment allows the robot to take a role akin to a pet rather than a human or a toy 3.1.3. Setting the correct expectations for the robot's true abilities will also be important in fostering a sense of trust between them 3.5.

To address these requirements effectively, this work will focus solely on a co-creative method for customizing the robot and on creating a pseudo-history between the child and the robot. The method will be thoughtfully designed to be playful, using minimal written text suitable for the child's age. Furthermore, justifying the robot's presence in the hospital through an engaging narrative that seamlessly integrates with the child's experience is a certain benefit.

By analyzing these requirements and establishing clear boundaries, the way is paved for a thoughtful and purposeful design process. In the next paragraphs a design lens will be established for this project and requirements will be detailed.

3.13 Design Lens: Familiarity, Trust, Ownership and Agency

Through the early research into current techniques for pediatric pain management, as well as currently available technology for social robots and design approaches, the design space for this research is proven to be vast. The need for a clear design lens is becoming apparent. For this research, the design lenses guiding choices and ensuring that the final product aligns with the intended goals and objectives will be Familiarity, Trust, Ownership and Agency.

Familiarity can be essential in helping a child feel more comfortable and secure during a surgical procedure. Having a familiar agent, such as a guardian or health-care provider with whom the child has previously interacted, can help reduce the child's anxiety and stress levels 2.4. The sense of familiarity and safety is the reason why guardians accompany their children in the operating room until they fall asleep 2.5. Additionally, as seen in related work, allowing the child to bring a favourite toy or comfort object to the surgery can also help provide a sense of familiarity and comfort 3.1. Since it is attempted to introduce a new social agent to the child, it is beneficial that this agent is familiar to them and beloved if possible.

Trust is also a vital aspect of this design, since the robot should allow the child to communicate their true feelings without the fear of judgment or the need to please authoritative figures in their environment. Building trust between the child and the robot can help the child feel more comfortable and safe, making it easier for them to communicate their true feelings and concerns. For the robot to build trust with the

child, it should be designed in a non-threatening, approachable way, with a friendly and reassuring demeanour 3.1.3. In addition, the robot should be transparent about its intentions and capabilities, that the child understands what the robot is there to do and how it can help them. Accurate depiction of true capabilities has been proven to be challenging for some social robots existing in a medical setting 3.3. This transparency can help to build trust and establish a positive relationship between the child and the robot.

Giving the child a sense of ownership over the robot (in the meaning of "my friend" not in the meaning of "mine") can help them feel more empowered and in control of their situation, leading to a more positive experience 3.13. Ownership can also contribute to empowering the child and building trust and familiarity. When the child feels a sense of ownership over the robot, it can create a deeper connection and boost engagement between the two. Giving the child the opportunity to personalise or name the robot and acknowledging the child's ownership of the robot can help to create a sense of attachment and responsibility. This process can make the child feel more comfortable interacting with the robot during the surgical procedure 3.1.

Providing the child with a sense of agency and control, when they may feel helpless and vulnerable, can help reduce their anxiety and stress levels, leading to better outcomes 2.4. One way to provide the child with agency is to allow them to help others 3.11 and reassure them that asking for help is acceptable and good . A robot in need of assistance could demonstrate both of these behaviours to the child.

3.14   Design Requirements

According to the above research and the context of this project mentioned in section 3.12 this work will focus on producing a method for the child to customise the robot and on creating a pseudo-history between them. While the overall aim of the robot is to monitor the child's pain, this work focuses on building the relationship that will allow the robot to do so. Therefore, the requirements detailed here are not aimed at designing a robot, but at designing the co-creative method. To achieve its goal, this method will combine elements of co-design (section 3.7), storytelling (sections 3.13 3.9), and improvisation (section3.10), with elements from TTRPGs (section 3.11) in a playful kit which will be thoroughly detailed in (chapter5). In this paragraph, a list of technical requirements will follow. The methods used and experiments done will be explained in more detail in the next chapters.

The necessary/primary requirements are:

- The kit will be targeted at children between 4 and 11 years old.

- It will have to require a short 1-2h of active work to be completed by the child.

- It should be done by the child and adult guardian alone.

- The kit should produce a set of physical and behavioural characteristics that describe the robot.

- The kit's outcome should be easily applicable to the Miro-e robot with minimal effort by the hospital staff.

- The process of designing the kit should give the child clear expectations of the robot's capabilities.

- The kit should use imaginative storytelling to help the child express their needs and connect with the robot.

- The kit should be cheap to make and distribute.

- The customisation done to the robot should be temporary and allow the robot to be easy to clean.

According to the research done so far and the primary requirements, the secondary requirements are:

- The kit should be an enjoyable and playful experience in itself.

- Given the age of the target audience the kit should avoid using written language.

- The kit should attempt to parallel the future experience of the child during the hospitalisation in some fashion.

- The kit should include simple instructions that a parent, guardian or other adult assistant can follow, to assist the child and produce usable requirements.

Some requirements that could be useful but are not expected to have a large impact on the project are:

- The kit should assign the child with a high-status and high-agency role compared to the robot.

In the next paragraph, several additional design considerations will be explored, thus concluding the set of requirements and considerations on which the design decisions (detailed in chapter 5) and methods (detailed in chapter 4) were determined.

3.15   Design Considerations

Before embarking on design, several key elements warrant close attention. Considerations such as design methods, physical vs digital product, choosing a story ark, the level of agency given to the child and the element of deception opposed to the degree of storytelling freedom are the final considerations that need to be explored.

Exploratory design research is a qualitative research approach, focused on generating new ideas and exploring potential design solutions. In the context of developing a robot for pediatric pain management, this approach would involve conducting research to understand the needs and preferences of both the patients as well as exploring different design possibilities for the robot's personality and physical embodiment.

This robot co-design/customisation kit, as mentioned in section 3.14, aimed to not only collect the child's choices for the robot, but also introduce the two. Since the robot will be a three dimensional agent it has been decided to use physical materials (comic book, cards and mini-games) to encourage the child to play in a more embodied way. Additionally, by avoiding audio and inviting the children's guardians to help them read through the book, it is ensured that the activity will be completed correctly.

In the kit's TTRPG-style adventure book, the narrative must introduce the robot, serving both as an introduction and preparation for the child's hospital stay. Although the child's feedback will influence the robot's design, its representation remains essential. The story might parallel medical scenarios, the hospital's ambiance, and address potential fears the child might have. Through drawing such parallels and allowing the child to face these challenges through the robot proxy, the narrative aids in fostering coping and empowerment for the child's hospitalization, while creating bonding opportunities for the child robot duo.

By featuring challenges met by a secondary robot character, the child assumes the hero's role, emphasizing their agency and power. Rather than focusing on the child's vulnerabilities, the story lets them aid others in comparable scenarios. Effectively, instead of asking the child how they would like to be helped in a situation that might be alien to them, the story asks them how they would help others in similar situations. This sense of control and empowerment intensifies when the child's choices steer the narrative direction, such as deciding paths, character interactions, or managing tough situations.

In the story arc for the kit, the end is pivotal for success of the kit. The conclusion should transition from the narrative back to reality, preparing them for the actual robot encounter. Although the narrative should pose minor challenges, leading to a larger resolution, the conclusion should facilitate a farewell between the child and the

robot, hinting at a future reunion. This ending primes the child for both welcoming and eventually parting with the robot in the hospital. It also serves as a consent opportunity, where a guardian can inquire if the child is comfortable meeting the robot at the hospital. A negative response means the robot should not be introduced.

While introducing the robot character aims to provide the child with a familiar, non-judgmental presence in the hospital, it raises ethical considerations, blurring the line between fostering imagination and potential deception — much like the roles Santa Claus and the Easter Bunny play in a child's life. The robot's portrayal is crucial: it must be emphasized as a temporary hospital-only presence, akin to Santa Claus Christmas-only existence, ensuring no negative aftermath following the child's procedure. Although the story can be presented as purely fiction, especially for older children, the decision on how it's conveyed should ultimately lie with the child's guardians, who have the responsibility of supervising the experience.

Finally, this story is an excellent way to set expectations for the child. The choices provided and the overall story arc can help the children define what the robot can do and learn what it cannot or will not do — establishing the robot as an independent social agent, a peer and a willing assistant to the child protagonist.

3.16   Inspiration: Robot stories

Given the unique nature of this research, it is important to address the sources of inspiration. The main source is the long-lasting history between robots portrayed as social agents in stories. Robot stories in the 21st century, such as Isaac Asimov's "I, Robot" and Philip K. Dick's "Do Androids Dream of Electric Sheep?" have helped to shape popular perceptions of robots and their capabilities. These stories can provide valuable insights into how society imagines and perceives robots.

The 21st Century Robot book by Brian David Johnson detailed in 3.9, which explores the intersection of creative writing and robot design, has been another inspiration for the approach followed in this research. By using storytelling as a tool for imagining and designing robots, Johnson provides a unique perspective on how robots can be designed to meet the needs and desires of people. This approach can be beneficial for designing a robot for pediatric pain management, as it can help create a robot that is functional in taking specific physical measurements and fitting the child's social and emotional needs in a unique way.

Finally, co-creative approaches to robot design and psychology such as Creative Characters have played a role in shaping the research. By combining these different sources of inspiration into the design process, the research can draw on a rich and varied set of ideas and approaches that can help to inform the development of a helper robot for children.

Methods

The design of this interactive kit/game is underpinned by two foundational experiments, which employed co-design and improvisation paradigms, see figure 4.1. The co-design session, led by Feiran Zang in TU Eindhoven (F. Zhang et al., 2022), delineated the spectrum of potential robot functionalities by emphasizing features desired by both children and their guardians. Meanwhile, the improvisation session aimed to curate a compendium of archetypical personas the robot could embody within its narrative.
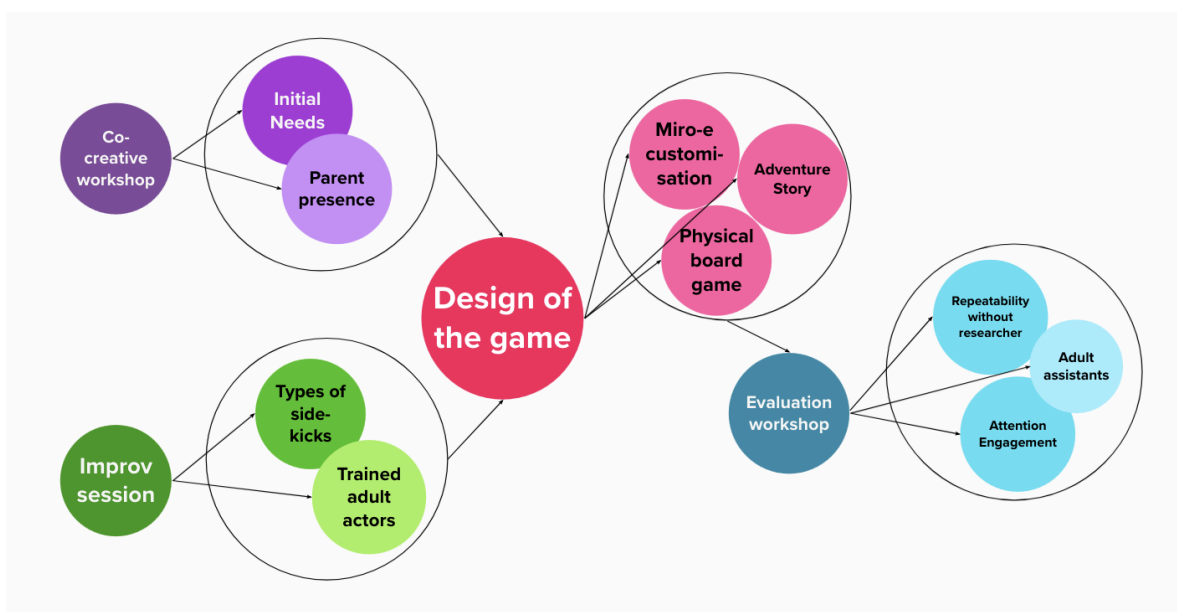
Figure 4.1: The complete process of this project.

Guided by the constraints and insights extrapolated from these preliminary studies, the kit was then designed. Following the creation of the primary kit/game and its initial prototype, an evaluation session was undertaken. While the upcoming chapter delves into the specific design decisions of the kit, this chapter will shed light on the methodological choices that shaped it.

Before going forward it is important to note that to ensure inclusivity for all family arrangements, the term "adult guardians" will be used instead of "parents" in this work.

4.1 Exploring children's needs: Co-designing workshop for identifying children's and adult guardian's needs

The expectations of the family members involved in the hospitalisation experience (children and their guardians) were explored by a preliminary research that was conducted within the collaboration. Feiran Zang from the university of Eindhoven (F. Zhang et al., 2022) conducted a research, examining what features and functionality young children and their guardians desire, to help them with pain management. Children were asked to discuss and build a low-fidelity prototype using craft supplies.

The contribution to this workshop focused on using pre-fabricated elements. 3D body shapes, as well as cardboard limbs, ears and tails were designed and produced for the use in this workshop. Additionally, stickers with functional elements were also produced, such as cameras/eyes and speakers. As mentioned above, the aim of this kit is to use prefabricated elements as the basis for the game, as well as customising the robot. This workshop offered a great opportunity to have a first view on how such a kit could be put together.

4.2 Using improvisation theatre for concept creation

Given that this kit will utilise storytelling, this improvisation session was aimed at generating options for the narrative and character of the robot.

If the child's experience in the hospital would be framed in literary terms, then the child would be the protagonist. Their guardians would be trusted and assistive, yet authoritative characters, holding power over the plot and the protagonist. The hospital staff will (hopefully) also be in the same category, although the child might be uneasy around new people. With our next experiment the following question was answered: what type of character would the robot be? Answering this question helped define possible personality characteristics that the robot will benefit from.

Keeping in mind, that the role the robot should have in real life is that of a supportive confidant, it was decided to experiment with the idea of a side-kick, a secondary character whose main goal is to assist the protagonist. This concept was introduced

using improvisation. As discussed in chapters 3.10 and 3.11, improvisation has certain advantages as a co-design method with children.

The experiment consists of a generative improvisation session featuring story-based and character-development exercises:

- Emotional Recall: Participants recall a time when they were helped by someone, focusing mostly on how that made them feel. This experience will inform the emotions and behaviour of their sidekick character.

- Interview: Participants take turns interviewing each other in the role of a sidekick character. This exercise can help young participants think about the personalities and mannerisms of their sidekick characters without having to use descriptive language.

- Problem-Solving: Participants work in small groups to create scenes where the sidekick character must help another child solve a problem. This exercise can help them think, in a natural way, about how their character might react in different situations and what actions they would take to help.

- Object Improv: Participants come up with an object. They then create a scene in which the sidekick uses the object to help someone in need. The use of objects helps participants define the manners in which their character moves, by using physical movement.

- Story building (also known as Typewriter): One participant begins a story, usually based on an inspiration such as a title. Then the participants alternate adding single sentences or words. In this case, the title will include the character which is being developed. This exercise allows the participants to gain and share insights about the character they are developing.

In order to gain more insight into the character's embodiment and personality, participants answer a set of questions after each exercise. Questions starting with "How", "Why" and "Using What" and answering the challenges the character had to overcome, posed in the story, are useful for this exploration. Depending on the exercise, the questions are answered individually or as a team.

This session was intended to include children of an appropriate age, directed by an experienced adult. Due to COVID 19 restrictions at the time, the session was run exclusively with trained adults. Therefore, the exercises were changed to accommodate them. The participants construct personas of children using the Interview exercise. Similarly, they also construct the personas of sidekicks. Considering that the adults had to first define the children's characters and then move on to their sidekicks, Emotional Recall was substituted by a second round of Interviews. Due to the

fact that trained adults are quite used to using movement in their scenes, the Object Improv exercise was not necessary. It was replaced with prolonged scenes, in which the participants could develop longer narratives and offer multiple challenges to the same child-sidekick duo.

4.3   Designing a co-design workshop to test the kit

Setup and Procedure

This session was aimed to test, whether the children could use the produced kit to co-design their robot's embodiment and personality. The desired outcome is a robot concept that the children participants would identify as unique and familiar. Additionally, data and feedback regarding the kit itself was gathered aiming to be used for improving the kit in the future.

One co-design workshop was organised lasting 1h30'. The workshop was organised in collaboration with a group of scouts during their scheduled evening meetups. The researcher was present in one of their previous meetups in an effort to familiarise themselves with the children and the adult scout leaders to ensure that they all feel comfortable in their presence.
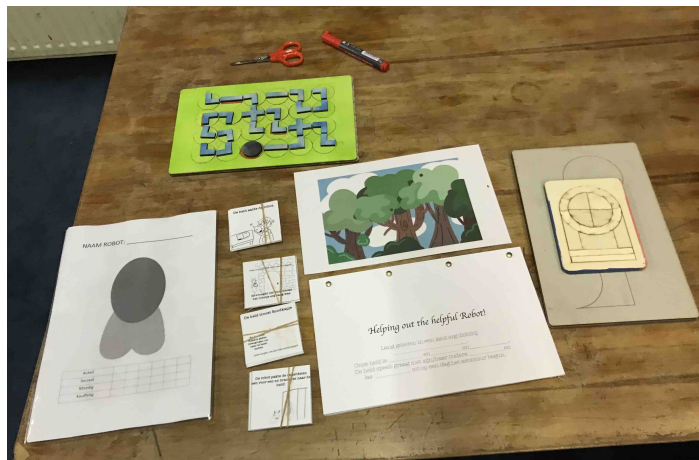
Figure 4.2: The kit during the workshop

The following process was followed:

- Before the session started, the adults were shown the assistive video in Dutch created by the researcher as their guiding manual (Kousi & Hotamis, 2023). The video goes through the process of playing the game and filling in the accompanied sheets step-by-step.

- During the first 10' the robot pain management assistant concept was introduced to the children. Alongside a short video produced by the Radboud

Hospital (kinderziekenhuis, n.d.) aiming to explain to children the preoperative procedure. Additionally, a short discussion about their own experiences was held.

- In the next part, the children were given one kit each (see Figure 4.2) and asked to play the game and build their story with the help of the adult assistant. This part lasted approximately 1h.

- Finally, the children had a discussion with their adult assistants asking them about their experience lasting about 5' and a team discussion where they showed their designs and discussed about their robots. During this session the Miro-e robot was also presented to these children and compared to their robot designs.

Design

The design of this approach and kit can be broken into three stages: designing an exploratory robot parts kit to be used for discerning the children's needs, designing the method itself including the type of playful experience, and finally designing the materials used in it. In this chapter, the design of each stage will be detailed.

After careful consideration of the vast choices available for building such a kit, the idea of a TTRPG style adventure picture book was selected. The kit will include a board game based on an RPG-style adventure story. The child will be offered to choose how they and the robot overcome obstacles and approach issues throughout the story. The story will attempt to create parallels to the child's future experiences in the hospital. Most importantly, it will have to end in a way to prepare the child to meet their robot in the hospital and eventually get separated from them. Using these choices, the hospital staff will have to quickly customise the Miro-e before the child arrives; therefore, the kit's outcome should be straightforward and not need much interpretation.

5.1 Exploratory robot parts kit

The exploratory robot part set was designed within the scope of this work and used in (F. Zhang et al., 2022). It aimed at offering a wide range of body parts and included raw materials that the children could use to create any extra parts they wanted. As seen in Figure 5.1, it included laser-cut cardboard pieces, pre-constructed three-dimensional bodies, as well as soft stuffed animal-like appendages and colourful fur dresses for them. The robot bodies were the main 3D pieces and were constructed in three shapes: an oval, a rectangular and an organic Miro-e-shaped version. The heads were made out of two pieces of cardboard fitting together similarly to the shape of Miro-e's head. These pieces were designed based on the most common pets children of these ages might have interacted with or know about. Therefore,

it offers four different head configurations: round/no ears, dog, cat and bunny ears. Similarly, a few different designs of tails were created. Arms, paws and hind legs

Figure 5.1: The material as they were **1:** digitally designed **2:** physically produced and **3:** used in the workshop

were also created in cardboard, fur and stuffed animal versions. The longer pieces were meant to be front legs/arms, while the shorter and wider legs were meant to be used as hind legs. Pre-sown dresses made out of fur were also offered as part of the set.

Finally, some extra mock-ups of interactive attachments such as speakers, touch sensors and cameras were made in the form of stickers. The kit was completed with craft materials as well as fabrics, felt and fur pieces to allow full freedom for the children to design their robot.

As mentioned above, the aim of this kit was to offer as much freedom as possible to the children, to design and think about their own needs when it comes to their ideal robot for pain management. The kit would not be efficient to produce, nor ship, given the number of material variety, volume of material and intricate shapes needed to be cut and assembled. It was however successful in being easy to deploy and allowing children to build with relatively basic prefabricated pieces.

5.2   Designing a playful approach for co-designing and customising the Helper Robot with children

When it comes to co-design methods such as surveys, workshops, ideation and prototyping, none seem to lend themselves to the requirements and restrictions of this project. The restrictions are the short time span between playing the kit and building the robot being only one week, the inability of many children to come in for a workshop ahead of time due to distance and/or poor health and the possible low language and expression ability of children in the target age range (5-10 years old). Since this experience is aimed to be playful and enjoyable in its own

accord a new method using play and storytelling as a way to convey robot requirements while avoiding large written texts has been developed. The design space was then narrowed down further to board games emphasising the physical aspect of the experience while offering opportunities for breaks in the form of mini-games or challenges.

Several board game types were considered. Narrative adventure games where the player navigates a main story and makes decisions that impact it were first investigated. While the style of gameplay would be fitting for the core requirements of the kit, test-runs of such games proved to be quite long and cumbersome and not fitting for the target age range. Next, choose your own adventure storybooks where examined. While these books offer great opportunities for storytelling and can easily be accompanied by some mini-games to complete the playful experience they usually tend to be quite text-heavy and position the reader in the role of an all-knowing creature, rather than the protagonist. Finally, role-playing games where the player assumes a character in the adventure and improvises their actions (TTRPG) were considered. Although typical TTRPG games offer great creative freedom and immersion potential for the player, these very characteristics mean that the outcome of each session will be unpredictable and therefore constructing a robust set of robot requirements can not be streamlined nor automated from it.

After careful consideration and testing of various games, a TTRPG-style adventure picture book, accompanied by minigames, was crafted by combining the positive elements of all three board game types. The kit will include a board game based on an RPG-style adventure story. The child will be offered to choose how they and the robot overcome obstacles and approach issues throughout the story. The story will attempt to create parallels to the child's future experiences in the hospital. Most importantly, it will have to end in a way to prepare the child to meet their robot in the hospital and eventually get separated from them. Using these choices, the hospital staff will have to quickly customise the Miro-e before the child arrives; therefore, the kit's outcome should be straightforward and not need much interpretation. In the next paragraphs, the specific design choices for the kit will be detailed.

5.3 Final Design

The final design of the robot design/customisation kit is a physical, role-playing comic book adventure with accompanying mini-games see Figure 4.2.

This robot's design was based on a story much in the style of the 21st-century robot. The number of words per comic panel was limited to 15 for ease of reading. Each panel was chosen to move the story forward, showcase behaviour and when possible do both. The story was co-created with the child, by allowing them to control

parts of it in the "choose-your-story" moments of the book. These parts were chosen to be the moments where the robot and child duo get into situations that parallel the hospitalisation experience or give an opportunity for the child to think about how they would like the robot to behave in a more general way.

In order to make sure that the stories are completely gender-neutral, they have been written referring to the child protagonist as "the hero". When talking about gender neutrality, it is important to explain the choice of stories as well. According to recent research, girls and boys have different interests when they choose their reading material (Boltz, 2007), (Merisuo-Storm, 2006), (Loh, Sun, & Majid, 2020). Adventure and fantasy have been the most neutral type of stories. Therefore an adventure was chosen not only due to the nature of the game (RPG) but also due to the universal appeal such stories have across genders.

Given the varied interests of children in the target age group of 5-11 years old, three stories have been written (see appendix A).

- The first story takes place in the world of fairy tales. The call to action for this story comes from the robot itself when the robot's head appears out of the magic book. The robot has crash landed in the stories in the book, lost parts in them and disrupted their flow. Now the child and robot duo will travel from story to story to collect the missing robot fragments by fixing what is going wrong. This story is the most familiar to children since it features well-known fairy tales such as the Three Little Pigs and Red Riding Hood. It can be used within the entire age range.

- In an attempt to offer a novel story, in which children can take charge without the constraints of known literature, the second story takes place in a novel imaginary steampunk world. In short, the script unfolds as such: In this world, each child is assigned a robot, but our hero's robot has arrived broken. With the help of a small hot air balloon and the instructions of an eccentric delivery man, they will embark on a journey to help their little robot. This story could potentially be better for older children or for children who like machines.

- Finally, the third story takes place in space. This story is aimed at creating a more thrilling experience including space exploration and a plethora of alien creatures. In it, the child is asked to help fix a stray robot that was found broken while travelling through the galaxy. Following a similar logic as the previous stories, the child and robot embark on an adventure to fix the robot and solve mysteries on their way. This story has been developed to appeal to older children and includes themes such as space battles and scary crime bosses.

In order to maintain the interest and attention of the children, the book is accompanied by thematic mini-games that allow the child to take a break from reading and achieve a small victory. The games are constructed in two different levels of difficulty, to ensure that the entire target age range can enjoy them. Additionally, the kit also offers the opportunity for the child to put together their robot's embodiment based on a pre-defined set of parts by using stickers.

Each story is designed to prompt the user to build the kit in slightly different ways. In the context of this research, only the first story has been fully developed, illustrated and tested (see appendix A.4), due to time restraints and limited access to child participants. The mechanics, objectives, and mini-games using the fairy tale story will be examined in detail in the following section.

5.3.1 Design choices regarding the Art style and the final Robot Part Kit

The design choices for the artstyle and robot elements of the kit were aimed at fulfilling the child's needs taking into account cultural nuances, and production feasibility.

The storybook's design was characterized by a deliberate colour palette, eschewing any hues potentially aligning with gender stereotypes. Classic fairy tale influences were evident in the portrayal of antagonists, with the aim of preventing any confusion with hospital staff by opting against the use of solid white clothing for any characters. A central theme of the book was the child's interaction with the robot, necessitating illustrations of the child. This protagonist figure, named "the hero", was carefully conceptualized to be as universally relatable as possible, bearing in mind the Dutch demographic. Deliberate choices were made to sidestep coloured eyes

Figure 5.2: The design of the Hero character.

and intricate facial details, and the attire —a gender-neutral green overall— was chosen to be neutral (see figure 5.2).

The requirements for the robot parts evolved from the initial exploratory kit. The primary focus was on harnessing readily available components of the Miro-e robot, in addition to parts that could be seamlessly integrated, premium was placed on
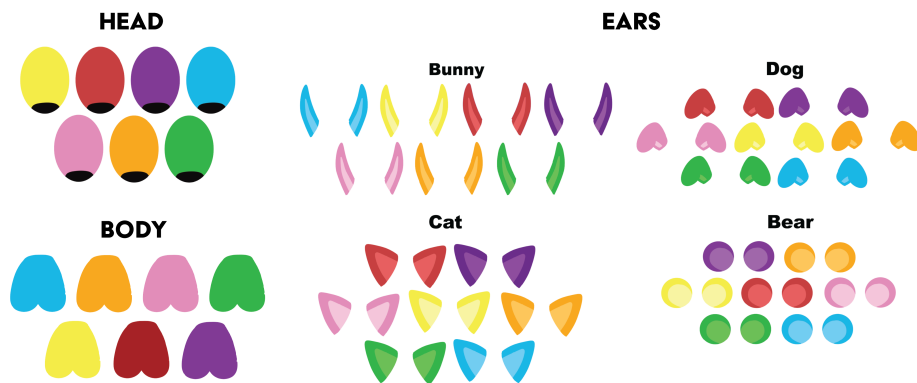
Figure 5.3: The Final robot parts set.

production simplicity and shipping convenience. Consequently, the robot building set was confined to 2D elements, resonating with the book/game's design aesthetic (see figure 5.3). The kit was completed using craft materials such as scissors, colouring pencils and markers. Since the robot already offered extensive touch sensors and a set of eyes/cameras as well as speakers these elements were omitted.

A distinctive addition to this kit was an external item pertinent to the robot, a curated assortment of animal-themed objects like bones and carrots, as well as fairy tale items like a magic wand (see Figure 5.4). Items like cookies, inspired by insights from the initial workshop, were also proposed. The dual objectives of this inclusion were to provide children with a medium to interact with the robot and to foster a bond, symbolized by a shared victory, between the child and the robot in the storyline. When the duo meets in the hospital, the robot possesses the item chosen by the child, offering a celebratory narrative climax.

Figure 5.4: The item pack available in the kit.

In summation, the book's art choices were rooted in inclusivity and cultural sensitivity, while the robot kit was consciously curated to be more functional than creative, emphasizing communication.

5.3.2 Mechanics, objectives, and mini-games

The book's front cover (see appendix section A.4) asks the child to fill in their name and describe themselves and their hobbies. At the same time, the world of the story is established and the child is positioned as the hero of this adventure. The rest of the activities focus on the robot (See Table 5.1). In total, the game includes 12 activities broken down into three categories:

- Robot behaviour choices are prompts for the child to choose what happens in the story by selecting panels and putting them in a sequence (see figure 5.5).

- Mini games (see figure **??**) comprise of a "hidden objects" game, a "pipe-connecting" game and a "jigsaw puzzle" game. The games are short, taking 1-3' each, depending on the difficulty level.

- Robot embodiment choices prompt the user to select from the corresponding parts, add them to their character sheet and draw over them if they wish to (see figure 5.6).

Page/Panel	Activity
2/3	Robot behavior choice: meeting the hero
2/4	Naming the robot
3/7	Robot behavior choice: meeting a child in distress
4/4	Mini game: find the apples
4/7	Robot embodiment choice: facial features / ears
5/4	Robot behavior choice: collaborating with the hero
5/8	Robot embodiment choice: main body
7/6	Robot behavior choice: asking for help
7/7	Mini game: puzzle
7/8	Robot embodiment choice: item
8/5	Mini game: connect the river
8/7	Robot behavior choice: straightforward point selection

Table 5.1: Game structure

The ultimate goal of this kit will be to create customisation instructions for Miro-e to be transformed into the robot designed by the child. Therefore it will aim to produce three main outcomes: a name that everyone can refer to the robot as, a visual guide to customise Miro-e's embodiment and a quantitative representation of Miro-e's relevant personality characteristics. This basic combination in the context of role playing games is also called a character sheet. For the helper robot, the

character sheet will include four options: active, social, brave and cuddly. As the game progresses, the adult assistant fills in a character sheet for the robot, based on the child's choices. A character sheet page is used for gluing the robot's parts and drawing any details on top, see Figure A.9. Meanwhile, the four characteristics of the robot receive points, depending on the child's choices in the game.

The character sheets will demonstrate how much each of these four characteristics are prominent on the robot. The values will be measured from one to five, with five being the most intense. It is technically possible for the values to exceed the number five, it is however rather improbable since it would require multiple conflicting or overlapping panel choices to be made. In this case, the adult guardian should help the child use the tool properly.

The character sheet and the adult's notes will then be used to build the robot's embodiment and personality. At the same time, the activities themselves serve as a hands-on way for the child to design their robot. As can be seen in Figure A.9, the child will be called to physically cut/glue together robot parts and draw details in order to "build" the robot. The physical element is also present when choosing story panels and when the child glues together the sequence of events.

Figure 5.5: Robot behaviour choice example.
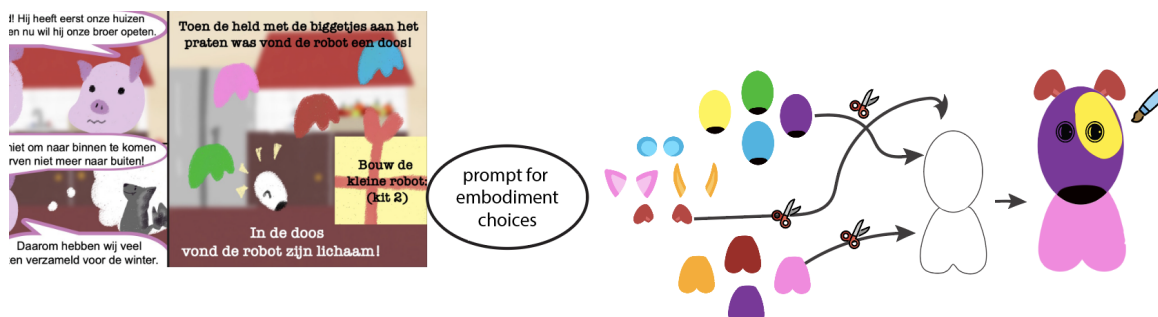
Figure 5.6: Robot embodiment choice example.

Additionally, a video manual was created, demonstrating the use of each part of the game (Kousi & Hotamis, 2023). The manual is intended to help adult guardians

use the kit effectively in a straight forward and quick way. This ensures that the experience is a playful one for the child and does not resemble a chore. The tracking of the character sheet is also simple, ensuring that the guardians will not have to work too hard on administrative tasks while helping the child. Each story choice/panel has been marked on the back with the personality characteristics depicted. In Figure 5.8 an entire list of all the choices is shown while in Table 5.2 the corresponding values can be seen.

Figure 5.7: List of story choices available to the children.

It is important to note, that the points are cumulative and positive. Panels that do not depict the robot as active, for example, do not carry a negative "actief" point. This choice was made on the basis that for an agent to have a personality characteristic they don't have to always display it. An active person can relax and a social
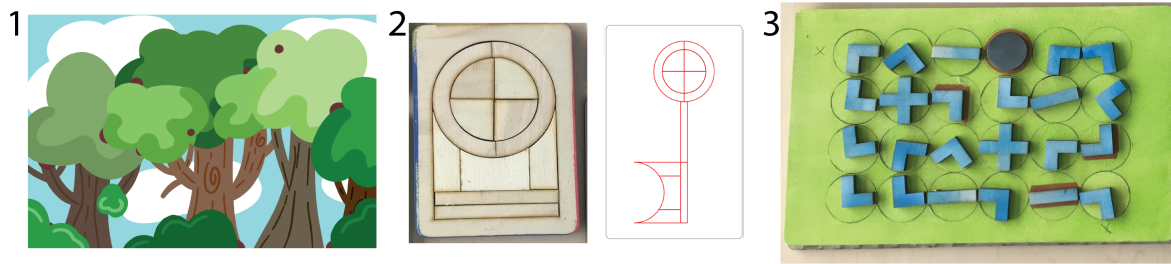
Figure 5.8: Mini-games for the first story. **1:** Find the apples game. **2:** Lock to Key puzzle **3:** Connect the river game

	Choice Point 1	Choice Point 2	Choice Point 3	Choice Point 4
Choice a	ASK	ASM	K	S
Choice b	A	SMK		AM
Choice c	SK	S	SA	
Choice d				AM
Choice e	M		–	A
Choice f	K	SMK	–	SA

Table 5.2: Choice values the letter correspond to "A" Actief NL or Active EN, "S" Sociaal NL or Social EN, "M" Moedig NL or Brave EN and "K" Knuffelig NL or Cuddly EN.

dog is still social when lying on the grass. The panels in which the robot does not demonstrate any of the above characteristics carry no points.

In the next paragraphs, the connection between the kits' results and the robot's customisation will be detailed.

5.4   Connection between parts in the kit and robot parts

The outcome of this kit is designed to be efficiently translated into a Miro-e costume and behaviour. In this paragraph, the connection between the parts in the kit and the physical robot will be explored.

Miro-e has a rather simple form. A head featuring ears and eyes and a body featuring a tail. The robot does not have any limbs, it moves using wheels located at the bottom of its body. Therefore the body parts designed for customising its appearance are mainly based on the colour of the head and body, as well as the shape of the tail and ears.

The body costume is intended to be made out of thin stretchy jersey fabric fas-

tened with Velcro, and connected under the body via a three-point elasticated strap. The body costume should feature holes, in order to avoid the obstruction of the sensors at the front of the body. At the same time, the thin material would allow the lights at the top of the robot's body to shine through and the touch sensors in the same area to work properly. This is the reason, why fur was omitted from the design as the thicker material obstructed functionality. The head costume is constructed similarly. It is connected to the body or collar with Velcro and features holes for the eyes, ears and snout.

The ears of Miro-e each feature a loudspeaker housed in a silicone case. The ears themselves are rather long and can be used as a structure for animal ears like bunnies, dogs or foxes. They also feature servos allowing each ear to rotate independently from each other. For that reason, for smaller ears such as cats and bears the soft silicone structure of the Miro-e ear should be folded before the costume is placed on it. The ear costumes do not connect to the head costume. They are instead fastened to the ear itself, allowing them to rotate since this motion helps with expression.

The tail features two motions, wagging (side-to-side) and drooping (up-and-down). There is no other functionality connected to the tail. The costume is designed in a similar way to the ears, although the tail's size is sufficient for any animal and does not have to be manipulated.

5.5   Connection between personality choices in the kit and robot personality

One of the design choices for this kit is its direct connection to the actual robot. The behaviour and personality of the robot are very important parts of this connection. In this paragraph, the translation of the kit's results to the robot's behaviour will be explored.

As mentioned in section 5.3, the kit defined the robot into four characteristics: active, social, brave and cuddly. Depending on the child's choices throughout the story, a character sheet is produced, assigning a numerical value to each characteristic, placing it in one of three categories: high, neutral or low. These values define the robot's behaviour.

Active is a characteristic that can inform the robot's initiative-related sequences. Deciding whether or not the robot acts immediately upon stimuli or waits for specific signals to be given.

Social as a characteristic can decide whether or not the robot engages with people that are unknown to them, or focuses on the one child they are programmed to

follow.

Cuddly indicates how quickly the robot engages in physical touch as well as whether or not it will attempt to nest around the child while the child is in bed.

Brave is the characteristic that quantifies and puts the rest into perspective, impacting both the initiative sequences of the robot as well as their social engagement and body posture. High bravery would mean that the robot moves in confident, straighter patterns maintaining its head and tail high and utilising slightly louder sounds. While mid to low bravery would mean that the robot moves in a slower and more curved pattern, keeping its head and tail relatively low and being as unobtrusive as possible.

The possible situations involving social interaction with humans as seen in Table 5.3, can be derived from the hospitalisation timeline, see section 2.5. Miro-e's affective expression, see table 3.1, can then be used to develop exact expression sequences for Miro-e. At the same time, as discussed in section 3.4 and section 3.6, this robot already features a bio-mimetic brain that produces fluid expression and animal-like behaviour. By using a basic image recognition model to identify the various humans, recognise the child and control the robots' emotional expression (as seen in (Ghafurian et al., 2022)), a few alterations to the main "brain" are needed to change the overall personality of the robot. These changes do not aim to alter what the robot does (comfort, play, sing a song etc.), but how it does it (fast, slow, confidently, cautiously etc.). These proposed alterations are shown in tables 5.4 and 5.5 for the robot's body and table 5.6 for the robot's head.

Location/ People involved	Child	Others
Waiting Room	is looking for	
	first meeting	first meeting
	is petted by	is petted by
	follow child	moves close to
	is held by	is held by
	engage in play with	
	after play with	
On operational bed	is being touched	is being touched
	is awakened by	is awakened by
	child requires comforting	
	is dressed by	
in aftercare room	is awakened by	is awakened by
	child requires comforting	
	engage in limited movement play	
		person enters room

Table 5.3: Expected interactions between the Helper robot and humans in the hospital

	Drive: 2 differential wheels	Accelerometers in body	Tail	Body DOF foot	Body DOF lift	Light sensors	Cliff sensors	Proximity (sonar)	LEDs
Brave									
high	rotation: during motion, 75-90 degrees	acceleration: 100%	neutral position: high				stop: up to 10cm before cliff	path favour room center, up to1m from people	70-100%
neutral	rotation: during motion, 85-100 degrees	acceleration: 80%	neutral position: centre				stop: up to 30cm before cliff	path favour room center, up to 1.5m away from people	70-100%
low	stop to rotate: 100-150 degrees	acceleration: 50%	neutral position: droop				stop: up to 1m before cliff	path favour room edges, up to 30cm from objects, up to 2m from people, stop and wait for moving obstacles to clear path	70-100%
Active									
high	up to: 100% of speed	acceleration: 100%	waggle: fast	tilt speed: 100% speed	lift distance: 100%	sleepy: 20% slower			70-100%
neutral	up to: 90% of speed	acceleration: 100%	waggle: normal	tilt speed: 100%	lift distance: 70%				70-100%
low	up to: 70%of speed	acceleration: 80%	waggle: slow	tilt speed: 70%	lift distance: 50%	sleepy: 20% faster			60-80%

Table 5.4: Expression map for the various degrees of the four personality characteristics for Miro-es body for Brace and Active characteristics.

	Drive: 2 differential wheels	Accelerometers in body	Tail	Body DOF foot	lift	Light sensors	Cliff sensors	Proximity (sonar)	LEDs
Social									
high								path favour room center, up to 1m away from unknown people, up to 50cm away from child	
neutral								path favour room center, up to 1.5m away from people, up to 50cm away from child	
low								path favour edges of the room, up to 2m away from people, up to 50cm away from child, stop and wait for moving obstacles to clear path	
Cuddly									
high				no movement when touched		sleepy: nest next to child 20% faster		when inactive/seated/waiting: 70% likely to assume position 0cm away from child	
neutral				slow tilt when touched	50% of lift distance	sleepy: nest next to child		when inactive/seated/waiting: 50% likely to assume position 0cm away from child	
low				fast tilt when touched	100% of lift distance	sleep: ignore sacedian rythm, stand in neutral positon next to child		when inactive/seated/waiting: 0% likely to assume position 0cm away from child	

Table 5.5: Expression map for the various degrees of the four personality characteristics for Miro-es body for Social and Cuddly characteristics.

	Neck \acro{DOF}			Eyelids	Eyes/Cameras	Speaker
	lift	pitch	yaw			
Brave						
high	neutral position: high	during rotation: 60-80% of speed	neutral position: center	neutral: 80% open	neutral position: subject of interest center of view field	100%
neutral	neutral possition: high	during rotation: 80-100% of speed	neutral position: center	neutral: 100% open	neutral position: subject of interest center top of view field	90%
low	neutral possition: low	during rotation: 100% of speed, 20% more frequent movements	neutral position: low	neutral: 100% open	neutral position: subject of interest center top of view field	80%
Active						
high				neutral: 100% open		100%
neutral				neutral: 80% open		90%
low				neutral: 60% open		80%
Social						
high	raise to greet: 100% speed				acknowledge/greet unknown person: 80% likely	
neutral	raise to greet: 80% speed				acknowledge/greet unknown person: 50% likely	
low	raise to greet: 60% speed	neutral position: towards child			acknowledge/greet unknown person: 20% likely	
Cuddly						
high	raise when touched: 100% likely					
neutral	raise when touched: 70% likely					
low	raise when touched &child in full view: 50% likely	rotate fast when touched & child out of view: 80% likely				

Table 5.6: Expression map for the various degrees of the four personality characteristics for Miro-es head and neck.

<div align="right">

Chapter 6

</div>

Results

6.1 Outcomes of the co-designing workshop with children and adult guardians

As presented in (F. Zhang et al., 2022), the co-creative workshop with children and their adult guardians aimed at better understanding their needs. During this co-creative workshop, the children built their prototype from a selection of three-dimensional robot parts. A pre-defined set of parts capable of creating humanoid, zoomorphic and mechanical-looking robots was given to the children. The kit was designed within the scope of this work and is described in detail in section 5.1.
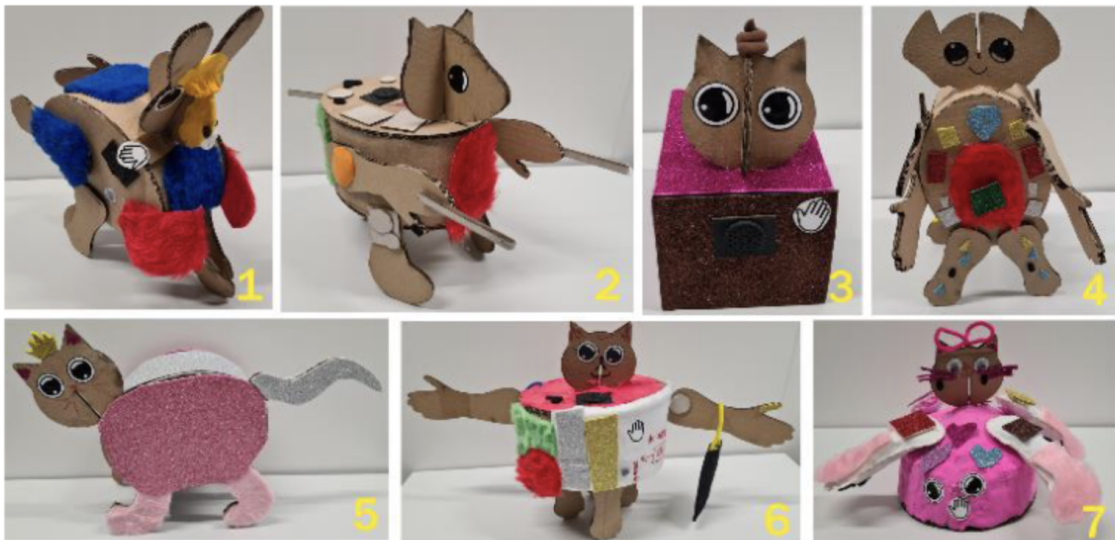
Figure 6.1: Examples of the children's robot design prototypes. Source: (F. Zhang et al., 2022)

As Zhang suggests, children demonstrated a liking to zoomorphic designs for their ideal hospital assistant robot. The participants also described the robots as

capable of playful, comforting and caring interactions. In some cases, taking up actions that a carer would, such as cleaning up after the children or reading stories. Additionally, expressing emotions seemed to also be important to the participants.

Adult guardians focused more on the functional aspects of the robot design. They also reported that they would value the robot as an emotional support agent. Their active involvement in the session indicated that especially for these ages (4-6), adult supervision and assistance are needed. Playful, comforting and caring interactions were identified as important to both children and their guardians.

It is important to note that participants in this study were asked to describe the functionality, not the personality of the robot. Nevertheless, some described the movement and behaviour of their robots by comparing them to animals, for example, "like a dinosaur" or "like a pet cat".

Finally, one of the results of the experiment was, that the children designed both active and passive features into their designs "store candy, read stories etc". The participants at large designed the robots to be reactive with functionalities including understanding the child's emotional state through interactive buttons. Additionally, in some cases, they attributed some insight to the robot by having them take actions under certain conditions for example "when I don't feel well".

All of the above agreed with common pain management strategies used today and reaffirmed the potential for this robot to be used equally well as a confidant and a carer. At the same time, based on the vastly different designs created in this study, see figure 6.1, it can be concluded that customisation to each child's preferences is important.

In the next paragraph, the results of the storytelling improvisation workshop aimed at defining the best adventure style and types of characters to use in the kit will be explored.

6.2   Outcomes of the Improvisation Theatre workshop with trained adults

The improvisation session lasted two and a half hours and consisted of 5 exercises as described in section 4.2. Four trained improvisers participated in this session, three as participants (two male and one female) and one as the director. The full transcripts of the improvisation workshop are included in the appendix of this document, see section A.7, while the design of this workshop has been explained in detail in section 4.2.

Five child characters were created, both male and female. The improvisers were instructed to "be a child" and they defined their personas through a series of ques-

tions. Next, the improvisers played out a scene to define a sidekick for every child. The final characters were five distinct children and side-kicks. The children's characters were chosen to be from 5 to 10 years old.

The analysis of this session's outcomes will be based primarily on the transcripts from the video taken in the session. The emotional expression using movement included in the video was used as a reference for drawing the book's story panels and was not analysed further.
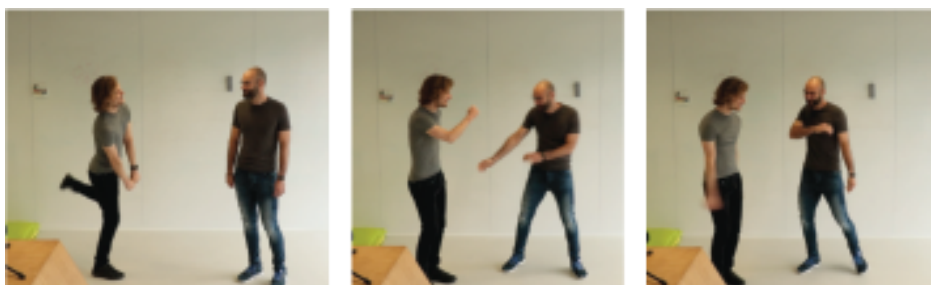
Figure 6.2: Improvisers in a sequence. The child (left) expresses anxiety, the side-kick (right) encourages them. **Left:** child is in distress, **Centre:** Side-kick begins encouraging motion, **Right:** Sidekick concludes encouraging motion.

6.2.1   Characters generated in the Improvisation session

In this paragraph, the child and robot characters will be described. First, the child characters will be detailed and then the sidekicks corresponding to each child character as well as the imagined context will be described.

The first character, Stevie is a shy and restrained boy who likes sports and cars and has the tendency to "chat rather than talk" with his friends. The second character, Marius is a 10-year-old boy who dislikes boredom and wants to play with his friends. The third character, Elena is a dynamic and strong-willed girl with extroverted characteristics. She likes social games, such as tag, and spy-related series. The fourth character, George is a lost frightened 5-year-old who searches for their parents. The fifth character, Quinton is an 11-year-old boy, who is bored and wants to fly in a car.

Stevie was involved in a romance-related playground adventure, where the side-kick (his cousin) acted as a conversation starter and moral encouragement for him to talk to a girl. Stevie, in this story, asked his sidekick to lessen the intensity of their encouragement because he was "feeling pressured".

Marius's side-kick is a young owl named Peggy. Peggy is an adventurous and mischievous character who follows Marius on adventures and actively encourages

them to have fun. Peggy wants to explore and discover new things. This is one of the only animal characters, and also the only sidekick who suggested going on the adventure. It was also the only story which placed the child near actual danger when the two decided to jump out of a plane and explore an active volcano. As one of the actors mentioned, "...it was really fun to see what came out between a very helpless, very rational little owl and a boy who was just like, "Yeah, Let's go for it."". Interestingly, the little owl was the voice of reason during the most extreme parts. While willing, it was obvious that the owl would be unable to move the story forward on its own, being carried around in the child's pocket for a good portion of the story. The child protagonist, therefore, was the centre of the decision-making.

Elena's sidekick was another child named Bob but she also ended up picking up a second unplanned sidekick Kyle. The story is "The Mystery of the Lost Kittens". The protagonist moved the plot forward for the majority of the story, coming up and executing most of the ideas. The actors felt supported by each other regardless of the degree of contribution. When asked, one of the actors (playing Kyle) mentioned "Kyle was a very willing person, just didn't realize the kind of input that he had". Additionally, the mystery type of story seemed to be enjoyable and offered a variety of tasks for the characters to tackle.

Elena's character was also in a sandcastle-building story, together with an older assistant, who helped her creative process by providing know-how and encouragement. Elena was one of the more vocal characters and the only one who explicitly asked for assistance. The sidekick, even though he was not necessarily needed, was readily available to her and expressed having fun which was encouraging.

George was the character in the worst situation, his sidekick Mr. Steel helped him find his parents by providing a plan. George in this story finds the courage to free his parents from captors, using his own strengths and the assistance of the sidekick. The participants agreed that even though George took no initiative and was not a very capable character (being defined as the youngest and scared/parent-dependent), they still felt like he was empowered and grew as a character.

Ms Creative was the sidekick of Quinton. She is an adult fairy with magical powers and helps the child by magically creating the parts needed to make a car. In this story, Quinton is given creative freedom, although he does not take a lot of actions himself, the sidekick is asked to do most of the active tasks. From another point of view, Ms Creative takes on the role of a teacher or instructor, who guides the discussion on how to get things done. When asked, one of the actors mentioned "So it Ms Creative was the creativity of George personified". When the sidekick became too powerful, being an ancient magic fairy that can make anything reality, the actors were forced to not assign any will to her mentioning "Like a tool, for the child to be used in a way".

Most improvisers reported feeling supported by willing and enthusiastic side-kicks. Both in the cases of Ms. Creative and Kyle, two sidekicks with vastly different power dynamics, willingness and enthusiasm were noted as calming and supportive.

The level of agency that the sidekicks had, ranged from being helpless like Peggy the Owl, to following along in support, like Bob and Kyle, having limited powers, like Mr Steel, Steve's cousin and Elina's assistant, and being all-powerful, like Ms Creative. Given the nature of Miro-e, the most fitting sidekick archetypes would be close to Peggy the Owl, Bob and Kyle.

6.2.2 Selection of behaviours and personality Characteristics from the Improvisation Session

As mentioned in chapter 5 the outcomes from the improvisation workshop informed the narrative and characters of the kit's story. In this paragraph, the specific outcomes that were relevant to the story building will be detailed.

Miro-e's character was heavily influenced by Peggy the Owl, Mr Steel Bob and Kyle. While the idea of a robot as a tool with which the child can express themselves is interesting, maintaining a clear separation between the sidekick character and the child is important to encouraging agency. Therefore, archetypes such as Ms. Creative and Mr. Steel will be excluded from further consideration. Elements borrowed from these sidekicks' behaviour are encouragement, approval, caution, excitement, fear and happiness. These can be expressed by the robot via movement, light and sound without having to use speech.

The behaviour of Miro-e in the storybook was therefore modelled using these outcomes while keeping the design lenses of Familiarity, Trust, Ownership and Agency in mind. The robot is encouraging and follows the hero's lead without being over-bearing, creating trust. At the same time, it gets carried when scared, encouraging both agency and ownership. The hero is called to solve the issues using their own powers and they can be assisted by the robot using the limited array of unique abilities that the robot offers and the hero lacks. Therefore, separating the two and positioning the robot sidekick as a complementary character not an extension of the child.

Finally, from the types of stories explored in this session, mystery was the most universally enjoyed among participants. The adventure style of the kit will therefore include mystery/ies.

Next, the results of the final workshop with children and adult assistants using this kit will be presented. The kits's design was fully described in 5.3.

6.3 Outcomes of the co-designing workshop with children and adult assistants

Four children participated in the workshop (see table 6.1), 2 boys and 2 girls between the ages of 7 and 11 years old. During the workshop, the participants came up with four distinct robots (see figure 6.3). Since there was a language barrier between the researcher and the children, the colleague who created the artwork for this book and was fully familiar with the workshop, was recruited to lead the workshop and translate the forms. The adult assistants (scout Leaders) were bilingual and therefore no translation was necessary.

Using the reporting form, see section A.6, the adult assistants noted the perceived engagement level that the children exhibited during each part/page of the book. They reported that the children started with low enthusiasm, which

Figure 6.3: Children participant robot designs

peaked during the third and fourth pages and, for most participants, dropped slightly in the fifth to sixth page and remained steady thereafter 6.4. According to the interviews that were conducted right after the session, the participants became tired around the 35-40' mark which coincides with the slight drop of engagement in the last part of the session. Overall, the children reported enjoying the session and would be excited to meet the robot they made if given the chance.

ID	Child's gender	Child's age	Previous robot experience
1	Girl	9	Has seen a robotic vacuum cleaner
2	Boy	7	No
3	Girl	10	No
4	Boy	8	Had robot-looking toys (transformers)

Table 6.1: Child participant demographics

The participants also showed a sense of ownership over their robot. When asked if this robot is the same as the stock Miro-e model that was presented to them, most participants reported that it did not feel the same. With one notable exception of a participant who expressed confusion noting "I don't know but mine is blue.". Some children extended their own interests, likes and desires to the robot, such as

"loves watching Spongebob just like me", as well as, "loves eating Mc Donalds" and "because -child- loves cookies it was nice [for the robot] to eat the cookie".

The participants attributed practical as well as playful abilities to their robots. All participants mentioned emotional support when describing the robot's abilities: "being by my side to cheer me up", "its face should cheer you up", "wagging tail when recognising", "is very sweet, smart, caring, fun to do games with, throwing a ball". One participant described the robot as being able to carry food on a tray on its back. Another participant noted that the robot should not be too loud, so as to not disturb the others in the hospital.

Figure 6.4: Participant interest over time

Two of the participants attributed characteristics to their robots outside the ones shown in the book. One participant described their robot as having "Magic Powers and Spells" like in Harry Potter. The other one described it as having "longer limbs" and being able to jump and do backflips.

Most participants identified with the hero. One participant did not, pointing to differences in the appearance of the hero depicted in the book versus themselves.

Finally, only one participant referred to their robot as a specific animal describing it doing "little dog pants". None of the participants thought that their robots could talk or understand language, however, they all believed that their robot would be able to recognise them and understand how they feel, making remarks like "nice talking about things that -child- experienced" or "only happy when the hero is happy".

6.3.1 Story choices and character sheet build

Story choice points were overall a fun activity for the participants. When it comes to filling in the character sheet, each story choice had been given a number on the back 1,2,3 or 4, representing the choice point and the letters a to f representing the particular choice (as can be seen in table 5.2). In addition to filling in the character sheet, adult assistants were asked to note in each panel what the participants chose for each choice point (see table 6.2).

Participants selected different options for their story choice points as can be seen in table 6.2. During the final interviews, adult assistants reported that participants

often verbally added to the story or altered it outside of these pre-defined choice points. One of the participants, for example, noted that the broken key featured in the Witch's house "is made out of candy" and that's why it broke. Another participant noted, that the robot head in the beginning of the story was discarded by its previous owner, much like a stray animal could be, effectively inventing a backstory for the robot.

	Choice 1						Choice 2						Choice 3				Choice 4					
	A	B	C	D	E	F	A	B	C	D	E	F	A	B	C	D	A	B	C	D	E	F
P1			x		x				x					x	x			x				
P2				x	x		x	x					x			x			x	x		x
P3	x	x			x				x			x		x	x			x				x
P4		x			x		x					x			x				x			x

Table 6.2: Participant story choices.

At the end of the story, the participants were also asked to give one "treat" to the robot by selecting one of the four characteristics and adding a point. Participants did not find this challenging. They all had a readily available justification as to why they chose the specific characteristic. One participant remarked that this would improve the robot, "because I think he would be more brave". Another chose "Social" because they wanted the robot to be content, listening to them talking about their life. The adult assistants reported that this last point selection was very important to the participants, and they all "took it very seriously".

Each participant and adult assistant team followed a seemingly unique way of filling in the designated character sheet, when it came to the personality characteristics table. While none of the participants used the character sheet as intended, two stood out. One participant ignored the instructions entirely and guessed the points by themselves at the end of the game. The other filled the character sheet first, then moved on to the story. While interesting and notable, these findings only serve as design feedback for the instructions given. The values of the character sheets used in this research were calculated based solely on the story choices, and the erroneous character sheets were ignored.

Based on the story selection, the four robot personalities can be seen in table 6.3.

Notably, when asked to explain their embodiment choices, participants had more difficulty answering. For example, it is evident from the results that the blue colour was favoured in most cases, but no participant attempted to justify their choice. The adult assistants did provide a possible reason: it is the colour of the scouting team's flag. Additionally, all participants chose cat ears, even when describing their robots as dogs. This lack of care for these decisions could indicate that the embodiment is

	Active	Social	Brave	Cuddly
Lana	1	2	2	3
Max	3	3	3	5
Meneer gek	2	3	1	3
Wookie	4	4	3	2

Table 6.3: Robot personalities based on participant story selection.

less important than the personality of the robot.

Finally, during the final discussion, the participants were asked to describe their robots and were then asked, whether the robot was "Active/Energetic", "Brave", "Cuddly", and/or "Social", without looking at their notes. The participants described their robots verbally, and most gave justifications and compared their robots. These verbal descriptions matched the produced character sheets. Participant 2 was the only one who described their robot as more active/energetic than cuddly, in contrast to their final character sheet. They also described it as "playful", "funny" and "wants to sleep with me when it is scared". In the next chapter, the final conclusions based on all the work done will be presented.

Discussion

The goal of this study was to produce a robot capable of assisting in pediatric pain monitoring and management by recording social and behavioural data. A review of related work and common criticisms and recommendations in the field suggested that to succeed, this robot would have to 1) fulfil the child's needs within the given context and 2) become a welcome and trusted presence for the child in the hospital. Furthermore, it was advised to determine the children's needs by actively including them in the design process. A zoomorphic embodiment was also found to be beneficial for this design.

This work succeeded in following all of the above recommendations and producing a method for co-creating a uniquely customised robot for each child, based on the existing zoomorphic robot Miro-e. The current concept integrates storytelling and games in a simple-to-play kit which produces embodiment and personality requirements while introducing the child to the robot, which they are actively designing. This method is, to the extent of the writer's knowledge, novel.

Several interesting findings emerged throughout the research:

- **Robot's Personality Characteristics:** After initial testing with children and their adult guardians and rapidly testing character concepts in an improvisation session, several personality characteristics were identified as important for the robot to establish itself as a welcome and trusted presence for the child, namely: active, social, brave and cuddly. Altering the intensity of these characteristics proved sufficient to create a variety of personalities while keeping the design focused on the specific tasks and situations a child might face during a day case operation. Such alteration is achieved through the produced kit by asking the child to choose the robot's behaviour within a story.

- **Value of Improvisation Theatre:** During the initial testing and especially when it comes to the story-building process Improvisation Theatre provided an effective way to explore potential narratives and character archetypes for the Miro-e.

This approach proved valuable in rapidly producing and testing different characters. At the same time, the serendipitous nature of improvisation offered new perspectives that were not considered before. For example, the characteristic "mischievous" was excluded in order to avoid encouraging unsafe behaviour during hospitalisation.

- **Robot Customisation:** While the preliminary testing is not yet sufficient to generalise results, the early findings are encouraging. After playing through the story of the kit, child participants identified their robot as unique and "theirs" separating it from the stock/uncustomised robot. Participants' descriptions of their robot also agreed with the character sheet they produced using the kit. In conclusion, this method worked well to introduce and familiarise the child with the robot in a positive tone, while at the same time allowing the child to build up the robot's personality and embodiment.

- **Prioritizing Robot's Behavior:** Another notable discovery was, that children tended to care more about the robot's personality than its appearance. Even though the children were given customisation options and materials to decorate their robot, they put a lot more care and effort into choosing how the robot behaved. A finding that highlights the importance of designing (and more specifically co-designing with the child) the robot's personality.

- **Potential of Accessories:** The particular interest shown by participants in giving items to the robot (observed in both co-design sessions) points to the untapped potential of accessories to enhance the interaction. Communication apparatus, such as buttons or external items, has shown promise as tools for children to communicate their emotions and effective data collection. Participants expressed interest in using the external items to communicate emotions, help the robot and play with it. Further research is needed to establish exact ways for implementing accessories in the robot's design.

- **Guardian Influence on Preferences:** Children's preferences for their robot's abilities and personality varied based on the presence or absence of their guardians. In the session where the adult guardians were present the children and their guardians agreed to value caring and playful traits for the robot, such as reading stories, cleaning up or protecting them. In the session where they were left without parental/guardian oversight, children tended to focus more on playful robot traits and did not assign actively caring tasks to them. This discrepancy could be due to the difference in age between the two groups of children. Yet more research is needed on this front.

- **Robot Status:** Another explanation for the discrepancy between children's reported needs between the two experiments could be due to having the robot ask the child's help within the story, successfully placing the robot in the status of a peer or a pet and not a carer. This is an encouraging finding, supporting the use of storytelling and play in robot design, however, more research is needed to validate these results.

The research's context is vital; results are primarily based on studies with healthy children and trained adults. A comprehensive evaluation involving pediatric patients is necessary to confirm the findings. The game's structural observations, such as the need for breaking it into episodes or including minigames, offer future directions to ensure engagement. Furthermore, considering cases where children may have extended hospital stays highlights the need for flexibility in design. These areas present further avenues for exploration, refining, and validating the research outcomes.

Several suggestions for adjustments emerged throughout the research:

- **Digitalisation:** Initial feedback revealed that the generalized hero's appearance in the kit was not universally resonant. To bridge this gap, a shift towards a digital platform where children could personally customize the hero's appearance can be used. Additionally, the language used in the story could change from "the hero" to "you" to further emphasise the connection. Furthermore, digitalizing the game would provide a rapid means to evaluate various robots and additional characteristics.

- **Character Interpretation:** Some concerns were raised about potential character misinterpretations. For instance, the witch, designed with grey/green skin and distinct apparel reminiscent of traditional fairy tales, could unintentionally be linked to hospital staff in the children's minds. Additionally, some beds used in the hospital feature bars similar to a cage see 2.1. While no findings support these associations avoiding such elements completely would be better.

- **Influence of External Factors:** Observations revealed that children's choices, especially regarding robot colour, might be influenced by external factors. For example, the predominant selection of blue aligned with the scout team's colour. Recognizing and accounting for these external influences will be crucial to extracting genuine preferences from children. A voiced digital game devoid of textual elements could allow participants to play completely alone, removing any possibility for influence from adult guardians or assistants.

- **Attention and game structure:** To enhance initial engagement and maintain concentration (see 6.3), the kit can be restructured. Starting with a minigame

to attract the child's attention and scheduling breaks can prevent fatigue and improve the overall enjoyment of the session.

- **Medical Playthings:** Building upon the observed enthusiasm of participants gifting items to the robot, the introduction of medical playthings is suggested. Drawing from current pre-operational preparation tactics (see section 3.1) and the participant's interest in items, a set of medical playthings (such as a mask, a medical gown or a syringe) could be added, allowing the child to use them while they put the robot back, together (for example in activity 5/8 where the child is attaching the head to the body 5.1). Such an inclusion could potentially further reduce the child's fear of the unknown.

- **Demographic Disparity:** There was a pronounced representation of male child characters during the Improvisation session, influenced by the gender distribution of the actors. The improvisers were guided mainly by the directive "be a child," prioritizing their connection to roles over gender balance. Working with a gender-balanced group of children in the appropriate age range will minimise any potential biases.

- **Game Conclusion and Duration Alignment:** The game's end and the culmination of the child-robot experience were purposefully designed to sync with typical day case operations, lasting up to 6 hours. Nevertheless, it's important to recognize that some cases might require longer observation periods for the child. In these scenarios, developing an alternative conclusion or ending to the child-robot interaction becomes necessary, ensuring a seamless, positive experience tailored to these specific cases.

Chapter 8

Conclusion

The four major research questions for this thesis were:

- How could a robot be designed most effectively, to more accurately measure pain in child patients using social cues alongside physiological measurements?

- Which elements of the robot design can help child patients feel calm, reduce their fear of the unknown and avoid negative results such as ED?

- How could the introduction between the child patient and the robot be handled in order to ensure effective collaboration between the two?

- Which aspects of the robot (embodiment, personality, modalities) are practically possible and useful to be designed or customised by the child patient?

Exploring these questions led to the following conclusions:

The answer to the first question is based on the premise that pain is a complex mechanism affected by physiological, social and personal factors. During initial tests with the Miro-e it became apparent that the robot, being an active agent, would not have the proper vantage point to constantly monitor the facial expressions or the body movement of the child. Arguably, this would be better achieved by a monitoring system with external cameras. A small robot is better suited to collect data about the willingness of the child to play, their need to be comforted, their physical movements and potentially their one-sided conversations with the robot. The most important element of the design would therefore be, that the child feels comfortable and safe to express their true feelings to the robot. In order to achieve that, a co-designing introduction method using a game was explored, with encouraging results.

This work regarded the second question more broadly. By taking a step back, and including the design method employed to produce the robot, this work has identified areas where the patient can be included (making sure that their individual

needs are met) and areas where the patient can be introduced to the robot ahead of time (minimizing the number of unfamiliar agents they will meet in the hospital). Based on findings about pain, pain management and the role a robot could play in it, in the first three chapters of this work, as well as in the research with children and adult guardians, a co-design method has been created, intended to produce a robot capable to effectively collect data from child patients. The design of this method has been based on familiarity, trust, ownership and agency as the four design lenses. This method has been shown to help children connect with and regard the robot as familiar, trustworthy, unique and "their own" while feeling empowered in their own abilities.

The introduction between the child and robot, which is the subject of the third question, has been determined to best happen outside of the hospital area, therefore away from the stress and fear associated with it. The story-based adventure game developed in this thesis was shown to be an effective way to achieve this goal. In this context, a story where the robot initiates the call to adventure or aid, successfully establishes a social connection with the child and empowers them within the narrative. At the same time, this type of story afforded a temporal relationship between the child and the robot. The two would be together for the duration of the adventure and then part ways, reducing the possibility of separation distress at the end of the hospitalisation.

The final research question was focused on the Miro-e embodiment, as Miro-e was the robot used for this study. The elements that Miro-e lacks, such as moving limbs, were excluded from the research. Nevertheless, findings regarding the existing elements of Miro-e (for example body, head, ears, tail, sound, light, and movement) could be applied to other robots. Simple colour alterations of the robot's parts were shown to be a simple and practical way to customise its embodiment. Shape modifications of soft/silicone parts such as the ears and the tail were also shown to be a relatively simple customisation. However, these alterations did not seem to be very important to the participants outside of visually identifying their robot. Movement (movement space), expressive movement (movement of head, tail, and ears to form an expression), sound and light were shown to be slightly more complicated, since additional coding of the robot is needed. Regardless, these types of customisation were shown to be more important to participants. In an attempt to cluster and therefore simplify personality customisation, this work identified four important characteristics: active, brave, social and cuddly. Producing unique robots based on these characteristics has been shown to be possible, however, more research is needed to further explore the practicality and accuracy of the method.

It is important to note, that the results stem from research that was performed with healthy children and trained adults. A complete test of the proposed game with

pediatric patients is still needed to validate the results.

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Appendix: The three Story scripts

Here you can find the three written stories/scripts written for this game.

A.1 Story 1

Type: mystery The child has to solve a mystery while collecting the pieces Types of mysteries:

- Someone is missing

- Something was stolen

- **Something is wrong**

A.1.1 Chapter/lvl 1: The floating robot head

The child is living in the normal world. They find a book and open it. A floating robot head pops out and quickly closes it again. The robot is scared. The child has to calm it down so they can communicate (how does the child approach someone in distress?).

choice 1 The child has to choose how the robot looks as they combine pre-set stickers into a face (eyes, ears etc).

choice 2 The child gets to choose how the robot behaves after they get out of the book.

Suggestions for drawing:

- Is happy and jumps around energetically

- It is grateful and jumps into their lap for a hug

- It is scared and jumps towards them for safety

choice 3

The child chooses a name and a gender for the robot: male female or nothing

Story continues:

The robot looks at the book when the child asks it "Where are the rest of your pieces?". The book opens a portal when turned to the first page. Robot and a child jump into the portal.

A.1.2   Chapter/lvl 2: The ears/face

The child and robot arrive to a page and talk to the narrator/mentor. The narrator tells them that a terrible thing happened: all of the fairytales are wrong! They are stuck! Also that the robot was last seen in the little red's story. The child and robot jump into the story. Little Red is sitting on her porch and is very upset.

choice 4 The child chooses how the robot reacts to the distressed girl:

- It is shy and hides behind the child until they get close when it seats next to the vehicle and radiates a calming light

- It makes fun little swirls around her so she laughs

- It physically touches her with it's head like a cat.

Story continues:

Little Red is comforted she explains that her grandmother's favourite treat is apple pie but there are no more apples! Someone stole them all! Without the apple pie, Little Red has nothing to take to her grandmother and therefore the story can not start. They have to find where all of the apples are!

Clues:

- Pigs trotter next to the apple tree

- there is also a trail that leads to the end of the page

- they see a hooded figure running with a sack which is ripped

minigame: Find the apples

They can collect some apples and give them to Little Red so she can start her story. Little Red will give them a little thing she found in her backyard as thanks. It is the robot's ears. The robot recognises the ears and jumps to them. It is very happy.

choice 5

The child chooses how the ears of the robot look like (color, fur/material etc) from a set of pre-made stickers.

According to the choice of ears the root drawing gets updated and the story continues.

Story continues:

The duo rushes to the next adventure to find the thief!

A.1.3 Chapter/lvl 3: The body

They walk the path and run into tree little houses one is made out of straw, one is made out of wood and one is made out of rock. The straw and wood houses are damaged; there are 2 little pigs peeking out of the third house.

choice 6

At the third house they knock but the door does not open. The 2 little pigs inside are afraid that it is the wolf. The child can choose how to get the pigs to open the door:

- The robot will get to the window and shine it's eyes while the child pretends to be the wolf. Then he says "Oh I can blow this house apart! I give up! I will go home now". And the robot stops shining their eyes. Then they hide and the pig opens the door.

- The child asks the robot to get in through the chimney and open the door from the inside.

- The child explains to the pig that they are there for his friend and helps the robot to get to the window so the pig can see it looking all sad and get convinced.

When the pigs open the door they see a lot of apples in the house. The pig explains that ever since a thing fell from the sky their brother disappeared and now the wolf will not come to finish the story! They became really hungry waiting for the wolf so they went out and stockpiled lots of apples. They show them the thing that fell from the sky: it is the robot's body!

choice 7

The child chooses how the body of the robot looks like (color, fur/material etc) from a set of pre-made stickers.

According to the choice of body the root drawing gets updated and the story continues.

Story continues:

The robot is very happy to have its body back and can now roll on the floor. The pigs are very happy for them but also ask for their help to find their brother so they can finish the story and the wolf can leave them alone. Without him the pigs will be

trapped in their homes forever! The child and the robot agree as long as the pigs return all the stolen apples. They promise and now they move on to the next story.

They find some breadcrumbs on the ground and on the next page. . . ..

A.1.4   Chapter/lvl 4: The accessory

They find the witch's house and they get locked up along with the pig. And they have to pick a lock to escape. The key is on the other side of the room. When the which leaves the robot get's there to that side and picks up the key to bring back. But the key is big and heavy and the robot drops it. The key is chattered.

choice 8 How the robot reacts to breaking the key:

- It panics and flashes its lights while running around picking up the pieces and bringing them to the child.

- It widens its eyes and runs back to the child. The child pets it and encourages the robot to bring the pieces to them.

- It says calm and carefully pushes the pieces towards the child looking sad.

minigame: fix the key

They put the key together as a puzzle OR the key is sentient and they need to put it on a pillow to sleep so they can put it back together again (opportunity to perform anaesthesia on the key).

choice 9 The child chooses the accessory(clothing item, button, light tactile stress thing etc), colours it and decorates it. The child also has to explain what this accessory does. Premade or open-ended choice.

Selection of items:

- Carrot

- Phone

- Googles

- Wand

- Ball

The child can also be asked to choose what this item does:

- The child will be able to communicate how it feels to the robot by touching grabbing etc

- The item soothes the robot when it is afraid

- The child can play a game with the robot using the item

Prelude to the next story: With this mystery solved it is time to solve this problem once and for all. The fairytales a meeting of all the fairytales to find out what happened. All of the fairytales are having issues! The stories are shaken! An old wise turtle tells them that the tree of stories is the one who puts boundaries and keeps the stories correct. This situation is grave! If the Tree of Stories is in trouble it will not take long before all of the fairytales become one big spaghetti! The child and the robot are asked to go to the tree and find out what is wrong.

A.1.5   Chapter/lvl 5: The choice

The child and the robot arrive at the Tree of stories. They see that the tree is indeed in trouble! The leaves are all yellow and the branches are all bent and dry. The tree tells them that something fell in the river of inspiration and now there is no water flowing in! Soon the tree will not be able to remember any stories! The child and robot investigate the river.

minigame: the river

Maze of the "river". There are 3 exits; they have to trace the correct river, find the correct exit and unblock it. OR there is a river network and the child has to turn each node to connect to reach the tree.

Story continues:

They unblock the correct exit and find that the robot's treat bag fell into the river and was blocking it. All of the treats are now wet and inedible. The robot is very sad. The Tree of stories offers them a treat each as thanks for unblocking the river!

choice 10 The child gets a treat in real life (to be chosen by the guardian according to the child's dietary requirements) and a treat for their robot. The treat will "update" the robot:

- Brave

- Social

- Energetic

- Cuddly

A.2   Story 2

Type: mystery/action The child has to solve a mystery while collecting the pieces and facing enemies.

A.2.1   Chapter/lvl 1: The floating robot head

Introduction to the world. The child is a hero living on a steampunk earth-like planet. On this planet, one robot is assigned to every child when they reach a certain age to be their companion. The day has come for this child and they open the door to find a goofy delivery man who has crashed with their balloon in their yard. The man tells the child that there was an accident and he crushed his Balloon! The cargo is all mixed up! They need to find the package.

minigame: find items

Find items type of game. The inside of this balloon is filled with stuff and the child needs to identify some items to help the delivery man. OR a simple shifting blocks puzzle

story continues

The delivery man thanks them for helping to tidy up and before he goes he remembers that he has to give them their package. The package is stuck at the side of the door caught up half outside half inside, damaged and half ripped, a robot head jumps out when they get it inside the balloon.

choice 1 The child gets to choose how the robot behaves after they rescue it from the outside of the balloon.

- Is happy and jumps around energetically

- It is grateful and jumps into their lap for a hug

- It is scared and jumps towards them for safety

choice 2 Child chooses a name for the robot and a gender: male female or nothing **choice 3** The child has to choose how the robot looks like they combine pre-set stickers into a face (eyes, ears etc).

A.2.2   Chapter/lvl 2: The item

The delivery man is very apologetic "how could this every happen! I hope you can forgive me". But also he has no time to spare he needs to deliver all the other robots! So he gives the child a GPS tracker and his secondary vehicle to go and find the robot pieces themselves.

The robot head and the child get into the vehicle and track the closest piece.

choice 4 The child chooses how the robot reacts after they get into the vehicle:

- Excitedly move ahead of them, check out the space and call back with a happy "bip bop" sound

- Shylly follow them and seat next to them/ behind their leg quietly making a slight shocked "blip" sound as the vehicle starts

- Smoothly move next to them and seat next to the controls of the car pushing the buttons the child asks them to (child is reading the manual and asks the robot to push buttons).

They drive a bumpy ride to the location where the first piece is. They leave the car and find a decrepit house where the piece has fallen. They have to solve a simple puzzle to open the door.

minigame: open the lock Use the shapes in order to make the keyhole/shape to open the door.

They get in and take the item and move on.

choice 5 The child chooses which item the robot has. Selection of items:

- Carrot

- Phone

- Googles

- Ball

- etc

The child is also asked to choose what this item does:

- The child will be able to communicate how it feels to the robot by touching grabbing etc

- The item soothes the robot when it is afraid

- The child can play a game with the robot using the item

- Something else

According to the choice of actions and item the root drawing gets updated and the story continues.

They return to the vehicle and travel to the other item.

A.2.3   Chapter/lvl 3: The body

They arrive and see a sentient vehicle whose roof is bent in and she is very unhappy. Something fell from the sky onto her and now it is stuck! She tried to get it off but she couldn't! The something is the body of the robot.

choice 6: The child can choose how the robot reacts to the distressed vehicle:

- It is shy and hides behind the child until they get close when it seats next to the vehicle and radiates a calming light

- It makes fun little swirls around her so she laughs

- It physically touches her with its head like a cat to show support

The car calms down and they get to work. They have to remove the body of the robot and fix her! They will have to explain to the vehicle that they will cut the power to the area where the thing is stuck at so they can remove it. She will not hurt at all! (opportunity to talk about anaesthesia)

minigame: fix the wires

The light is red. The child has to turn off a switch, untangle a mess of cables, fix them to the correct colour-coded sides and turn the switch back on

They remove the body of the robot and now the robot is complete.

choice 7: The child chooses how the body of the robot looks (colour, fur/material etc) from a set of pre-made stickers.

The vehicle is very happy that she is now fixed. It did not hurt at all! She says goodbye to them so they can go on to the next adventure.

The robot is very happy to have its body back and can now roll on the floor.

A.2.4   Chapter 4: the treat/upgrade

The items are all found but the robot is not too happy! There was supposed to be a treat in the box that gives him an upgrade but it fell from the tower! They have to go down and find the treat! They go down the tower and they search for the treat. They arrive in a garden and have to avoid the guards so they can get to the treat.

minigame: avoid the guards

Maze find the correct path that leads to the treat without passing through a guard.

choice 10 The child gets a treat in real life (to be chosen by the guardian according to the child's dietary requirements) and a treat for their robot. The treat will "update" the robot:

- Brave

- Social

- Energetic

- Cuddly

A.3 Story 3

Type: futuristic/action The child has to collect the pieces and face enemies.

A.3.1 Chapter/lvl 1: The floating robot head

The child lives on Earth and visits a space station. There they meet an astronaut who seems deeply troubled. The astronaut has a box and explains to the child that she found this robot on the moon and she can not turn it back on. They open the box

    choice 1: The child has to choose how the robot looks like they combine pre-set stickers into a face (eyes, ears etc).

    choice 2: The child touches the robot head and it turns on "Friend detected" is flashed on the robot (AR overlay) and it wakes up. The child has to add their own name and choose a name and a gender for the robot: male female or nothing

    choice 3: The child gets to choose how the robot behaves after it wakes up.

- Is happy and jumps around energetically

- It is grateful and jumps into their lap for a hug

- It is scared and jumps towards them for safety

The astronaut tells the child that she has to move on but the child can try and put together the rest of the robot. She gives the child a tracker to find the other pieces.

A.3.2 Chapter/lvl 2: The item

The child and robot arrive at a space station and rent a space shuttle. They start navigating to the moon to find out what happened to the robot. They find where the robot fell and they see that next to it there is a communication device. "Boss, is everything ok? We got the cargo! Boss, are you there?" someone talks on the device.

    choice 4:

- The child chooses how to solve this problem. They can roleplay this with the adult or have some cards that explain the sequence of events.

- They talk to the person and convince them to reveal their location, while the robot seats on their lap looking unaware of the situation and happy to be with them.

- They keep the person buzzy while the robot connects to the machine and tries to track the call.

- The child tells that person that they have parts of their robot and they need to give it back! While the robot is angrily panting back and forth. The person laughs at them and brags at them that they will never find XO20. This is the only information the child needs to put into their gps.

They get into the shuttle and realise that the shuttle does not store enough fuel to get to XO20. They have to upgrade the vehicle. They get to a mechanic shop and see the mechanic being very angry. He shouts at his assistant and sends them out for the day. The child and robot pick up their courage and move into the shop.

choice 5: The child asks the mechanic if everything is ok. They get to choose what the robot does:

- The robot cowers behind the child looking all scared.

- The robot moves on next to the child and nods/emphasises/pantomimes their story.

- The robot moves on ahead of the child. Goes near the mechanic and taps them with their head like a cat to ask for help/calm them down.

Turns out there was a robbery in the shop. Someone stole the keys to an expensive car. The mechanic was out at that time and the assistant took care of the shop. There are three suspects who entered the shop during this time and they need to find out who did it. Until then the mechanic does not take any jobs.

minigame: guess who

The child gets 3 pictures of the three suspects with their stories of when they entered and what they did in the shop. They have to find who's done it. Or a simple game of guess who where the child asks questions to witnesses to determine which of the suspects depicted in front of them did it.

Idea: They can have a set of powers to use to get extra clues: They can scan for fingerprints with the help of the robot (dusting and taking photos with its eyes) They can ask the robot to scan the person for nervousness They can seat down and think with their robot and get a hint card etc

If they guess a person they flip the card to confront them each has something to say. They can go on like a detective style saying first who didn't do it and why. The innocent people agree and give an alibi while the guilty person breaks and admits that they did it.

NOTE: 2 ways it doesn't matter who did it: the person the child chose is the culprit OR they have to guess the next person if they are wrong.

story continues:

They find the culprit and the mechanic is very happy. He puts an extra fuel tank and a laser beam on their car and gives them gifts.

choice 6: The child chooses the accessory(clothing item, button, light tactile stress thing etc), colours it and decorates it. The child also has to explain what this accessory does. Premade or open-ended choice.

Selection of items:

- Carrot

- Phone

- Googles

- Wand

- Ball

The child can also be asked to choose what this item does:

- The child will be able to communicate how it feels to the robot by touching grabbing etc

- The item soothes the robot when it is afraid

- The child can play a game with the robot using the item

According to the choice of actions and item the root drawing gets updated and the story continues.

The child-robot duo rushes to the next adventure to XO20!

A.3.3 Chapter/lvl 3: The body

The child and the robot jump back into the space rocket and navigate towards XO20. The GPS/space navigator takes them to the end of the known universe and then gives them a slight dotted line that they have to navigate themselves.

minigame: fastest path The child is given a small map with 5-6 points and has to navigate the ship in the area and find XO20. Connect the dots or make a path with the available string "gas". With obstacles and/or enemies. To complicate things

At the end of this minigame they have arrived in XO20, where they find find a pile of robot bodies and parts. In which the child has to find the robot's body. They go through showing the little robot different bodies until they get to the correct one.

choice 7: The child chooses how the body of the robot looks like (limbs, color, fur/material etc) from a set of pre-made stickers.

In order to get into the pirate ship they have to wear a mask. The child has to explain to the robot that it has to wear the mask and to put it onto it. They try to sneak into the pirate's storage room and find the body of the robot. The robot is very happy to have its body back and can now roll on the floor.

A.3.4 Chapter/lvl 4: The choice

The child and the robot have to access this wear house. The child gets a blueprint and chooses how to enter.

choice 8:

- The child gets a blueprint and chooses how to enter.

- They connect the robot to a monitor, help it to enter from the vents and help it find and fetch the keys.

- The robot helps the child climb up to a vent open the screws and enter

- They wait until a guard comes out, freeze them and use their fingerprints to open the door. The robot keeps guard looking afraid

The find the upgrade chip of the robot. In a pile and the robot is happy

choice 10 The child gets a treat in real life (to be chosen by the guardian according to the child's dietary requirements) and a treat for their robot. The treat will "update" the robot:

- Brave

- Social

- Energetic

- Cuddly

They escape and return to earth!

A.4 Adventure Book

Helping out the helpful Robot!

Lang geleden in een land erg dichtbij
_____.
Onze held is _____ en_____ en_____.
De held speelt graag met zijn/haar ouders _____ en
las _____ tot op een dag het avontuur begon.

Figure A.1: Frontpage

Figure A.2: First page

Figure A.3: Second page

Figure A.4: Third page
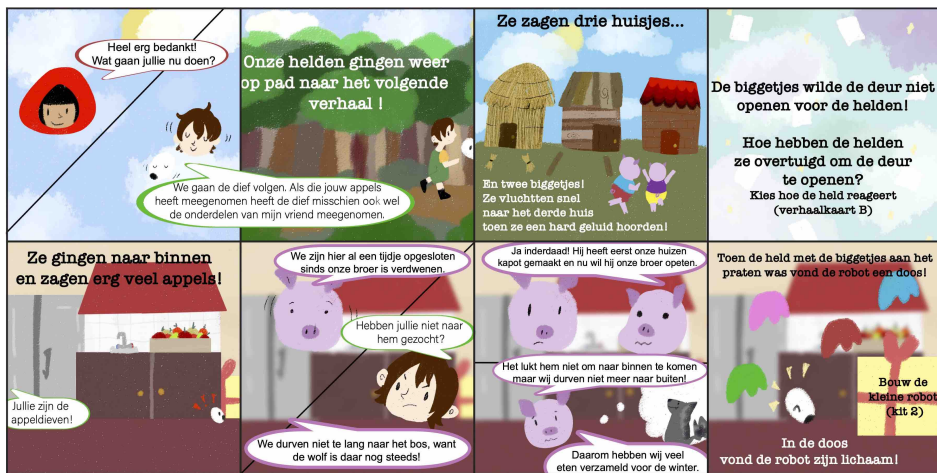
Figure A.5: Fourth page

Figure A.6: Fifth page

Figure A.7: Sixth page

Figure A.8: Seventh page

Figure A.9: Behavior choice panels for story 1.

A.5   Privacy document

UNICHVERSITY OF TWENTE.

Ontwerp van een robot middels een spel

Onderzoeker:　　Nefeli Kousi (opleiding ITECH, Universiteit Twente),
　　　　　　　　n.i.kousi@student.utwente.nl, +31657058820
Begeleider:　　dr.ir. E.C. Edwin Dertien (Universitair Docent, Universiteit Twente,
　　　　　　　　Robotica en Mechatronica groep), e.dertien@utwente.nl, +31534892778

Wij zouden graag u en uw kind uitnodigen om mee te doen aan een ontwerp- en onderzoeksproject. Middels deze brief willen we graag de bedoeling van dit project, wat u (en uw kind) kunnen verwachten en hoe we met uw inbreng zullen omgaan. Voordat u toestemt om mee te werken is het belangrijk dat u begrijpt wat we van plan zijn. Lees daarom de volgende informatie goed door en en benader ons wanneer bepaalde dingen onduidelijk zijn of meer uitleg nodig hebben.

Het doel van deze ontwerp sessie is om te onderzoeken in hoeverre het mogelijk is om met kinderen een eigen robot te ontwerpen die hun kan bijstaan in het ziekenhuis. Deze robot 'helper' wordt ontworpen middels een (bord) spel, waarbij het de bedoeling is dat de ontworpen robot zal helpen met het omgaan met pijn voor en na een operatie. Het (bord)spel dat hiervoor ontwikkeld is willen we graag testen. Het is de bedoeling dat het spel de kinderen door een eigen ontwerpproces leidt, waarbij onderdelen en functies voor de robot worden gekozen, en het uiterlijk en gedrag van de robot naar behoefte worden aangepast.

Om dit bordspel te testen wordt een sessie georganiseerd waarbij een aantal kinderen onder begeleiding van een volwassene hun eigen robot ontwerpen. Als onderzoekers zullen we vooral op de achtergrond proberen het proces bij te staan en te observeren.

Voordat we beginnen met het spel zullen we de kinderen duidelijk maken wat de context is van het ontwerp, dus dat ze zich mogen inleven in een (hypothetische) situatie waarbij de robot hen zal bijstaan in het ziekenhuis. We laten wat voorbeelden zien van bestaande robots - en vragen misschien ook in hoeverre kinderen al een keer iets in een ziekenhuis hebben ervaren (en daar eventueel iets van willen delen, dit hoeft natuurlijk niet!)

Na de korte introductie zal aan de kinderen gevraagd worden om het bordspel te doen, onder begeleiding van een aanwezige volwassene. Het is vooralsnog een individueel ontwerp-spel zonder duidelijk winst of verlies, goed of fout - het is meer een 'collaboratief' spel waarbij een avontuur in verhaalvorm beleefd wordt en keuzes gemaakt moeten worden. Tenslotte zullen de kinderen de kinderen de robots aan elkaar en de begeleiders laten zien in een kort presentatie moment.

Het is de bedoeling dat tijdens de sessie niet specifiek op een medisch onderwerp wordt ingegaan, het is vooral bedoeld als test van een (bord)spel gedreven ontwerpproces. Er wordt in de introductie wel gesproken over ziek zijn en ziekenhuizen om de context duidelijk te maken.

Gedurende de hele sessie geldt, voor zowel volwassenen als kinderen die mee doen, dat ten allen tijde deelname aan de sessie onderbroken of helemaal gestopt kan worden. Op dat moment zullen we voor het kind een andere activiteit aanbieden. Wij zullen als begeleiders er alles aan doen om er voor te zorgen dat er een ongedwongen en open sfeer blijft, dus wanneer u vooraf verwacht dat het onderwerp erg ongemakkelijk of oncomfortabel kan zijn voor u of uw kind (en desondanks wel aan de sessie wil meedoen) dan kunt u dit van te voren aangeven, wij zullen extra opletten.

Voor deze studie zullen wij geen NAW of andere privacy gevoelige informatie vastleggen, van de kinderen die meedoen willen we alleen leeftijd, geslacht en persoonlijke interesse (hobbies) vastleggen. In een studie wordt dit dan gebruikt als

- jongen (7 jaar), houdt van minecraft, voetbal en boomhutten bouwen

Gedurende de sessie zullen we foto's maken van het verloop van het spel en de materialen / tekeningen die de kinderen maken. We zullen hierbij zorgen dat de kinderen zelf nooit herkenbaar in beeld zullen zijn, tenzij expliciet hieronder is aangegeven dat het geen probleem is.

De foto's zullen nooit voor promotionele doeleinden gebruikt worden - maar, in geval van toestemming, wel voor onderzoekspublicatie. In dat laatste geval zullen ook altijd de gezichten van kinderen in beeld onherkenbaar ('geblurred') gemaakt worden.

Gedurende het spelproces en de sessie zullen de onderzoekers aantekeningen maken van opvallende reacties van kinderen, b.v. hoe ze de robot die ze ontwerpen beschrijven. Iedere deelnemer aan de sessie heeft altijd het recht om inzage te vragen in deze notities en eventuele rectificatie of verwijdering te vragen. Hiervoor kan contact opgenomen worden met de onderzoeker (Nefeli Kousi)

De geanonimiseerde gegevens en resultaten van de sessie zullen vervolgens met andere onderzoekers in het project gedeeld worden en mogelijk gebruikt worden voor onderzoekspublicaties.

Toestemming voor deelname aan sessie "robot ontwerp door middel van spel"

(dit formulier mag digitaal getekend en opgestuurd worden, maar we zullen ook voorzien in een papieren versie bij de start van de sessie)

Vink a.u.b. de hokjes aan die voor u van toepassing zijn:

Deelname aan de sessie	ja	nee
Ik heb de informatie met betrekking tot de sessie gelezen en begrepen	☐	☐
Ik stem toe dat mijn kind vrijwillig meedoet aan deze sessie en heb begrepen dat hij/zij ten allen tijde mag weigeren antwoord te geven of stoppen met deelname (zonder opgaaf van reden)	☐	☐
Ik heb begrepen dat mijn kind zal meedoen aan een bordspel waarbij een robot ontworpen wordt	☐	☐

gebruik van de resultaten		
ik heb begrepen dat de resultaten gebruikt zullen worden om een ontwerpproces voor robots voor omgang met pijnbeleving van kinderen in het ziekenhuis vorm te geven	☐	☐
Ik heb begrepen dat de resultaten zullen worden bewaard en opgeslagen ten behoeve van het onderzoeksproject en (mogelijk) gebruikt zullen worden in wetenschappelijke publicatie	☐	☐
Ik heb begrepen dat de onderzoeksresultaten zullen worden geanonimiseerd	☐	☐
(optie) ik stem toe dat opmerkingen en reacties van mijn kind anoniem gebruikt mogen worden voor onderzoekspublicaties over dit project	☐	☐
(optie) ik stem toe dat tekeningen, materialen die gedurende de sessie door mijn kind zijn gemaakt gefotografeerd mogen worden en gebruikt mogen worden voor onderzoekspublicaties over het project	☐	☐
(optie) ik stem toe dat foto's van mijn kind gedurende de sessie (onherkenbaar gemaakt) gebruikt mogen worden voor onderzoekspublicaties over dit project	☐	☐

Toekomstig (her)gebruik van de resultaten in verder onderzoek

(optie) Ik geef toestemming dat de resultaten door deelname van mijn kind worden
bewaard voor eventueel toekomstig gebruik ten behoeve van toekomstig onderzoek   □   □

(optie) ik geef toestemming dat opmerkingen en reacties van mijn kind anoniem   □   □
bewaard worden en gebruikt mogen worden voor toekomstige onderzoeksprojecten en
publicaties

(optie) ik geef toestemming dat foto's van mijn kind die gemaakt zijn gedurende de sessie   □   □
(onherkenbaar gemaakt) gebruikt mogen worden voor toekomstige onderzoeksprojecten en
publicaties

Ondertekening

_____ _____ _____
Naam (ouder of voogd)   plaats, datum   handtekening

Hierbij verklaar ik dat ik de bovenstaande informatie zo goed mogelijk heb geprobeerd duidelijk te
maken bij de deelnemer en heb benadrukt dat deelname geheel vrijwillig is

_____ _____ _____
Naam onderzoeker   plaats, datum   handtekening

Contactgegevens voor verdere informatie: Nefeli Kousi
                                          n.i.kousi@student.utwente.nl
                                          +31657058820

**UNIVERSITY
OF TWENTE.**

A.6 Form for adult guardians

Start/Introduction (10'):

Short discussion about the hospital.
Show the short video:
https://radboudumc.bbvms.com/p/niet_te_indexeren_door_google/c/4069688.html
Show Miro.
Brainstorm of what a robot can do to help them if they are in the hospital.

Game (60'):

Introducing the game (10'):
- Going through the story with their robot
- Introducing the 2 stories: fairytales and space
- Introducing the building station

Allow children to choose their story and setup based on the choices (10')

Play the game (40')

Final discussion (20'):

Interview by the assisting adult 10'
Final discussion 10'

Things to note while the child is playing the game:

Let the child read the story to you and tell you what is happening.
Try to pay attention and note the things the child finds interesting.

First page:

Has the child given a name and a gender (male female nothing) to the robot?

Name:
Gender:

Is the child deviating from the comic book? If yes, what is the deviation?
………
………
………
………
………
………

Which panels did the child choose for this empty panel?
………
………
………

Other remarks:
………
………
………

Is the child engaged in the story?
Not engaged 1   2   3   4   5   6   7   8   9 Very engaged

Second page:

Is the child deviating from the comic book? If yes, what is the deviation?
………
………
………
………
………
………

Which panels did the child choose for this empty panel?

……
……
……

Is the child engaged in the story?
Not engaged 1   2   3   4   5   6   7   8   9 Very engaged

Third page:

How long did the child spend on the game?
……minutes

Was the child interested in the game?
Not interested 1   2   3   4   5   6   7   8   9 Very interested

Is the child deviating from the comic book? If yes, what is the deviation?

……
……
……
……
……
……

Did the child give any remarks on the face characteristics it gave to the robot?

……
……
……

Is the child engaged in the story?
Not engaged 1   2   3   4   5   6   7   8   9 Very engaged

Fourth page:

Is the child deviating from the comic book? If yes, what is the deviation?

……
……
……
……
……
……

Did the child give any remarks on the body characteristics it gave to the robot?

....
....
....

Which panels did the child choose for this empty panel?

....
....
....

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Fifth page:

Is the child deviating from the comic book? If yes, what is the deviation?

....
....
....
....
....
....

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Sixth page:

Is the child deviating from the comic book? If yes, what is the deviation?

....
....
....
....
....
....

How long did the child spend on the game?
......minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 8 9 Very interested

Which panels did the child choose for this empty panel?

……
……
……

Did the child give any remarks on the accessory it gave to the robot? How will the child use it with the robot (e.g. play, calm down, communicate etc)?

……
……
……

Is the child engaged in the story?
Not engaged 1　2　3　4　5　6　7　8　9 Very engaged

Seventh page:

Is the child deviating from the comic book? If yes, what is the deviation?

……
……
……
……
……

How long did the child spend on the game?
……minutes

Was the child interested in the game?
Not interested 1　2　3　4　5　6　7　8　9 Very interested

Which panels did the child choose for this empty panel?

……
……
……

Which statistic did the child put the point in?

……
Why?

……
……
……
Is the child engaged in the story?
Not engaged 1　2　3　4　5　6　7　8　9 Very engaged

Questions for the final interview:

Describe your robot to me.

....
....
....
....
....
....
....
....
....

Is this the same robot as (Miro)?

Yes
No

If it is not the same robot what makes this robot unique?

....
....
....
....

If you were sick do you think this robot would be helpful to you? How?

....
....
....
....

Any other remarks:

....
....
....

A.7   Transcripts from the Improvisation workshop with adults

0:00:00.0 Researcher: What we're gonna do today. There is this beautiful research that we're doing, and it's quite innovative, we... Nothing of... Essentially exists about it, and it is used in improvisation in order to design machines. They're basically social robots, that's what we're trying to say. But this specific robots are going to be sidekicks for little kids that are going to undergo operation. It's not big fun thing to go through. So we have this little sidekick to soothe them, to help them, and to also somehow gauge when this kid's having pain, so we can actually help them.

0:00:49.8 Researcher: So what we're making now is a pre-work of the pre-work. So we're going to generate some narratives that have to do with kids and sidekicks, for the different kinds of sidekicks, I guess we're all sort of aware of them. So the helpers, and the person who takes you on an adventure, and the logic person that has all of these powers and helps them make part of the...

0:01:17.7 Researcher: So there's many different kinds of sidekicks that exist, and what we want to do is generate some of them... Which will be used in a game, in a toolkit that is basically a game, that the kids would play in order to make their own little robot. So the kids will play this game based on the narratives that we make today. At the end of this game, they will have designed... Based on the choices that they make, they will have designed their little robot. And when they come to the hospital the next time to do the operation, the robot would be there waiting for them. How do we do that? We would have some sort of a kit of parts, like disassembled robot thing where we'll just put things together, put a little uniform on it and make an individual robot for the kid.

0:02:10.4 Director: So, some of us are gonna be kids and some others will be different type of sidekicks?

0:02:16.7 Researcher: Yes, so this is the main goal of today, to generate these two types of characters and also generate the situations that they're going to be in, and the kind of arcs that they're going to make.

0:02:38.7 Participant 1: Are they going to only design the outside or also the person that gets the robots?

0:02:41.3 Researcher: Yeah. We are going to define. So that may be... Casper can explain a little bit better, how we're going to structure everything, he's going to be your Director for today.

0:02:50.8 Director: Yes, so I'm going to tell you guys what we need to do. So, first we're going to do some character interview things, so we can actually define a character based on personality traits and that kind of stuff, and then we go to scenes with those characters and see what kind of situation they end up with. Let me see.

We're going to do that a couple of times, after that, we have a break. And then, we'll probably refer back to the characters we had which we like, what we like about them, what we don't like, and use them to make more leopard stories. We're going to probably do a story continuation, so that someone starts a story that another one continues that story, and then one after another. And maybe we'll also do a typewriter. I don't know, have you ever done a typewriter?

0:04:02.3 Participant 1: Is that that one person says the story and the other people act it out?

0:04:08.4 Director: Yes, so that's cool. And maybe we'll do also a fun thing at the end. So yes, and probably for the warm up, we do a little bit of transformation, a little bit of story art telling, and some energizers.

0:04:33.7 S?: Sounds good.

0:04:33.8 Researcher: Yeah, so all of these things will be video-graphed and audio-recorded, and they will be used for this research. So I will just annotate them and break down the stories and use them to generate actual stories and generate storylines and stuff like that. There is a very thin possibility that we might use some snippets of that for further research, because as I said, this kind of improvisation for robot design has not really been vastly established. So maybe Edwin wants to use that a bit further down the line, so you will be given some consent forms that state all these things. So we just save all of this data until my thesis is over and there's a possibility that it'll be extended for some snippets and cold calls for further research that wants to use improv, so they can have some references.

0:05:35.7 Participant 2: Do we get to hear about that if that happens, or...

0:05:37.5 Participant 3: Are we going to be referred in the... Your thesis?
-chuckle-

0:05:37.8 Researcher: Yeah, you will be thanked for sure.

0:05:41.2 S?: Nice.
-chuckle-

0:05:42.2 Researcher: Obviously, all of the actors will be thanked.

0:05:51.1 Researcher: So once the time has come...

0:05:51.2 Researcher: Does the -0:05:51.2- $_t hethesisdone?$

0:05:51.3 Participant 1: The time of... No COVID.

0:05:53.3 Researcher: No COVID, beautiful. So maybe we can take one moment to make sure that all of the cameras are rolling.

-background conversation-

0:06:05.3 Researcher: I will round up the things... All of the forms, because for some reason the thing that they sent before didn't want to work. -0:06:22.0-

$_.Ineedatallperson.$
0:06:34.8 S?: That's me.

0:06:35.9 Researcher: That's you, to tell me if this will... Can you go behind there 'cause I need to know what this can see.

0:06:47.6 Participant 1: It's set too high... It's a little too high.

-overlapping conversation-

0:06:51.8 Researcher: Just set it to see all of the scene, so we're gonna have two of them rolling.

-background conversation-

0:07:02.2 Researcher: Okay, and now let's also check the audio and we'll be so ready, nothing can stop us.

0:07:11.0 Participant 1: Can we sing?

0:07:13.7 Researcher: You can sing.

0:07:14.5 Director: -0:07:15.3- $_{certainly helps with...}$

0:07:20.3 S?: Are we officially clear to touch each other and stuff like that?

0:07:24.8 Researcher: Yeah, you are officially clear to touch each other, it's just only how the other people actually allow you to...

-overlapping conversation-

0:00:00.0 Researcher: From a camera perspective, they are both recording.

0:00:07.2 Director: So, let's do this. We'll start... Let's do something that we haven't done in a long while. Just walk randomly through the room. You know this? It's been a while, isn't... Hasn't it? Yeah. Okay. Let's do the airplane thing. So when I say airplane you're gonna have to do as if you are in a car. When I say car, you are going to play as if you are an airplane. Alright? So car.

-vocalization-

0:00:46.9 Director: Airplane.

-vocalization-

0:00:52.2 Director: Car.

-vocalization-

0:00:56.3 Director: When I say yes, you say no. Yes.

0:00:57.9 Participant 1: No.

0:00:57.9 Director: Yes.

0:01:00.2 Participant 2: No.

0:01:00.8 Director: Car.

-vocalization-

0:01:07.2 Director: Yes.

0:01:07.1 Participant 3: No.

0:01:07.2 Director: When I say up, you touch the ground. Up. Up. No, no, Up.

0:01:11.7 Participant 1: Yes, yes. Up.

0:01:14.5 Director: When I say down, you jump. Down. Up.

0:01:22.8 Participant 2: I really love the instruction, you jump down.

-laughter-

0:01:26.7 Director: Oh! No it was the thing I said Yeah, yeah. So, up, up, down. Very well. Yes.

0:01:38.3 Participant 2: No.

0:01:39.0 Director: No.

0:01:40.6 Participant 3: Yes.

0:01:40.7 Participant 2: Yes.

0:01:40.9 Director: Airplane.

-vocalization-

0:01:46.3 Director: Car, airplane, yes, up.

-vocalization-

0:01:51.6 Participant 1: No.

0:01:52.0 Participant 2: No.

-laughter-

0:01:54.9 Director: Okay. Okay. Let's stand in a little circle.

0:02:00.5 Participant 3: Like we did five minutes ago.

0:02:03.6 Director: Yes... Oh we can... Okay. Yes. Let's think a little bit through because we want to be able to, you know, act a little. We're going to do a transformation, why not. So I want each person to state like a type of character that you can be, and then we're all going to transform in that character. Alright. So let's... I will start and I think a really nice character would be one of those bully kids you see at the kindergarten. Alright. So three, two, one, go.

-laughter-

0:02:53.9 Director: Hey, Nina, a different character.

0:02:57.9 Participant 1: A grumpy old lady.

0:03:02.0 Participant 2: Get off my lawn.

0:03:04.4 Participant 1: No you get off of my lawn.

-vocalization-

-overlapping conversation-

0:03:27.2 Participant 3: And I'm the school teacher.

-overlapping conversation-

0:03:37.2 Participant 1: Okay. I give you one more warning and then you go...

-laughter-

0:03:40.3 Director: Well, I am supposed to be here. I am the teacher here. You guys are doing terribly, alright? Stay home, why don't you show us how it's done.

0:03:56.2 Participant 2: A really happy french guy.

0:03:57.6 Participant 1: Bonjour.

-overlapping conversation-

0:04:28.3 Director: Yes. Okay. Very good. Nice, nice, nice. Okay. Let's do a story. So we're going to... Well probably, you have done this... I don't know if you done it before. But each person has a sentence and at the end, we need to have finished a story.

0:04:47.7 Participant 1: Okay.

0:04:49.2 Director: So we'll start at the beginning.

0:04:50.3 Participant 1: we need full sentences.

0:04:53.1 Director: I think it's better to do it twice around, maybe. Yeah.

0:04:58.8 Participant 1: I'll stand like this so we have the public in mind.

0:05:01.2 Director: Oh yeah. That's fine. This is still warming up so, you know, whatever.

-laughter-

0:05:07.8 Participant 2: Nefeli's not gonna use it. -chuckle-

0:05:07.9 Participant 3: Hopefully not.

0:05:08.6 Director: It's like you can imagine the camera is not there for now.

0:05:18.0 Participant 1: Okay.

0:05:18.6 Director: So yeah, so we'll go twice around, can you name a title of a non existing story?

0:05:27.2 Participant 2: The time that buildings fell up.

0:05:35.3 Director: The time that buildings fell up. That sounds very interesting.

0:05:37.8 Participant 3: They fall up?

0:05:41.5 Participant 2: Yes.

0:05:41.6 Director: Okay. Well so if Yanitz start, then at the point that we're again at Yanitz.

0:05:48.1 Researcher: That's the middle.

0:05:50.0 Director: That's the middle. Yeah. So then we should be right in the centre of like danger and stuff, or a conflict. That kind of stuff.

0:06:00.4 Participant 1: Can I start as I've never done it before?

0:06:02.9 Director: Yes you can.

0:06:03.7 Participant 1: Okay. -chuckle-

0:06:05.7 Director: So yeah you are going to set up a story and then in the end you'll make the final...

0:06:12.8 Participant 1: Oh okay.

0:06:13.6 Director: Yeah. So you actually have...

0:06:16.0 Participant 3: All the power.

0:06:18.0 Director: Yeah.

-overlapping conversation-

0:06:18.7 Participant 2: The first and the fifth sentence.

0:06:19.6 Director: You only have the beginning and middle...

0:06:21.6 Participant 1: Yeah and you have the end.

0:06:27.7 Director: And I will have the final word, yeah.

0:06:28.0 Participant 1: So that's why I think mine is easy then.

0:06:28.5 Director: And you'll kind of have the end, and you'll have to...

0:06:28.6 Participant 2: I don't know why my brain feels like we should go that way.

0:06:33.0 Participant 3: Right.

0:06:34.4 Director: Well then we'll go that way.

0:06:35.3 Participant 1: Sure, okay.

0:06:35.4 Director: Okay.

0:06:36.5 Participant 1: Yoni lives in a beautiful, big and luscious white city.

0:06:49.5 Director: And in this city, she would always go to the grocery store and people were always smiling. Everything was really nice and everyone was always happy.

0:07:03.1 Participant 2: But this time was a little different because she walked towards the grocery store, but she noticed that she could already see it, whereas usually there were buildings in the way, but she decided, "I'm just going to... Wait... is this the same sentence?.. To just follow the path and not skip through the non-existing buildings."

0:07:32.6 Participant 3: Skip through the non existing buildings?

0:07:32.9 Participant 2: Yes.

0:07:33.2 Participant 3: So she started walking and walking and walking and people were not so friendly anymore. They were grumpy and angry, and they were making fun of her and were disrespectful of the way she expressed herself.

0:07:53.8 Participant 1: Being sad about that, she looked up and there she saw all the buildings not only floating but they turned blue.

-laughter-

0:08:07.8 Director: Shocked by the fact that she just saw every building in the blue sky being blue, it seemed like they were disappearing, "How can I make sure that I'll get back those buildings?"

-chuckle-

0:08:27.3 Participant 2: So she grabbed... She went to the grocery store, which was the only building that still remained on the ground and she bought some rope there, and she lassoed a building and started pulling, but she wasn't strong enough on her own.

0:08:51.4 Director: This is the last sentence by the way.

-laughter-

0:08:54.1 Participant 3: So she was struggling and struggling but then she looked around and other people were helping her. They were grabbing the rope and helping

her bring the buildings down and all the community together managed to bring all the buildings back to the land.

-applause-

0:09:14.8 Participant 2: We were a little creative with the meaning of sentence.

-laughter-

0:09:15.2 Director: Okay. So one note I have about this is that we started really late with the resolution. That's also my fault, so that's nice. Yay!

0:09:30.7 Participant 1: Yay!

0:09:31.8 Participant 3: Yeah.

0:09:32.8 Participant 2: I wasn't really like, "I am gonna really speed this up." You were like, "Oh, where are the buildings?" -chuckle-

0:09:38.4 Director: Indeed. But it was really nice to hear this... The woman struggling and that kinda stuff. So the setup is great, maybe shorten it a little.

0:09:49.8 Participant 1: Okay.

0:09:50.3 Director: Okay. So let's do another one.

0:09:53.1 Participant 3: So for the setup. So first, things go well and then something goes bad, we should make it go bad faster?

0:10:00.2 Director: Yes. Well, it went fast, but we were describing the bad like, "Oh. So the buildings were gone but I'm still going on my routine. Oh. Everyone is being very angry." And that kinda stuff.

0:10:14.5 Participant 3: Elaborate more the resolution. How they...

0:10:17.1 Participant 2: The struggle needs to come early.

0:10:18.6 Director: Less is probably right I guess. Yeah. Well...

0:10:23.4 Participant 2: Like I introduced the problem and then it took a couple of like... And it's, and people got angry and you just kind of added to what was already like a pretty clear problem, I guess.

0:10:34.9 Director: Yeah. So we had a problem, then we need a struggle, and then we need a resolution. Okay. Can you think of... Well, can you maybe think of both a nonexisting title of a story?

0:10:45.8 Researcher: Non-existing title of a story.

0:10:51.2 Participant 3: Of an existing story? -laughter-

0:10:53.9 Director: You can also make up a non-existing story title.

-chuckle-

0:10:56.3 Participant 2: Non-existing title for an existing story.

0:10:58.4 Researcher: Okay. So it is a... The three peas and their journey in the garden.

0:11:08.3 Participant 2: The three peas, and their journey in the garden.

0:11:10.3 Researcher: Three peas and their journey in the garden.

0:11:10.9 Participant 3: Ps like letter P?

0:11:11.2 Researcher: No like the peas...

0:11:15.4 Participant 1: No like the green peas.

0:11:16.3 Participant 2: Yeah. Like the small...

0:11:18.0 Researcher: So the three green peas...

0:11:20.2 Participant 1: Vegetables.

0:11:20.3 Researcher: And their journey in the garden.

0:11:21.3 Director: Yeah. Vegetables. All right. Who wants to start? You will.

0:11:24.6 Participant 1: Yes.

0:11:29.7 Participant 2: Once upon a time, there was a garden. It had a lot of flowers, but barely anything to eat, so... But the farmer was getting hungry and couldn't sell flowers, so he decided to make things that he could eat.

0:11:53.8 Participant 3: And things started popping out from the ground. They were small spherical things that were green and very nutritious but they had minds that could think.

-chuckle-

0:12:13.9 Researcher: Being born together, the three peas were as thick as thieves, and they decided to go on an adventure.

0:12:26.8 Director: They jumped out of their...

0:12:29.7 Participant 1: Pod.

0:12:30.5 Director: Pod. Thank you.

-chuckle-

0:12:35.4 Director: Three peas in a pod. And started walking around in the barren landscape with all of the giant flowers around them, but it wouldn't take long until they had some trouble.

0:12:53.6 Participant 2: Because there were not just plants... I'll take this alone. In the garden. There were also rabbits and mouses...

0:13:08.4 Participant 3: Mice. -laughter-

0:13:09.0 Participant 2: Mice. It's my sentence. Mouses.

-laughter-

0:13:12.4 Participant 2: Now it's your turn.

0:13:17.7 Director: Mouses might also be good, right?

0:13:20.6 Participant 1: No.

-chuckle-

0:13:26.3 Participant 3: And the three peas were, decided to band together in order to fight with the ugly predators that were trying to eat them and they were jumping, one on top of the other and hit the mice in the eyes and the mice would run away.

0:13:46.5 Participant 1: Lastly. They came to their big enemy, the robbing rabbits. -chuckle- And they started a fight to the death.

0:14:05.3 Director: They won this fight with ease and care, and at the end of the day, they went to sleep in the ground and the farmer would have multiple patches of peas to farm for the rest of eternity.

0:14:26.8 Participant 3: All of eternity.

-applause-

-laughter-

0:14:30.5 Director: It's a nice ending.

-laughter-

0:14:30.6 Director: Alright, great, we did something. Now, we're going to define some people, so first, we want some children, so who wants to start with being a child?

0:14:51.3 Participant 2: Yes.

0:14:52.0 Participant 3: Yes.

0:14:52.8 Participant 2: I feel like...

0:14:58.5 Participant 1: Sure.

0:14:58.7 Director: Okay. So I want Yanitz... You can interview those two children.

0:15:03.5 Participant 3: Ah, they're both children?

0:15:04.5 Director: Yes. They are both children right now and you'll be sidekick in a moment.

0:15:11.6 Participant 3: Psychic as in Psychic, like Mediums?

0:15:12.9 Director: Sidekick.

0:15:16.3 Participant 3: Not Psychic, sidekick.

0:15:18.6 Director: Yes.

0:15:18.7 Participant 1: And not side chick. It's sidekick. -chuckle- S-I-D-E-K-I-C-K. -chuckle-

0:15:25.7 Participant 3: So what exactly does a sidekick?

0:15:28.7 Participant 2: You are our side chick.

0:15:31.4 Director: Okay. First we go to define the children and then we're going to play some games with it, where you will be helping them solve their problem or a problem.

0:15:43.0 Participant 2: But is it like a Superman sidekick or a realistic sidekick?

0:15:48.1 Director: That's up to you guys. Yeah. We are not going to interfere with that.

0:15:49.1 Participant 2: And are we realistic children?

0:15:56.6 Researcher: Yes.

0:15:56.9 Director: Yes.

0:15:57.0 Participant 2: Okay.

0:15:57.4 Director: That's what I wanted to ask. Be careful with playing children because of course, if you make them too young, they don't have...

0:16:06.2 Researcher: There is an age preference, which is from 4-12 years old, so you're children who can articulate yourselves, you can speak. The level of connection to reality is up to you. Like four years old, has a different imagination than 11 years old would.

0:16:29.8 Participant 1: So what I would give as a tip is think of the level abstract thinking you can use, because children, like a 12-year-old, it's just at the point where they are actually thinkers, before that, they grow on the small levels, and you just don't know the whole world yet, so you just have to make your world smaller, so there are more questions about things.

0:16:56.7 Director: Yeah. But we're going to help you with that because first of all.

0:17:03.6 Participant 2: I actually haven't interacted with children in so long. -chuckle-

0:17:08.4 Director: Well, that makes it maybe even more interesting, so make your own interpretation of what you think a child between four and 12 would be like.

0:17:18.4 Participant 1: They're really different though.

0:17:21.5 Director: Yes.

0:17:21.8 Researcher: Just pick one of the ages. Pick one of the ages, set your age from the beginning.

0:17:25.0 Director: Yeah. Yanitz, I want you to ask these children questions like how old are you? What you like to do, and that kind of stuff. We'll do that for a couple of minutes until we think like, "Okay, these are two defined people." And then we're going to sit outside and we're going to have one child, and we will have you as a sidekick, and then we have another child with you as a sidekick and the other child can be the third character.

0:17:57.0 Participant 3: So, can we use normal names or?

0:18:00.4 Director: Well, you can ask them. What's your name.

0:18:02.8 Participant 3: What is your name?

0:18:04.2 Participant 2: Stevie.

0:18:05.0 Participant 3: Stevie. Hello Stevie. How old are you?

0:18:09.0 Participant 2: 8 years, 10 months and four days.

0:18:13.8 Participant 3: Oh... That's very old. -chuckle- 8 years and do you like school?

0:18:18.7 Participant 2: Do I like school? Well, do I like school?

0:18:27.7 Researcher: Second grade of primary school basically or third...

0:18:32.7 Participant 1: Do you want it in Dutch Chris?

0:18:36.0 Participant 2: No, no.

0:18:37.1 Participant 1: If you're five.

0:18:38.5 Participant 2: Yeah I know, I'm just trying to like... Can you ask her some questions?

-laughter-

0:18:43.0 Participant 2: 'Cause I need to think about what we're gonna...

0:18:43.8 Participant 3: So what is your name little kid?

0:18:46.7 Participant 1: I am Elina.

0:18:48.1 Participant 3: Hello Elina.

0:18:48.9 Participant 1: Hello.

0:18:49.8 Participant 3: How old are you?

0:18:50.1 Participant 1: I'm nine.

0:18:51.5 Participant 3: You are nine?

0:18:52.8 Participant 1: Yes.

0:18:52.9 Participant 3: Oh, a bit older than you.

0:18:54.5 Participant 1: Yes, I am.

0:18:56.9 Participant 2: Only one month and 26 days. -chuckle-

0:19:00.1 Participant 1: No, I am a lot older than him.

0:19:02.0 Participant 3: Yeah. And much more mature, I can see. And what do you like? What's your favourite game?

0:19:10.8 Participant 1: I like playing on the playgrounds and then I would go with my friends and I would... Like we would sometimes play football, and if I don't want to, I go and we play sometimes Totally Spies.

0:19:30.0 Participant 3: Totally Spies? Where is Totally Spies?

0:19:35.9 Participant 1: It's a series, it's really fun. It's about three girls and they do like adventure things and they beat the bad guy. Yes.

0:19:46.9 Participant 3: Nice. And you Stevie, what is your favourite game?

0:19:51.7 Participant 2: My favourite game is tag.

0:19:54.1 Participant 3: Tag.

0:19:55.3 Participant 2: But I also like hide and seek.

0:19:57.7 Director: Try to also transform your body maybe.

0:20:00.9 Participant 3: Are you good at tag?

0:20:04.0 Participant 2: Yes, I'm very good at running away, especially...

0:20:07.7 Participant 3: Running away? Nice. But do you also... Are you good at hunting and chasing other kids?

0:20:16.5 Participant 2: Yes.

0:20:20.0 Participant 3: And...

0:20:20.7 Participant 1: He's the fastest from our grade.

-chuckle-

0:20:24.8 Participant 1: Yeah.

0:20:25.1 Participant 2: Aw, thank you.

0:20:27.5 Participant 3: Oh, you're modest too.

0:20:30.0 Participant 1: Normally he's not...

0:20:30.2 Participant 2: Yes, I'm the fastest.

-laughter-

0:20:38.2 Participant 3: And who is your favourite... Your best friend?

0:20:44.4 Participant 2: She is.

0:20:47.3 Participant 3: Whoa, hey, woo.

0:20:48.6 Participant 1: That's why I have makeup on.

0:20:49.8 Participant 2: I just forgot her name. I forget a lot of things, but I forgot her name, but she's my best friend.

-laughter-

0:20:56.4 Director: Elina, right?

0:20:56.5 Participant 1: Eline.

0:20:58.0 Director: Eline? Okay.

0:21:00.0 Participant 3: I'm sorry.

0:21:00.8 Participant 2: Wow you're really making me confused. Eline.

0:21:05.5 Participant 3: And what's you're favourite fairytale Eline?

0:21:08.8 Participant 1: Fairytale?

0:21:09.7 Participant 3: Fairytale.

0:21:10.5 Participant 1: I don't know.

-chuckle-

0:21:15.1 Participant 3: Do you like Snow White? Or...

0:21:18.7 Participant 1: Disney movies?

0:21:20.8 Participant 3: Disney movies, yeah.

0:21:23.9 Participant 1: Oh. I like Tangled.

0:21:27.0 Participant 3: And what has...

0:21:30.4 Participant 2: Tangled. That's a Disney movie about Rapunzel.

0:21:34.8 Participant 3: Oh. Thank you.

-chuckle-

0:21:38.8 Participant 3: And what is your favourite movie let's say?

0:21:41.1 Participant 2: Cars!

0:21:41.6 Participant 3: Cars. So you like Cars?

0:21:43.6 Participant 1: Yeah, Cars is also fun.

0:21:46.3 Participant 2: Yeah?

0:21:46.6 Participant 1: Yeah. I like Lightening McQueen.

0:21:49.0 Participant 3: What do you like about Cars?

0:21:56.4 Participant 1: I like that they're funny. And I like that they are... Really fast. And they make a really good friendship.

0:22:14.2 Participant 3: And why do you like Cars?

0:22:15.4 Participant 2: They're just cool.

-chuckle-

0:22:17.2 Participant 3: I bet they are.

-chuckle-

0:22:19.1 Director: Okay, do you guys have an idea of who you guys are?

0:22:23.2 Participant 3: Yeah I do.

0:22:25.3 Director: Do you feel well defined? Are there things that you are like, "We need to touch upon that", maybe?

0:22:30.7 Participant 2: I don't... I'm not entirely sure what's coming next, so I...

0:22:34.6 Participant 1: I think maybe about our hobbies and stuff.

0:22:38.3 Researcher: I would ask a couple of questions about you 'cause I have a couple of notes from the scene.

0:22:40.6 Participant 2: Sure.

0:22:41.4 Researcher: So do you feel extroverted or introverted?

0:22:48.7 Participant 1: I think where it's a bit extroverted but not... Like, inbetween.

0:22:54.8 Researcher: Okay. So you feel more extroverted than introverted.

0:23:00.5 Participant 1: Hmm. Yes. It depends.

0:23:04.1 Participant 2: I guess like extroverted, but...

0:23:07.6 Director: In a cool way.

-laughter-

0:23:08.8 Participant 2: Yeah. Like not necessarily very like emotional share... Or I don't know. Stuff like that.

0:23:17.2 Researcher: I would say a little bit shy, maybe?

0:23:17.9 Participant 2: Yeah, but also not. Like... Acting... Yeah.

0:23:19.2 Participant 1: Acting tough in front of the other kids.

0:23:21.4 Participant 2: Trying to...

0:23:23.0 Participant 1: Because that's an adult thing.

0:23:25.5 Researcher: Okay. Good.

0:23:27.0 Participant 2: Like, not trying to hide it.

-chuckle-

0:23:31.2 Director: And then... What is a favourite thing for you to do?

0:23:39.8 Participant 1: I do...

0:23:51.7 Director: Stevie?

-laughter-

0:23:54.7 Participant 2: I like to read. Smarter than everyone else, you know. Just being the first to know the right answer and I'll just feel like, Yeah!

0:24:04.8 Participant 3: So you are a good student, you like school?

0:24:05.8 Participant 1: I like playing with other kids after school and going to horse riding lessons?

0:24:11.3 Director: Do you ride horse?

0:24:14.0 Participant 1: Yes... And other than that like going on the computer sometimes if I'm allowed to.

0:24:26.3 Director: What do you do on the computer?

0:24:29.0 Participant 1: Play games.

0:24:30.1 Participant 2: That's cool.

-chuckle-

0:24:30.8 Participant 1: Yes.

-chuckle-

0:24:32.0 Director: Like what kind of games?

0:24:36.5 Participant 1: Run. Run 3.

0:24:38.4 Director: Okay. Cool.

0:24:43.0 Participant 1: And yeah, we have these game websites, and then we go on there and we play games where we go on the phone with my mother, play Minecraft or...

0:24:53.5 Director: Oh, cool. Minecraft.

0:24:55.2 Participant 1: Yeah.

0:24:55.7 Director: Stevie, what do you do if you are home alone? What kind of games do you play?

0:25:04.3 Participant 2: I usually just chat a lot with my friends.

0:25:07.9 Director: And what do you use for that?

0:25:11.9 Participant 2: I think I got a phone. My parents are so cool, they gave me a phone! -chuckle-

0:25:18.8 Director: Oh, you have a phone. That's cool. Oh.

0:25:20.4 Participant 3: Or you use the landline.

-chuckle-

0:25:23.4 Participant 1: I can't have a phone yet.

0:25:27.1 Participant 2: So, yeah I just chat with my cool friends who have phones and with my less cool friends I just borrow the computer from my parents.

0:25:41.4 Director: Do you use instagram or whatever?

0:25:41.7 Participant 2: What's a chat service?

0:25:42.8 Director: Facebook.

-laughter-

0:25:45.8 Researcher: I don't know what...

0:25:45.9 Participant 1: I might come over to his place...

0:25:46.0 Director: What?

0:25:46.1 Participant 1: So I can chat on there.

0:25:47.6 Director: Yeah, this is good. Okay, so now we're going to play a scene with each of you, but first one then the other. So who wants to go first? Stevie or Elina?

0:26:00.5 Participant 2: I'm good.

0:26:04.0 Director: Okay, Stevie is going to go first. You are a sidekick.

0:26:06.1 Participant 2: Thank you.

0:26:06.6 Director: Yes. You can explain yourself and if you can think of something right now, like, "This is a very cool sidekick and I want to be like that." Then please do so. And it's just a pre-scene. We are going to give you some input for location. All that kind of stuff. Elina will be able to jump in as an extra character and that's the plan for now. Alright?

0:26:32.6 Participant 3: To be clear he's the main character and we are helping him?

0:26:36.6 Director: Yes. You are helping him achieve a goal. Okay.

0:26:39.5 Participant 2: Do I have any kind of goal or something like that?

0:26:43.0 Director: I would like you to define it. Can you do that?

0:26:47.1 Researcher: Imagine a challenge for Stevie.

0:26:50.6 Director: Yes.

0:26:51.0 Researcher: What would be challenging for Stevie?

0:26:55.2 Director: So, shall we give a location?

0:26:57.2 Researcher: Yeah. That would be good. Maybe you are at school. Or in a park. Could be... I'm just giving suggestions you can choose one.

0:27:09.8 Participant 2: Okay. School, park?

0:27:13.8 Researcher: It could be an airport.

0:27:15.2 Participant 2: Like playground outside of school?

0:27:16.7 Researcher: Yeah you could do.

0:27:16.8 Director: Yeah you could be.

0:27:17.7 Participant 2: Yeah. Sounds good.

0:27:19.6 Participant 3: You're almost nine.

0:27:21.9 Director: Alright, so whenever you are ready. Play park, out of school, Stevie, sidekick... Yeah.

0:27:35.1 Participant 2: Oh my God, she looked at me in class!

0:27:39.4 Participant 3: Yeah she did, man she's looking at you like this and...

0:27:43.3 Participant 2: Ooooh, what do I do? What do I do?

0:27:47.7 Participant 3: Go talk to her, go talk to her.

0:27:50.5 Participant 2: No, I can't do that. No.

0:27:51.2 Participant 3: Come on, man, come on.

0:27:51.9 Participant 2: No.

0:27:52.0 Participant 3: You can do it.

0:27:52.5 Participant 2: My heart is like beating. It's not okay. I can't do it. I'm just going to embarrass myself.

0:27:57.6 Participant 3: Oh, it doesn't matter, man. You have to do it and then your friend's here will be for you. We'll be here to support you.

0:28:06.8 Participant 2: But... But...

-vocalization-

0:28:07.7 Participant 3: She likes you, man.

0:28:09.2 Participant 2: Ah! What should I say?

0:28:10.6 Participant 3: She likes you. You're going to learn when you say, "Hi, my name is Stevie... The Great."

-chuckle-

0:28:22.6 Participant 2: I feel like you're pressuring me. I don't know what to do, ahh.

0:28:25.4 Participant 3: No man, I'm not pressuring you. It's okay.

0:28:28.3 Participant 2: Ah, I need more time, okay? Ahh.

0:28:31.4 Participant 1: Stevie! Stevie! Stevie! Hey.

0:28:36.6 Participant 2: Hey.

0:28:37.4 Participant 1: Who's this?

0:28:39.7 Participant 2: This is...

0:28:39.8 Participant 3: I am robot. I am his cousin.

-laughter-

0:28:44.1 Participant 1: Oh. You don't look like his cousin.

-laughter-

0:28:47.0 Participant 3: How does his cousin look?

0:28:48.0 Participant 1: Not like a robot.

-laughter-

0:28:54.4 Participant 3: I am his cousin.

-laughter-

0:28:57.4 Participant 1: Oh. Okay.

0:28:57.9 Participant 2: He's my cousin, yeah.

0:29:00.2 Participant 1: Okay.

0:29:01.3 Participant 3: Hi.

0:29:01.7 Participant 1: You never told him about me, you never told me about him, yeah?

0:29:09.4 Participant 2: No?

0:29:10.2 Participant 1: No.

0:29:11.0 Participant 2: Sorry? I don't know you want to know about my cousin...

0:29:15.2 Participant 3: Yeah I'm from another city... I came here from Amish falls.

0:29:21.5 Participant 2: He's new.

-laughter-

0:29:23.3 Participant 1: Where is that?

0:29:26.1 Participant 3: It is close to the...

0:29:28.7 Participant 1: Like we learned the provinces? Which provinces?

0:29:31.6 Participant 3: The what?

0:29:32.2 Participant 1: The provinces!

0:29:33.1 Participant 3: Oh, the provinces.

0:29:34.1 Participant 1: Yeah.

0:29:34.4 Participant 3: It is in the province of... -laughter- I'm not good at geography.

-laughter-

0:29:42.3 Director: Somewhere like, east right?

0:29:48.0 Participant 3: Somewhere out there in the mountain.

0:29:52.4 Participant 1: In the middle, right?

0:29:53.6 Participant 3: And... Now my mother has moved here and I will be at your school with him. With my cousin.

0:29:55.6 Participant 1: Oh. You guys you will be in our class?

0:29:58.0 Participant 3: Yes, I will be in your class.

0:30:00.8 Participant 1: Oh! That is cool. Have you told your friends?

0:30:08.3 Participant 2: No?

0:30:08.7 Participant 1: Okay.

0:30:09.3 Participant 2: Should I tell?

0:30:09.8 Participant 1: We can ask them to come and play.

0:30:12.1 Participant 3: Yeah, we're going to play. Let's go play!

0:30:17.1 Participant 2: Yeah. Yeah.

0:30:17.8 Participant 1: Okay, let's go play. What do you want to do? Shall we do Tag?

0:30:20.8 Participant 3: Tag, yeah!

0:30:21.6 Participant 2: Yes, I love Tag.

0:30:25.7 Participant 3: He is very good at Tag.

0:30:26.0 Participant 1: Okay. Who's going to be... It's not my turn.

-laughter-

0:30:30.2 Director: Time jump. You just had a really nice game of Tag together and it was really nice and you are all like physical exerted and yeah, had a good time.

0:30:44.8 Participant 2: Oh.

0:30:45.0 Participant 1: I'm done.

0:30:45.9 Participant 2: I kicked your ass!

0:30:47.5 Participant 1: No, you played wrong.

0:30:49.3 Participant 3: What do you mean? I tagged you and then it's your turn.

0:31:01.5 Participant 1: Yeah, but you stood behind a tree and I didn't know you were there.

0:31:09.5 Participant 2: Well... That's because I'm also good at Hide-and-Seek and that's just fair.

-vocalization-

0:31:18.9 Participant 3: She is right. He was hiding there and he found you.

0:31:27.7 Participant 1: No.

-vocalization-

-laughter-

0:31:32.2 Director: So what do you think of her?

0:31:35.6 Participant 2: I guess like she's probably my crush. But I don't...

0:31:39.4 Director: Yeah but you just thought robot with taunting her? So do you agree with robot or yeah, you were also being attacked by...

0:31:52.7 Participant 2: Hey! Don't be mean to her.

0:31:56.9 Participant 3: I'm not mean to her!

-vocalization-

0:32:02.0 Participant 1: Yeah you are. You are mean.

-vocalization-

0:32:05.7 Participant 3: Hey!

0:32:05.9 Participant 2: I'll protect you Eline!

0:32:07.0 Participant 1: He's my best friend, ha.

0:32:11.3 Participant 2: Ha!

0:32:11.8 Director: Okay. Maybe turn a little bit so we capture it on camera.

0:32:18.7 Participant 1: Ha.

-laughter-

0:32:18.7 Participant 3: I'm going to go talk to your mother that you're not playing with me.

0:32:23.4 Participant 2: We did play with you!

0:32:24.6 Participant 1: We can also do something else?

0:32:26.7 Participant 3: If you say sorry to her...

0:32:27.8 Participant 1: No no no. I'll be nice.

0:32:27.9 Participant 3: Okay. I guess I'm sorry.

0:32:30.8 Participant 1: Okay. What do you want to play?

0:32:35.7 Participant 2: I'll keep my phone.

0:32:41.2 Participant 3: Let's play football!

0:32:41.3 Participant 1: Okay.

0:32:42.1 Director: And, end scene. Okay, cool! So, what was the story?

0:32:47.0 Participant 1: That's the story. Okay.

0:32:52.3 Participant 2: So, I had a crush but I was too afraid to say it and then she just kind of walked up to play with us but I was still to afraid to say anything. So we played and then I kind of saw an opportunity, like them, he... Like I was being a dick and he kind of joined me and then I saw an opportunity to like... I was being a dick to impress her but then he joined in and I was like, "Oh now I can protect her." What a brave...

0:33:20.9 Researcher: My hero.

-laughter-

0:33:21.0 Director: Amazing yes. Great, thank you so much. That's a great story. Let's go on to another one. Elina this time...

0:33:31.2 Participant 2: I guess you are a good sidekick.

-laughter-

0:33:33.7 Director: This time you're the child and I guess you can be the sidekick again. You are the third character. And if you can just be different sidekick that would be nice. Now...

0:33:45.2 Participant 3: The sidekick can also be fictional things...

0:33:48.4 Researcher: Participant 1 can define the problem, and you can decide what kind of sidekick you are.

0:33:56.1 Director: Yeah.

0:33:57.7 Participant 3: It can also be a fictional thing like an animal or something.

0:34:00.4 Director: Yes, definitely.

0:34:01.9 Researcher: You can be an astronaut, you can be a dolphin if you want.

-laughter-

0:34:05.8 Participant 2: Whether you were my actual cousin or my robot cousin?

0:34:12.8 Director: Yeah, yeah, yeah. Well it shouldn't matter. Yeah I think, that you accept...

0:34:19.3 Participant 1: Yeah I'm thinking about some, a problem.

0:34:20.5 Director: Yeah okay, but it's hard to accept what's going on because you were like, "Hey cousin", and you look like a robot and that was fine. You know?

0:34:28.8 Participant 1: Okay, yeah, yeah, yeah.

0:34:28.9 Participant 3: Am I supposed to look like a robot?

0:34:31.0 Director: No.

0:34:31.5 Researcher: No.

0:34:32.1 Director: But...

0:34:33.6 Researcher: I'm not gonna say...

-overlapping conversation-

0:34:33.7 Researcher: Be whatever you want to be, but you're the sidekick because we want to take care of the child.

0:34:37.1 Participant 2: Okay.

0:34:37.6 Director: Yeah. So...

0:34:40.5 Researcher: So should we be in the seaside like the beach?

0:34:43.3 Director: Oh yeah, you guys are at the beach, that's a really nice place. I think to have a thing. Don't try to think too much. Just...

0:34:52.5 Participant 1: Yeah, yeah, this helps.

0:34:55.2 Director: Yeah.

0:34:56.2 Participant 1: Can we build a sandcastle?

0:34:58.2 Participant 3: Yeah, yeah, let's build sandcastles.

0:34:58.4 Participant 1: Okay. Okay. How are we gonna make it? What are we gonna do?

0:35:07.3 Participant 3: We put all the sand in the bucket.

0:35:09.5 Participant 1: Hmm, okay, I'm gonna make a moat.

0:35:14.3 Participant 3: And then we'll put the bucket like that.

0:35:16.3 Participant 1: Oh, oh yeah. Oh that's good. Oh.

0:35:21.5 Participant 3: And look now we can sculpt the castle.

0:35:25.4 Participant 1: Okay. Can you help me dig out the moat?

0:35:40.4 Participant 3: I think we need water in a moat. How are we gonna do that?

0:35:42.9 Participant 1: We have... Get the water from the sea.

0:35:48.0 Participant 1: Okay. We can get the bucket.

0:35:49.0 Participant 3: Yes.

0:35:49.7 Participant 1: Okay, let's go. Okay. It's heavy.

0:35:52.4 Participant 3: Oh look! There is a fish in there.

0:35:57.9 Participant 1: Oh. Are... Isn't it... Is it gonna die?

0:36:00.6 Participant 3: No, no, if we put it back here fast.

0:36:07.8 Participant 1: Okay.

0:36:07.9 Participant 3: It's going to be alright. It's going to be the guardian of the castle.

-chuckle-

0:36:16.7 Participant 1: That's a good idea. We need more sand. Oh look what I found! I found a seashell.

0:36:35.5 Participant 3: Wow. That's great! Good job Elina.

0:36:36.0 Participant 1: Thank you... Should we put the castle full of seashells?

0:36:36.1 Participant 3: Wait what?

0:36:36.2 Participant 1: The castle full of seashells?

0:36:36.3 Participant 3: Yes, let's do it.

0:36:36.4 Participant 1: Okay, let's get seashells.

0:36:43.1 Participant 3: Your mother is coming with the food. So let's do it fast.

0:36:48.0 Participant 1: Okay, let's put them on it.

0:36:53.5 Director: Yeah, yeah, now you're just...

0:36:58.2 Participant 2: Hey children!

0:37:00.3 Participant 1: Hey look what we made!

0:37:02.7 Participant 2: Oh a sandcastle... Is that a fish?

0:37:06.0 Participant 1: Yeah we found it!

0:37:07.9 Participant 3: That's a mermaid, it's protecting the castle.

0:37:14.5 Participant 1: Oh yeah, yeah, yeah, yeah.

0:37:14.6 Participant 2: Okay. Just be sure to put it back when you are done okay.

0:37:18.4 Participant 3: Okay.

0:37:19.8 Participant 1: But it's protecting the castle.

0:37:20.5 Participant 3: And then who's gonna protect the castle?

0:37:21.2 Participant 1: Yeah.

0:37:23.9 Participant 2: Okay... Yeah no... Just leave it, yeah, it's fine. It protects the castle.

0:37:30.7 Participant 1: Can we have seashells?

0:37:33.3 Participant 2: Yeah. Cool. Anyway, so I have food and it's still warm. Who wants a hotdog?

0:37:39.2 Participant 1: Me!

0:37:40.1 Participant 3: Oh a hotdog.

0:37:42.1 Participant 2: Grab 'em.

-vocalization-

0:37:49.1 Director: And end scene. So, what was the story?

0:37:51.6 Participant 1: Building a sea castle. Yeah.

0:37:56.4 Director: So how did it go? Can you...

0:38:01.0 Participant 1: So yeah we were at the beach and I decided to build a sea castle. So he showed me how to make a good sea castle by using the sand and the bucket method. I wanted to build a moat and then we needed water. So he said, like, "Let's get it from the sea." And then we found a fish. And we put it in water in the moat, and the fish became our mermaid warrior.

-laughter-

0:38:27.2 Participant 1: Yeah. And then we looked for more sand but we found seashells, but we had to be quick because our mother came, so we quickly got some seashells, decorated the castle, and then we showed it off to our mother and ate some hotdogs.

0:38:42.6 Director: Amazing! Great story guys, thank.

0:38:45.0 Participant 3: I was going from more of a parent figure, but then I guess I became an other sibling figure.

0:38:50.2 Researcher: That's exactly what I noted. You started as a dad, maybe an older kind of friend afterwards, older sibling.

0:39:00.6 Participant 2: But I guess you were like... Like you were a dad that went along in like the language of your child. So I just picked up on the language of the child.

0:39:12.0 Researcher: Yeah. It's very nice.

0:39:14.5 Participant 2: I was actually thinking, I'm curious because at some point I was thinking, Should I like storm in now and be like an annoying child and break their sand castle. But I'm not sure, are we looking for a conflict here or not?

0:39:27.2 Director: Anything goes.

0:39:29.1 Participant 2: Because I'm still like... What are we trying to do?

0:39:32.7 Director: We're trying to define stories that we can tell using a social problem. So in this case, I think that real conflict can be interesting for children of like 12. For children...

0:39:52.6 Participant 1: Or for nine and 10.

0:39:54.6 Director: Yeah, for children like eight, it would be nicer maybe to just have the story like, "Oh, we're going to build a sandcastle. We'll get the shells, the water and everything." In the end it looks really nice.

0:40:05.7 Researcher: Do you know what's a favourite...

0:40:06.1 Director: We just want to make interesting stories...

0:40:06.8 Researcher: Stories are of children of eight?

0:40:08.7 Director: What?

0:40:09.0 Researcher: They are conflict ridden, and they are full of those kinds of -0:40:13.9-

-chuckle-

-overlapping conversation-

0:40:15.0 Participant 3: Your task sucks.

0:40:16.7 Researcher: You don't have to have that, but it is very well. But if you feel like this is necessary...

0:40:25.0 Participant 2: Yeah, I'm just understanding now, like, "Okay, we're trying to make stories that are cool for children to listen to."

0:40:30.2 Director: Yeah. So, that's why I ask you what happens. And repeat stories. So we have a narrative... And we have had two really nice narratives, one was a little bit more love, drama. And the other one was just building a sandcastle. And that's also fine. Let's... Now, we're going to define sidekicks. So I guess you can interview those people. And yeah, they are becoming the sidekick character.

0:41:08.9 Participant 3: One character?

0:41:12.7 Director: Yes one character.

0:41:15.4 Participant 2: Okay, what's your name?

0:41:15.6 Participant 3: My name is Mr. Steel.

0:41:19.7 Participant 2: Mr. Steel?

0:41:21.6 Participant 3: Yes.

0:41:22.4 Participant 2: With e-e?

0:41:24.3 Participant 3: With e-e.

0:41:26.1 Participant 2: Okay. Hello Mr. Steel. What's your name?

0:41:32.1 Participant 1: My name is Miss Creative.

0:41:39.0 Participant 2: Miss Creative. Interesting. And what kind of things do you create?

0:41:46.7 Participant 1: Everything and anything. What can you imagine?

0:41:52.8 Participant 2: Okay. And how did you become this, how... What's your origin story?

-chuckle-

0:42:01.5 Participant 1: I was created.

-chuckle-

0:42:02.5 Participant 1: No, I really, really like to just think up things and then see how I can make them happen, how I can just create...

0:42:15.0 Participant 2: So you've just always been like that.

0:42:16.6 Participant 1: Yes.

0:42:17.2 Participant 2: And how old are you?

0:42:20.1 Participant 1: I'm an adult.

-chuckle-

0:42:22.9 Participant 2: How old adult?

0:42:27.0 Participant 3: 5000 years.

0:42:27.9 Director: No that's fine, an adult is fine.

0:42:30.1 Participant 2: 18 or 50 it matters, I would say. Or...

0:42:33.5 Participant 1: I'm an adult.

-chuckle-

0:42:37.8 Director: It doesn't matter if you're like... The dog can be eight and very adult and we don't know what type of creature he is. And an elf can be 50 and be very young.

0:42:51.5 Participant 3: She's an elf.

0:42:52.9 Participant 2: What kind of creature are you?

-chuckle-

0:42:56.1 Participant 1: I'm a fairy.

-chuckle-

0:43:00.9 Participant 2: That makes more sense, okay.

0:43:01.7 Participant 2: So how old are you?

0:43:03.6 Participant 3: I am 25. I'm almost 25.

0:43:07.9 Participant 2: And what kind of creature are you?

0:43:13.5 Participant 3: I am a semi-god.

-chuckle-

0:43:14.6 Participant 2: Like a demigod.

0:43:18.9 Participant 3: A demigod. Not like Jesus, more like Venus.

0:43:21.4 Participant 2: And what's your super power?

0:43:25.8 Participant 3: I'm very courageous.

0:43:28.4 Participant 2: Courageous. Okay. Are you strong because you're Steel?

0:43:33.7 Participant 3: I'm strong but I'm not all powerful.

0:43:39.2 Participant 2: More like a steel wheel.

0:43:40.6 Participant 3: But I'm trying.

0:43:47.8 Participant 2: Oh, Mr. Steel.

-chuckle-

0:43:48.7 Participant 2: Anything else you wanna...

0:43:52.9 Director: Maybe...

0:43:54.0 Participant 2: What is your purpose in life?

0:43:55.4 Participant 3: My purpose is to help small kids, young kids confront the difficulties of life.

0:44:06.5 Participant 2: And what is your purpose in life?

0:44:09.6 Participant 1: I wanna make life a bit a bit more wonderful. Like I look into the things that are done and give everybody the confidence to make something they're proud of.

0:44:23.9 Participant 2: Okay.

0:44:25.5 Director: Do you think you have an idea about your character? Okay, great, then we'll do more scenes, so... Yeah, who of you wants to start? You will be playing a child.

0:44:38.7 Participant 3: Okay, is that the same child that he was...

0:44:43.1 Director: It can be a different child.

0:44:45.5 Participant 3: A different child. Okay.

0:44:45.9 Director: Yep.

0:44:46.0 Participant 1: -0:44:46.1-

0:44:47.8 Director: Actually rather make it a different child. Yeah. So we can have a more...

0:44:53.1 Participant 2: Should I say or just we'll see?

0:44:55.2 Director: What did you say?

0:44:55.3 Participant 2: Should I say what kind of child I am now or...

0:44:57.8 Director: Yeah, sure. If you have an idea, then we can go with that.

0:45:02.3 Participant 2: I'll be like a five-year-old. Always wants his mom around.

0:45:10.2 Director: Alright.

0:45:12.0 Participant 2: Mommy, mommy, mommy child.

0:45:12.2 Director: Mommy child. That's cool. Let's go to a more fantastic place. I think, that would be good. Right?

0:45:24.0 Researcher: Yeah. You wanted to be an ancient demigod, right? So let's to maybe move to a medieval time?

0:45:31.7 Director: Medieval times?

0:45:33.7 Researcher: A medieval village.

0:45:36.2 Director: Yeah, where they have horses and they...

0:45:40.1 Researcher: Animals around.

0:45:41.4 Participant 3: Maybe even dragon.

0:45:43.4 Participant 2: No plague.

-chuckle-

0:45:43.9 Director: Maybe they have dragons, and maybe everyone is just trying to make sure that they have enough to eat. Yeah. Well, here and... You go. The floor is yours. Yeah it's still a story that you're playing as this character.

0:46:08.0 Participant 2: Yeah, I was thinking like it also needs to be a story which appeals to a five-year-old, I guess.

0:46:14.5 Director: Yeah but don't think too much about it.

0:46:16.2 Participant 2: Yeah. -chuckle-

0:46:16.9 Participant 3: Just be the five-year-old.

0:46:18.2 Director: Just be it.

0:46:20.7 Participant 2: Daddy! Daddy! Where is Daddy? Daddy? Where is everyone? Maybe they're in the Church. Hello-o-o.

0:46:49.2 Participant 3: It looks like everyone hide. Hello. Hello Richard.

0:46:52.9 Participant 2: Who are you? I want my daddy.

0:46:56.2 Participant 3: I'm Mr. Steel. There has been a problem in the village. Some bad people came and drove everyone away, and they ran for their lives.

0:47:11.3 Participant 2: Oh. Where's my Daddy?

0:47:14.2 Participant 3: Your Daddy, we're gonna find your daddy. But we have to save you because he's imprisoned by the bad people.

0:47:23.6 Participant 2: Okay, so where are we going? How...

0:47:32.2 Participant 3: We will follow the tracks of the horses.

0:47:42.8 Participant 2: Oh okay. I'll follow you then. Can I hold your hand?

0:47:43.8 Participant 3: You can hold my hand.

0:47:45.8 Participant 2: Thank you.

0:47:45.9 Director: After a while, after tracking the paths of the horses you guys come across a bridge.

0:47:52.9 Participant 3: Can you see? There's soldiers there!

0:47:56.1 Participant 2: Oh, oh no!

0:48:00.9 Participant 3: Don't be scared.

0:48:02.3 Participant 2: Okay.

0:48:04.1 Participant 3: These people have your parents, we have to save them. I know they look big and strong but you are stronger.

0:48:16.4 Participant 2: Okay, I don't feel stronger.

0:48:19.5 Participant 3: Look behind you, that cage, it's your father, your mother. I want you to sneak there and steal the keys from that soldier. And then we're gonna open the cage.

0:48:31.8 Participant 2: And what are you gonna do?

0:48:33.8 Participant 3: I'm going to distract the soldiers so that you can steal the keys.

0:48:37.9 Participant 2: Okay.

-vocalization-

0:48:41.5 Participant 1: Hey there, what are you doing? What are you doing?

0:48:45.9 Participant 3: I'm sorry there was a dog that is chasing me.

0:48:48.8 Participant 1: A dog?

0:48:49.5 Participant 3: A dog, yeah.

0:48:50.6 Participant 1: A dog?

0:48:51.2 Participant 3: It's a very wild weird and angry dog.

0:48:54.3 Participant 1: Oh, oh, oh, I don't see any, what do you mean? Hey. Hey, the prisoner is gone.

0:49:01.6 Participant 3: I just...

-vocalization-

0:49:04.5 Participant 2: Come on daddy. And mommy.

0:49:07.7 Participant 1: Where are you guys going?

0:49:12.9 Researcher: End scene.

-laughter-

0:49:15.7 Director: Okay, very very nice. So what happened?

0:49:22.9 Participant 2: What happened? So I just walked around in the village and I suddenly noticed that my Daddy wasn't there and that basically no one was there. So I went to the church to see if someone was there but there was no one there. And then suddenly Mr Steel was there and I was like, "Who is this guy?" And I was scared of him. But he turned out to be a good guy, or at least... Yeah, well, he told me that he knows where my Daddy is. And I wanted my Daddy. So I went with him. And then we had to hide from soldiers. And then he asked me to sneak in and

save my Daddy while he was distracting the soldiers. And then we succeeded and we run away. And we had a lovely hug because I love my daddy.

-laughter-

0:50:21.1 Director: And how did it make you feel?

0:50:25.4 Participant 2: Quite happy.

-laughter-

0:50:27.2 Director: Very good.

0:50:29.7 Participant 2: And I feel grown and like courage is good. I feel like there was a nice moral here.

-laughter-

0:50:36.3 Director: Yes, I feel so too. When I heard like, "Come we're going to save your daddy." I'm like, "Yes, that's a goal you guys, that's a goal." Yeah that was really cool.

0:50:47.4 Researcher: And also, it also feels like the goal Mr. Steel was to help children confront difficulties.

0:50:54.7 Participant 3: Yeah.

0:50:55.7 Researcher: And I was afraid that you will confront the difficulty for the child. But no, the important bit, the keys were done by the child.

0:51:04.4 Participant 2: Yes.

0:51:05.9 Director: Amazing. Very good. Yeah, good sidekick. Nice. So...

0:51:11.6 Researcher: Did you feel that you have a lot of input in this? Did you feel that you have agency as a child.

0:51:16.8 Participant 2: Well I was kind of... I think my input was more that I was asking like, what should... Like I was, yeah, I was more... Yeah. I felt like I was in control of how much input I had, if that makes sense. But I consciously was like, I don't think it makes sense for me to actually have a plan or something.

0:51:40.3 Director: Yeah. So you were very well at being guided.

0:51:45.9 Participant 2: Yeah.

0:51:46.5 Director: Asking to be guided.

0:51:46.8 Participant 2: But it was also like, I was thinking of myself as like really dependent, looking for my mommy, looking for my daddy.

0:51:53.2 Participant 3: But at some point...

0:51:53.6 Participant 2: This is what just makes sense.

0:51:54.0 Participant 3: You broke free from your dependence and you actually... But you needed a push.

0:52:00.7 Participant 1: Great.

-applause-

0:52:02.3 Director: Okay. Miss Creative.

0:52:04.0 Participant 2: Am I still the child?

0:52:06.4 Director: Yes, you are again the child.

0:52:07.6 Researcher: A different child.

0:52:09.1 Director: A different child.

0:52:09.3 Participant 2: Can be a different child.

0:52:10.1 Director: It'd be nice actually.

0:52:13.5 Participant 1: So where are we at?

0:52:14.4 Participant 2: What's a 12-year-old like?

0:52:17.7 Director: You guys are in the far future.

-overlapping conversation-

0:52:23.5 Director: A metropolis.

0:52:24.6 Researcher: Yeah. In a futuristic metropolis.

0:52:27.6 Participant 1: Okay.

0:52:28.1 Participant 2: When does puberty start again?

0:52:30.5 Participant 1: At 13.

0:52:32.3 Researcher: Yeah, I think it depends on the gender.

0:52:34.2 Participant 2: Or not puberty...

0:52:37.0 Participant 1: Like there are one or two that begin 11,12.

0:52:41.1 Director: So girls, if you're a boy, girls are interesting, but it's a very innocent kind of interest.

-laughter-

0:52:50.4 Participant 2: Yeah not necessarily...

0:52:52.4 Researcher: Yeah no like, love interests and stuff, that begins often around eight, nine. And then it's also the "Ew" phase, that becomes like nine, 10, 11 is "Ew" phase and then from eight, nine, they become interested in like...

0:53:08.0 Director: Luckily we have someone who is like amazing at the didactics and the...

0:53:13.4 Researcher: Pedagogy.

-laughter-

0:53:14.9 Director: The what?

0:53:16.1 Researcher: And Pedagogy.

0:53:17.5 Participant 1: Pedagogy.

0:53:19.3 Director: Oh okay yeah.

-laughter-

0:53:25.4 Director: So you know, great that we have an expert. So do you know what kind of child you are?

0:53:31.4 Participant 2: I'll be a child in the "Ew" phase, so like 10 or 11. I guess a little like annoying and like, "I don't wanna do that." Like just kind of a...

0:53:45.6 Director: Can you also be like very passionate about something? Because you just had as well like...

-overlapping conversation-

0:53:51.4 Participant 2: Oh you want him more proactive...

0:53:54.1 Participant 3: Or maybe make him -0:53:55.3-

0:54:00.9 Participant 2: I don't know.

0:54:01.0 Director: Yeah. Yeah you don't have to define it right now if you don't want to. Maybe it's better to let it...

0:54:05.6 Participant 2: Yeah but maybe I should pick something other than annoying, doesn't want anything, child.

0:54:10.6 Researcher: You can do, be that and still be passionate.

0:54:13.2 Director: Yeah, yeah.

0:54:15.0 Participant 1: So it's a fine basis. But like it's nice doing that other side.

0:54:18.4 Director: Yeah, agreed. Like...

0:54:19.7 Participant 1: So you have something relatable and you have something that is like... That extends like the road sort of.

0:54:27.7 Participant 2: Okay... Yeah because like saving the world or something is probably too much for a...

0:54:34.4 Participant 1: Because to be honest...

0:54:35.3 Director: That's a bit much. Maybe you just have a hobby that you're really into.

0:54:41.4 Researcher: Mm-hmm. Okay.

0:54:45.8 Participant 2: I wanna be... Like I wanna be a great football player or something.

0:54:46.6 Director: Well for instance.

0:54:48.7 Participant 2: Right, I'll leave it a little undefined but...

0:54:52.8 Director: Okay.

0:54:54.3 Researcher: Yanitz hasn't been a child yet, right?

0:54:56.1 Participant 3: Well I was like years ago.

-laughter-

0:55:00.2 Researcher: But if you find it difficult to make too many children then maybe Yanitz can give the go.

0:55:05.6 Director: Yeah Yanitz can be a child as well.

0:55:10.8 Participant 2: I'm not sure... Like, yeah.

0:55:11.2 Director: Okay well...

0:55:12.4 Participant 2: I guess that makes sense...

-overlapping conversation-

-laughter-

0:55:16.9 Director: Okay Yanitz, can you do this scene again?

0:55:19.7 Participant 1: Okay.

0:55:20.6 Participant 3: So we are in the future, futuristic...

0:55:24.0 Director: Yes a futuristic metropolis, like a, you know, I don't know, buildings and flying cars and whatever.

0:55:32.2 Participant 3: Flying cars and stuff.

0:55:33.0 Director: Yeah, whatever you think is supposed represent the metropolis. Alright.

0:55:41.9 Participant 1: Hello. Welcome to the Miss Create Fairy Class. What can I do to make you happy today?

0:55:51.2 Participant 3: I don't know. I just want to learn how to drive, but my mom tells I'm too young for that.

0:55:58.6 Participant 1: To drive?

0:56:00.4 Participant 1: Yeah.

0:56:00.4 Participant 3: You want to drive. Do you like cars?

0:56:02.4 Participant 3: I love cars.

0:56:03.4 Participant 1: Shall we make one?

0:56:06.8 Participant 3: I guess we can make one.

0:56:07.8 Participant 1: Yeah?

0:56:07.9 Participant 3: Yeah.

0:56:09.0 Participant 1: Okay what kind of car do you want to make?

0:56:12.1 Participant 3: I want it to be big and to be able to fly.

0:56:16.3 Participant 1: Oh that's a good idea. Okay, what do we need for a car that is big and that's gonna fly? What kind of things do we need?

0:56:24.6 Participant 3: Wind turbines.

0:56:26.0 Participant 1: What, sorry?

0:56:26.8 Participant 3: Two turbines.

0:56:28.5 Participant 1: Turbines, okay, okay.

-vocalization-

0:56:33.6 Participant 1: Look we have two turbines but I don't think... I think we need more than that to make a car. What else do we need?

0:56:43.0 Participant 3: We need a... We need a wheel.

0:56:46.3 Participant 1: A wheel?

0:56:46.4 Participant 3: Yeah.

0:56:46.9 Participant 1: Oh okay okay. What kind of wheel? A parachute wheel?

0:56:51.7 Participant 3: A parachute wheel? Yeah.

-vocalization-

0:56:58.8 Participant 1: Oh wow. Oh that goes really quick. Okay, we... Also I think new wheels to actually go and roll.

-laughter-

0:57:05.1 Participant 1: The car.

0:57:05.5 Participant 3: My car is gonna fly.

0:57:07.3 Participant 1: Oh you're car is gonna fly. Okay we need jet propeller.

0:57:10.0 Participant 3: Jet propeller. Yeah.

-vocalization-

0:57:15.7 Participant 1: That's cool. Okay. Now I think... How are you going to make this safe? Because I think your mom doesn't want you to go in a car because it's not safe. So how are we gonna make it safe.

0:57:25.1 Participant 3: Oh yeah my mom is always worried about me.

0:57:28.1 Participant 1: I know, I know. What do we have in a normal car to make it safe?

0:57:31.9 Participant 3: We have seatbelts.

0:57:32.5 Participant 1: Oh we can put some seatbelts in and then she's probably fine with it.

-vocalization-

0:57:38.7 Participant 3: Can we also get a very cool helmet?

0:57:41.4 Participant 1: Yes.

0:57:41.9 Participant 3: Like formula one! Yay.

0:57:45.9 Participant 1: Oh you look so cool. Okay shall we go and drive the car now?

0:57:49.1 Participant 3: Yes.

0:57:49.4 Participant 1: Okay. Okay, drive me away to the moon.

0:57:55.0 Participant 3: It's a British car now.

-laughter-

-vocalization-

0:58:07.3 Participant 1: Oh wow. Where are we now?

0:58:12.7 Participant 3: Now we're above the metropolis.

0:58:13.6 Participant 1: Oh.

0:58:13.7 Participant 3: Look, look, I can see my house.

0:58:16.2 Participant 1: Wow. Oh you have a fun house. And I see that little patch of forest that is left in this world.

-laughter-

0:58:25.3 Participant 3: The forest. I didn't know that.

0:58:29.9 Participant 1: Let's go.

-vocalization-

0:58:38.3 Participant 1: Oh shall we land?

0:58:40.6 Participant 3: Yeah.

0:58:40.7 Participant 3: Okay.

-laughter-

-vocalization-

0:58:45.3 Participant 3: I'm still learning.

-laughter-

0:58:47.7 Participant 1: Yeah. I feel that. It's a good thing I have wings, so if anything goes wrong, I will help you. Okay let's get out of the car... Look at the trees.

0:59:02.2 Participant 3: Wow.

0:59:04.7 Participant 1: You know, I have a good idea.

0:59:05.5 Participant 3: Yeah?

0:59:07.3 Participant 1: Shall we make a tree hut?

0:59:09.6 Participant 3: A tree hut?

0:59:11.0 Participant 1: A tree hut, so you have a place where if you're grumpy and you wanna go away from your mother, you're gonna go there.

0:59:17.3 Participant 3: Yes.

0:59:17.4 Participant 1: Yes. Okay. What does it need to be like?

0:59:21.9 Participant 3: It needs to be like a sphere.

0:59:26.3 Participant 1: A sphere, okay.

0:59:26.9 Participant 3: Okay.

-vocalization-

0:59:26.9 Participant 3: But how can I get up there now?

0:59:33.3 Participant 1: That's a good question. I don't know. You have any ideas? Maybe we can find something around here?

0:59:43.3 Participant 3: Maybe we can take one big stick and run it...

-vocalization-

0:59:47.4 Participant 1: Oh let's try it. Okay.

0:59:47.9 Participant 3: Like in the Olympic Games, 155th.

0:59:48.4 Participant 1: Okay let's get a stick.

-vocalization-

0:59:48.9 Participant 1: Oh yeah but I have wings, let's... Wings would be cheating.

0:59:50.0 Participant 3: Yeah it's not fair.

0:59:51.0 Participant 1: Okay, I will come back. Hmm, what else could we do?

1:00:06.3 Participant 3: Maybe we can tie a rope and so I can climb.

1:00:11.2 Participant 3: Oh okay, I will go up and tie a rope. Okay. Can you climb up now?

-vocalization-

1:00:25.1 Participant 1: Oh, oh. Hmm. What do we normally use to go up in like buildings?

1:00:37.9 Participant 3: Elevators.

1:00:40.8 Participant 1: Elevators. Let's put an elevator.

-vocalization-

1:00:49.8 Participant 3: Okay. Ping.

-vocalization-

1:00:52.7 Participant 1: Ping. Ah!

1:00:57.7 Participant 3: How do I enter inside? It's a ball.

-laughter-

1:01:02.1 Director: Okay, end scene.

-laughter-

1:01:05.5 Director: Thank you guys. Okay so what happened?

1:01:08.1 Participant 3: So I was bored there and there was this class of creative stuff, I don't know what. And then she asked me, my teacher asked me, "What do you want to make? What do you want to do?" I said, "I want to drive a car but my mother doesn't allow me." So then she helped me build a car. But she asked me... So basically she wanted me to build the car but she would present the components with her magical power. Then we drove the car and we noticed that outside the metropolis there is a part of unspoiled nature so we went there and then we tried to build a sanctuary in the nature.

1:01:52.4 Director: Yeah.

1:01:52.4 Participant 2: In my head it's like, you spoiled the one bit of nature...

-laughter-

1:02:02.0 Director: Yea. And there was a lot of struggle getting up, so you met a couple of struggles. And also I really liked the seatbelt and... Ah safety first, right. -1:02:13.8- $_{,Okay,verywell.Let'stakealittlebreakbecauseweneedthatIthink.Andafterthiswe'regoingtodoacoupleofstorygamesandyeahforthatwecangoba}$

1:02:43.6 Participant 3: Cool, I kind of still want to be a sidekick as well.

-laughter-

1:02:47.8 Participant 1: Yeah, I get that.

-laughter-

1:02:49.8 Director: Well I guess if we have enough time, you know? We can do it. Yes I believe there is cookies up there.

1:02:55.6 Researcher: Yes!

1:02:56.8 Participant 3: That's what I'm going...

-background conversation-

0:00:00.8 Director: Okay, cool. Thank you, thank you, thank you. That was a nice warm-up. My plan was to do a storytelling. So, I want to try that, but maybe it would be better to actually do some scenes, because I really like that previous session as well. But we are going to start now with telling some stories.

0:00:19.5 Participant 2: Okay.

0:00:20.1 Director: I'm sorry. Yeah, I'm figuring out as we go. So, the idea is just to tell a story. We are going to do that one person stands in the front and people can take him or her over.

0:00:33.8 Participant 1: Like the play for... Like the...

0:00:35.2 Director: It's similar to The Ace.

0:00:37.0 Participant 1: The Ace, yeah.

0:00:38.0 Director: But without the actual colour or emotion.

0:00:40.0 Participant 1: Okay.

0:00:41.0 Director: Yeah. So that makes it a little bit more free and that kind of stuff.

0:00:45.6 Researcher: And we can choose protagonists?

0:00:50.1 Director: Yes. So, we want to choose a child and a sidekick. Which of the sidekicks that we have played was really nice?

0:00:57.9 Participant 1: Also a question we read it in the first person or the...

0:01:04.6 Director: We could do anything, I think. No, I would do... I would do a third person view.

0:01:12.8 Participant 1: Third person view?

0:01:13.6 Director: Yeah.

0:01:13.8 Participant 1: Okay.

0:01:14.0 Director: So really, then we can focus more on the story itself.

0:01:18.2 Participant 1: Mm-hmm.

0:01:18.9 Director: And try to create an arc.

0:01:20.6 Participant 1: Okay.

0:01:21.0 Director: Rather than creating the characters, because we have characters.

0:01:26.8 Participant 1: Yeah, yeah, yeah.

0:01:27.2 Director: We've developed a couple of characters, which are really nice, but now, let's see.

0:01:30.6 Participant 3: So we have to choose one kid and one sidekick?

0:01:31.3 Director: Yes.

0:01:31.3 Participant 3: Thank you.

0:01:32.9 Researcher: So, we have Stevie and Elena. We also have the...

0:01:39.7 Director: The sand castle. I know it.

0:01:40.8 Researcher: Let's call it George, the child in the medieval castle, in the medieval area was George...

0:01:49.4 Participant 3: -0:01:49.4-

0:01:49.9 Participant 1: Can we do one character as...

0:01:52.7 Researcher: And also we do have the other child on the...

0:01:58.3 Participant 3: The flying car.

0:02:00.3 Director: The flying car.

0:02:00.7 Researcher: With the flying car, let's call it Quinton.

0:02:03.3 Participant 3: Quinton?

0:02:04.1 Participant 2: Quinton.

0:02:04.6 Director: Quinton, George...

0:02:05.4 Participant 1: And we clap when we want?

0:02:07.3 Director: Yeah, that sounds like a plan indeed, I think. So, shall we just... Yeah, I don't remember who George was so let's do that one.

0:02:16.8 Participant 3: The medieval?

0:02:18.9 Director: The medieval, okay.

0:02:19.6 Participant 2: I thought that was... Oh, George. Yeah, that's the...

0:02:22.3 Participant 3: Everyone can read now?

0:02:22.4 Director: Everyone has an idea about George?

0:02:25.2 Participant 2: Yeah.

0:02:25.4 Participant 1: Yes.

0:02:26.9 Director: That's good. You don't have to be exactly on one line because it makes a little bit of difference and that's also cool. And then we have the sidekick, we have Mr. Steel, Ms. Creative, we have Bob...

0:02:39.3 Participant 3: The cousin?

0:02:40.8 Director: Yeah, the cousin.

-chuckle-

0:02:42.9 Director: Bob, the cousin and...

0:02:44.9 Researcher: And the older sibling called Mirella.

0:02:49.6 Director: Mirella. -chuckle-

0:02:50.8 Participant 1: Can we not do Mirella? I won't remember that.

0:02:55.4 Director: Okay. The oldest is...

0:02:56.3 Researcher: Michael...

0:02:57.7 Participant 1: Yeah, Michael.

0:03:00.1 Director: Okay.

0:03:00.5 Researcher: Is the older cousin.

0:03:02.1 Participant 2: I think I'll go with Ms. Creative, seems like a pretty solid...

0:03:07.3 Director: Cool. So we have George and Ms. Creative, and they will be in a setting together.

0:03:15.3 Researcher: Interesting. We have Dinosaur Time, Alien Base, Medieval Castle, a park, a school, an airport, a zoo, a forest, the Wild West, the sea...

0:03:28.7 Participant 1: I think Dinosaur Time is fun.

0:03:32.4 Director: Sure. Cool.

0:03:33.7 Participant 2: The what?

0:03:34.9 Director: Dinosaur time.

0:03:35.1 Participant 1: Dinosaur time.

0:03:36.8 Participant 3: Dinosaur. Flinstones. Okay.

0:03:38.2 Director: Yes. So, George, Ms. Creative, Dinosaur times. Okay, do you need anything more, like try to make a beginning, then the conflict and an ending?

0:03:52.0 Participant 2: Strictly, we want a dinosaur sidekick or like...

0:03:53.6 Researcher: We can give you a genre, what kind of story you're playing.

0:03:58.7 Participant 2: Or can we make George a small dinosaur? -chuckle-

0:04:03.0 Director: Yes.

0:04:03.0 Researcher: Yeah.

0:04:03.1 Director: You could. Yeah, that sounds actually really nice.

0:04:05.6 Participant 2: Yeah. Okay, fine. And then we could just be...

0:04:06.6 Researcher: And also you can have like a certain genre that you play in, so you know where to steer the story, so...

0:04:14.8 Director: I think they have enough to be honest.

0:04:16.5 Researcher: Yeah, okay.

0:04:16.6 Director: Yeah.

0:04:18.4 Participant 1: Okay.

0:04:19.2 Participant 2: Are we making George a little dinosaur and Ms. Creative is what?

0:04:24.8 Researcher: You start.

0:04:24.9 Participant 3: You start with your...

0:04:25.5 Participant 2: You start, like this. -chuckle- Prepare for yourself. George, the little T-Rex was walking around, and...

0:04:50.2 Participant 3: And he couldn't find his mother. And he was running around saying, "Where is my mother? Oh, my mother is missing." And then he looked below the trees, his mother was nowhere to be found.

0:05:02.1 Participant 1: There, he saw a wondrous fairy just walking around, minding her own business. And George was very curious, so he started from behind the bush to look at her, but he had a bit of a long neck, so his head peeked out over the bush. And fairy was like, "George, hey little guy! What are you doing here?" And George was like, "Who are you? I am looking for my mummy." And she was like, "Oh, that's interesting. I don't have a mummy." -chuckle-

0:05:42.0 Participant 3: "But, I can help you find her, together." "Yes, let's do it", said the young George. So they were starting looking for his mother, but the mother was nowhere to be found. So...

0:05:58.1 Participant 2: The fairy asked George, "Okay, where does your mom usually go at this time of the day?"

0:06:08.0 Participant 1: And George became very sad because he had already looked around all the places where his mother would usually be, at a drinking place, in a little forest they would play, and even at the eating growth where all his cousins

and uncles and aunts were. But she couldn't find her anywhere. And he was really scared because there were stories out there of these mean and big dinosaurs that could really, really hurt their group of dinosaurs. So, George says to the fairy, "I am scared that mummy is maybe hurt because I can't find her anywhere where I usually would find her." So the fairy was like, "Oh, I can help you with finding her because I can do almost anything. Do you have an idea of what we can do to maybe look for her?" And George was like, "Oh, if I want to look then I need to see things. So maybe you can make my neck longer." So the fairy...

0:07:27.9 Participant 2: To what?

0:07:28.5 Director: My neck longer.

0:07:30.1 Participant 1: My neck longer.

0:07:31.2 Director: Yeah.

0:07:31.5 Participant 1: So the fairy was like, "Sure." And she waved her wand and George's neck grew and grew...

0:07:39.1 Participant 3: And grew and grew until he could see all around the forest. And he walked around and he looked, but his mother was not there. Then the fairy asked, "What else do you think we can do to find your mother?" And he said, "Maybe I can grow a bigger head... Bigger hands, so that I can pick up things and look behind the bushes." So the fairy moved her wand and the dinosaur grew large arms. He started walking around and picking things.

0:08:19.9 Participant 1: That moment they heard a really big "Roar," going through the whole forest. And the little George, that wasn't that little anymore, began to shake on his big feet. "Oh, what is that?" And this fairy was like, "If your mother is in danger maybe we should go and take a look."

0:08:49.0 Participant 3: So George started walking towards the very scary noise. And he moved around a tree and he saw the tail of the T-Rex, the Plateosaurus. And he moved there and he grabbed the Plateosaurus with his new long arms and he said, "Where is my mother?" The Plateosaurus couldn't speak so he just growled. And then George started fighting him, and the other dinosaur was fighting back. Plateosaurus and George were going at it for hours.

-laughter-

0:09:28.8 Participant 2: But the fairy said, "Wait. There must be a non-violent solution to this."

-laughter-

0:09:32.8 Participant 2: "Violence doesn't solve anything."

-laughter-

0:09:37.3 Participant 1: So, she turned both of the dinosaurs little again. And for good measure she made the T-Rex just like a little bit more little. -laughter- So, this T-Rex was there. And then George was like, "Yeah, but now I still don't know where

my mother is." And... So the fairy started thinking, "Yeah, what can we do about that?"

0:10:13.8 Participant 2: "Maybe we should ask the dinosaur." But George said, "But the dinosaur can't speak." And the fairy said, "Well, I'm a fairy." -chuckle- "Do you want me to make it speak?" And George said, "Fine."

-laughter-

0:10:35.0 Participant 2: So the fairy waved her wand and made the dinosaur speak, and the dinosaur said, "Oh, thank you. I've been meaning to tell you, your mum, she fell off a cliff, she's lying down there, I think she could still be saved but we need to go quickly."

0:11:00.4 Participant 1: So they... George said, "Quick, make my legs big again." And they run towards the cliff. -chuckle- There at the cliff, they looked down. What a long way down it was. And they saw... And he saw his mother laying on the ground. The fairy was like, "Okay, I'm gonna give you some wings, and it's not the easiest thing, but just follow my lead." And she made George some wings to fly. -chuckle-

0:11:33.1 Participant 3: And George jumped over the cliff and he was stumbling and falling, "Aaah, what am I going to do?" But suddenly he started... He straightened his wings, and he started flying and enjoying the view. But then he remembered his mother. So he went back and flew over her shoulder. And he said, "Mum, I'm here to save you." Then mum was very hurt from the falling and she said, "It's enough my son that you are here for me."

0:12:03.5 Participant 1: But the fairy in the meantime also came down and was like, "I can just wave my wand if you want".

-laughter-

0:12:15.7 Director: All fixed. -laughter-

0:12:18.6 Participant 1: So -0:12:18.6- $_said, "Please, can you..." So the mother was made better again, but she was still a bit in shock$

-applause-

0:13:03.2 Director: Great, thank you. So what happens in living with -0:13:07.7-

$_a few sentences?$

0:13:08.7 Participant 3: Many ups and downs.

-laughter-

0:13:11.3 Participant 2: George couldn't find his mummy, and then there was a fairy...

0:13:23.7 Participant 1: The fairy helped him look for the mother by making him bigger and going around, and then they heard a...

0:13:33.1 Director: Big boom...

0:13:34.0 Participant 1: They heard a T-rex and they thought like, maybe she's in danger, so they went and looked there, he was big so he started fighting, but the fairy was like, "No, no fighting." So he made them small and made the other dinosaurs

speak and he actually told what happens...

0:13:50.1 Participant 3: And they became friends. -chuckle-

0:13:52.2 Participant 1: Yeah, and they became friends and the mother fell off the cliff, so they went to save his mother by flying to get her off the cliff and making her better again. And then the T-rex joined them and they had a lovely time together.

0:14:08.6 Director: How did you enjoy this kind of story?

0:14:12.2 Participant 2: It was... I don't like too much how powerful a fairy was.

0:14:18.1 Director: Yeah.

0:14:18.5 Participant 2: Like, it wasn't like... I mean... -chuckle- No offense, but... -overlapping conversation-

0:14:24.0 Researcher: I have one question. Who was the sidekick?

0:14:26.4 Participant 2: The fairy? -chuckle-

0:14:28.1 Participant 3: Yeah.

0:14:28.9 Participant 1: No, that George was smarter...

0:14:31.4 Researcher: No, the sidekick was George, guys.

0:14:33.2 Participant 1: Yeah.

0:14:33.5 Participant 2: Was he though?

0:14:34.3 Researcher: Yeah, wasn't he?

0:14:35.1 Participant 2: Yeah, well George was still the leading...

0:14:37.9 Participant 3: I think the motivation for the story.

0:14:40.3 Participant 2: He was the reason for all the...

0:14:41.5 Researcher: He was the reason... He was the motivation for the story?

0:14:44.3 Participant 2: Yeah.

0:14:44.9 Researcher: Okay, cool.

0:14:44.9 Participant 2: Yeah, I was also trying to think of like, okay make George into... Yeah, there were... The fairy was suggesting a lot where it would have been nicer if the dinosaur had suggested it. I think that...

0:14:55.5 Participant 3: And if also it had some limitation, so I cannot do that, you have to try.

0:15:00.9 Participant 2: Yeah, I was a little like, "Oh no, the mum is wounded." But then I'm like, "But I can wave my wand." And I'm like... -chuckle-

0:15:08.5 Participant 1: Yeah, but I maybe I wouldn't have done that if the story already went on for quite a long time.

0:15:16.4 Director: Yeah, yeah.

0:15:16.5 Researcher: It was closing moment.

0:15:16.6 Participant 1: Yeah.

0:15:17.3 Participant 2: Yeah. So it was a little...

0:15:18.3 Researcher: So it might be good to keep the sidekick not like a deus ex machina that fixes everything, so allow the child and the sidekick to actually work

together. Does that makes sense?

0:15:31.3 Participant 2: Okay.

0:15:31.9 Participant 1: Okay.

0:15:32.4 Participant 3: I think it does.

0:15:34.4 Director: I really like all the things that happens, the good thing is we can make a lot of stuff happen because it's easy to cut stuff out and more molarities is better. So usually for a theater sports game, this is probably way too much but for this it's fine. It sounded really nice.

0:15:54.2 Researcher: It's a longer form type of thing.

0:15:56.1 Director: Yeah, yeah. But also just different aspects because it's strange for me.

0:16:00.2 Participant 2: It's also a draft. -chuckle-

0:16:02.3 Participant 3: Yeah, we're expecting Bart's voice to be, "30 seconds... "

0:16:05.1 Researcher: It's generative.

0:16:05.7 Director: Yes, indeed. Well, and I intentionally didn't do that because there were great great pearls in the ideas that you had. Alright, so let's go on. Let's do another one because I think that worked very well. Did you enjoy it as well because you were being pulled back a little?

0:16:29.0 Participant 2: Yeah, I was just a little like, yeah, probably overthinking it. Anyway, yeah, I'm fine with going on.

0:16:33.8 Director: Okay, cool. Do you have two names for us?

0:16:38.4 Researcher: Yes, we have a couple of, a child... Let's take Elena, maybe?

0:16:43.1 Director: Okay.

0:16:44.1 Researcher: A more, a bit more dynamic child.

0:16:45.1 Participant 3: Elena was the...

0:16:46.4 Participant 1: That was the sandcastle, yeah. She likes horse riding and she...

0:16:54.3 Researcher: Yeah, she's nine years old. She's extroverted, she's going to playgrounds, she's sporty. She likes Tangled so she's more of a kind of heroine type of child. So she's a team player and a gamer, that's what I have noted for her. And for sidekick, we could have Bob, the helpful cousin?

0:17:16.4 Director: Sure. Sounds good.

0:17:18.8 Researcher: Similar age type of deal and you can make Bob into something else if you want.

0:17:26.2 Director: Yeah, yeah.

0:17:26.4 Researcher: And maybe this time...

0:17:27.3 Director: Because Bob is not really defined, so there's a lot of room to define.

0:17:30.6 Researcher: Yeah. And so this time we can give you a genre.

0:17:31.9 Director: Sure.

0:17:32.9 Participant 1: Okay.

0:17:33.9 Researcher: So you can make a genre. We have sci-fi, the magic world, steampunk, high school drama, detective story, an adventure and an exam or something anime style.

0:17:48.1 Participant 1: I think detective is fine.

0:17:49.6 Participant 2: I think detective, yeah. Me, too.

-laughter-

0:17:51.9 Director: Okay, cool. So this is going to be a detective story with Elena and Bob.

0:18:00.2 Participant 1: Okay. Can I start off?

0:18:02.7 Director: Sure.

0:18:04.0 Participant 1: Elena was on her way to her first riding lessons. She had to always bike a bit before she was there, so she was thinking about her day when she came across something strange. She saw something moving inside the forest, but it also made some sound like, "Meow, meow." sounds, so she took her bike, put it on the side of the road and started to explore what was going on. When she walked up to that place, she saw a little kitten stuck there in a bush and on his collar was a name tag with Luna on it.

0:19:01.0 Participant 2: With what?

0:19:01.0 Participant 1: With Luna, Luna. She was like...

0:19:05.1 Participant 3: So what will she do with that small kitten? They had to find the mother or the owner of the kitten. So, she went back to her house she rode it and she started going to the city to find the owner. On the way she saw her cousin, Bob. And Bob said, "What happened there? What is that small kitten that you're holding?" "Bob, I found that kitten and I want to rescue it and bring it back to its family." And Bob...

0:19:46.0 Participant 1: "We need to bring it back to its family, but it only has its name and I don't know anything else. So, maybe we can go back home first so it has like a safe place to be while we we're gonna look for its family." So Bob says, "Okay, hop on my bike then you can hold this kitten because I don't think it's so safe to drive while you hold it and let's go. Let's go to your home." So, a little bit later, they were in Elena's house and making a little bed for the kitten so it could like have a nice place.

0:20:31.1 Participant 3: And they thought, "Okay, let's find what clues the kitten has on it that could point us to its family." And they opened the kitten's small mouth

and they saw inside that it had some chicken meat stuck inside. So the kitten had recently eaten chicken. Elena thought, "Where can we find chicken?"

0:20:57.5 Participant 2: George said, "Well...

0:21:00.3 Researcher: Bob.

0:21:01.9 Participant 2: Bob, sorry, said, "Well there is that KFC -chuckle- at the Town Square. We could check there. Maybe the owner of the KFC has a cat called Luna."

0:21:24.6 Participant 1: "That's a good idea. But let's first make a picture of her so we can show it around." So they made a picture of Luna and it was very cute.

-laughter-

0:21:38.8 Participant 3: So it was an Instagram?

0:21:41.7 Participant 2: Oh my God.

0:21:44.8 Participant 1: Like, ah. And luckily she could borrow Bob's phone because she couldn't have a phone yet. -laughter- So, they went on Bob's bike again, because she left her bike back there. And on their way, they they met one of their schoolmates and so he was like, "Hi Luna, how are you doing? What are you doing?" "Oh hey Kyle, I'm looking for the owner of this kitten named Luna." So Kyle was, "Oh can I see it? Can I see it?" So she was like, "Yeah, sure. Do you know her?" And he said, "No. She does ring a bell, but I can't think of it now." So Elena was like, "What do we do with that? You have to come with us." So Kyle... She said "I'm gonna go to the KFC. Meet us there in like 10 minutes." -chuckle-

0:22:51.0 Participant 3: So they go there and they see Kyle munching from a bucket of fried chicken. And they told him, "What did you do here? Did you ask about the kitten?" And he said, "No, but you have to try one." -laughter- So then I said, "Come on we have to go, we have to find the family." So he went to the counter, and he said, "Does that kitten remind you of anything?" And the cashier look at it and she said, "I remember an old lady who came here earlier today to buy fried chicken and she was holding that cat. And then she went towards the forest."

0:23:34.1 Participant 1: "Do you know the name of that old lady?" "Sorry, we can't really get like information of our customers like that. That's not really how it works." So Elena, "But can you at least tell us what she looks like?" So the register man started to explain that it was like an old lady with gray hair and she had this flowered dress on. And she seemed to be walking there. She didn't have a bike or anything, but she had like a stroller to help her move around. So they were like, okay we have more clues. And Bob was like, "Where could... Like if she's walking then she has to be nearby." So near... Elena started to think like, "What are places that old people live that are nearby the KFC?" Kyle was like, "My grandma lives in the neighborhood." -laughter-

0:24:47.8 Participant 3: So, they started going towards Kyle's grandma because

old people in the neighborhood would know each other. And they went there, and rang the bell. And grandma opened...

0:25:02.3 Participant 2: And grandma opened the door while eating KFC -laughter- and she was like, "Oh hey, children. What's up?" And... What's the protagonist called again?

0:25:23.3 Participant 1: Elena.

0:25:23.9 Participant 2: And Elena said, "Look, we found this cat." And she showed the picture. And the woman said, "Oh, that's such a cute cat." "But we don't know who the owner is. It's called Luna. Do you know where we could find the owner?" And she said, "Hah, this cat looks really familiar to me, but I just can't remember. Sorry, children, my memory has gotten much worse."

0:25:57.8 Participant 3: And then the neighbor of Kyle's grandma, Mary, came from the apartment and bawled. And she was very upset.

0:26:07.3 Participant 1: Noisy old people. -laughter-

0:26:09.8 Participant 3: And she was very upset. And she said, "I lost my cat. Where is my cat? I was just going to the forest and then my cat jumped and started following a guy who was eating KFC."

0:26:23.7 Participant 1: And there she was, in all her glory with this... With her white hair, her flowery dress and the KFC still on her hands. -laughter- Elena and Kyle and Bob were so happy, and they ran out to her, "We found her!" -laughter- So the grandma got a big smile and she was, "Oh, thank you children. I'm so happy that you got my cat, Luna. Where is she now?" And Elena says, "She's at our home. So you can come with her to get her." So the grandma thought for a second, and she was like, "Okay, I will come with you, but first come in for a second, I have something for you guys."

-laughter-

0:27:26.0 Participant 3: And they went inside the house and then the grandma appeared with a big bucket of KFC. -laughter-

0:27:35.3 Director: Amen.

-applause-

0:27:38.9 Participant 2: Let's go to commercial. -laughter-

0:27:40.4 Director: And thank our sponsors. Alright, so what happened?

0:27:46.0 Participant 3: Well, sidekick didn't play an important role.

0:27:50.2 Director: That's true.

0:27:50.9 Participant 3: Yeah.

0:27:52.0 Director: But what happened?

0:27:52.8 Participant 3: Yeah, but girl, Elena, was going to a horse riding lesson, but she found the cat and then she was trying to find who owns the cat. And then on the way she picked up some people that would help her. They first went to KFC,

because the cat had chicken in her teeth. At KFC they got another clue, so they went in a grandma's house. And then another grandma appeared that actually had the cat, and...

0:28:23.6 Director: Well, a very nice story. A very good mystery, that has been solved.

-applause-

0:28:32.9 Researcher: They were rewarded, and everybody's happy.

0:28:38.8 Director: With KFC. -laughter-

0:28:40.1 Participant 1: KFC will be a good sidekick. -laughter-

0:28:43.3 Researcher: Yeah. KFC is like the clue.

0:28:46.9 Director: Yeah, the clue. Yeah, Kyle was as important as Bob, I guess. So they were both a little bit the sidekicks, so to say. I don't know. I like the story.

0:29:01.4 Participant 2: Yeah, we focused more on the mystery than the...

0:29:05.0 Director: The relationships.

0:29:06.8 Participant 2: The interaction, or like the thinking.

0:29:09.8 Director: Well, that's fine.

0:29:10.4 Researcher: The children worked with each other, so all the characters did something, right?

0:29:19.4 Director: Oh, Kyle only supplied the grandmother, I guess. -laughter-

0:29:24.9 Participant 2: Which was crucial to solving the problem.

0:29:26.3 Director: Which was pretty crucial, that's true.

0:29:27.7 Participant 1: And some comic relief, which is always nice.

0:29:32.4 Director: Yes, definitely.

0:29:32.5 Participant 2: I was kind of thinking would I like to follow through on that... That it would be Kyle's cat that he just forgot, like he was like, "Looks very familiar, because he was also eating KFC, and then like made the grandma eat KFC so I thought that was where we were gonna go.

0:29:48.9 Participant 1: I hoped that the grandma would get all the grandmas in the neighborhood together. -laughter-

0:29:55.8 Participant 3: And then your story starts with grandma.

0:30:00.8 Participant 1: And she starts like giving out KFC to everyone, and like, "Whose cat is this?"

0:30:00.9 Participant 2: Let's party. Oh. -laughter-

0:30:00.9 Director: You used to love to be a sidekick, right?

0:30:08.0 Participant 2: Yeah. I am getting tired by the way. I noticed that, which I don't...

0:30:11.5 Director: Yeah, it is a long session, that's true.

0:30:15.2 Participant 2: And I also just slept poorly last night.

0:30:17.0 Director: Shall we do...

0:30:17.6 Participant 2: My point is more, I don't mind, but just like I imagine that it's probably starting to get noticeable. -chuckle-

0:30:24.1 Director: Yeah.

0:30:24.2 Researcher: We can have another break if you need one?

0:30:27.9 Participant 2: No, I don't think a break is gonna help me.

0:30:31.0 Director: We only have 25 minutes, right?

0:30:31.7 Participant 1: I think that we'll drop all the energy that we still have. We should keep going.

0:30:34.3 Researcher: Yeah.

0:30:34.6 Director: So, what I suggest, we do one last thing where you are the sidekick. You can maybe transform into something that gives you energy.

0:30:44.2 Participant 2: Yes.

0:30:46.0 Director: And we'll do that with the... Well apparently you were the child. Can you do a quick interview, Nina?

0:30:54.0 Researcher: Oh yeah. Sure.

0:30:54.6 Director: Yeah, so we define two new people, and try to be more... I don't know more quick, I guess. Maybe that's nice.

0:31:06.8 Researcher: Like not fully human.

0:31:07.3 Director: Because we...

0:31:09.8 Participant 2: Gender-neutral you mean like...

0:31:10.6 Director: No, no, no, more... Yeah, well, also, but more...

0:31:11.9 Researcher: Mythical.

0:31:12.3 Director: A transformation of an animal. Indeed what we talked about, because we haven't really seen that and it may be nice to try it. Worth trying.

0:31:21.2 Participant 2: Sure.

0:31:21.8 Participant 1: Be a dragon, no. You can be whatever you want.

0:31:24.4 Director: Whatever. Oh, we had of course the fairy. Yeah, I guess so. But that's...

0:31:31.4 Researcher: It would be a nice thing to have a sidekick that asks for help from the child. We didn't have that yet.

0:31:36.8 Director: No.

0:31:37.1 Researcher: So maybe we can make it to order, to make a sidekick that has a problem.

0:31:42.5 Participant 1: Okay.

0:31:43.1 Participant 2: So this is a little bit the left over buckets that we're going to scoop out. -laughter-

0:31:48.9 Participant 1: Line per line.

0:31:50.4 Researcher: Throw everything on the same one. -laughter-

0:31:52.8 Participant 2: What day did we have that? Okay, let's move that all into -0:31:55.7-

0:31:56.7 Participant 1: Okay, so what's your name?

0:32:02.9 Director: If you need help, then you can ask...

0:32:04.7 Participant 2: Alright, so first I was thinking of wise owl but then now I'm thinking, okay that might be problematic in terms of energy. So I was like...

0:32:13.1 Researcher: What's an energetic... A buzzy bee?

0:32:16.0 Director: Maybe you're young dragon, that can also be quite wise and feel a little bit more...

0:32:21.6 Participant 2: Or just a young owl, I guess.

0:32:27.6 Director: A young owl? Yeah, sure.

0:32:27.7 Participant 1: A young owl? Yeah, sure.

-laughter-

0:32:31.7 Participant 2: I'll be a young owl.

0:32:31.8 Director: Young owl.

0:32:31.7 Participant 1: And what's your name?

0:32:31.8 Participant 2: My name is... What's an owl name? -chuckle- Peggy.

0:32:36.8 Participant 1: Peggy, Peggy the owl. Peggy what do you like to do?

0:32:49.4 Participant 2: I like to listen to my wise dad and absorb all the information he gives me, and I want to go out into the world and explore and discover new things. Knowledge.

0:33:09.0 Participant 1: Sounds good. And What's your age?

0:33:15.4 Participant 3: I am 10.

0:33:15.6 Participant 1: You're 10. And what's your name?

0:33:17.1 Participant 3: My name is Marius.

0:33:19.7 Participant 1: Marius, and Marius what do you like to do?

0:33:25.6 Participant 3: I like going out and playing with my friends.

0:33:30.1 Participant 1: Okay, and what do you really not like to do?

0:33:33.6 Participant 3: I don't like... I don't like... I don't know what I like.

0:33:41.3 Participant 1: Think about it. Peggy, what's something that you've always wanted to learn?

0:33:58.2 Participant 2: It's more that I want to see the entire world.

0:34:02.0 Participant 1: Oh, you wanna explore the world, okay. And do you have any other family except your dad?

0:34:09.9 Participant 2: Well, my mom passed away... So no. -chuckle-

0:34:21.2 Participant 1: No. Okay. Oh, that's okay. And what are your hobbies?

0:34:33.0 Participant 2: Well, thinking, travelling, flying, talking to people and asking people questions.

0:34:40.9 Participant 1: Okay, and Marius?

0:34:43.9 Participant 3: Marius.

0:34:46.5 Participant 1: Marius. Can I say it? -laughter- Marius, what do you not like?

0:34:55.2 Participant 3: I don't like boredom.

0:34:56.6 Participant 1: Boredom?

0:34:57.3 Participant 3: Yeah. I want to play but my parents...

0:35:01.5 Participant 1: And what are your hobbies then?

0:35:02.1 Participant 3: My parents always tell me, "Go there and sit in your room and study." But I wanna go out and play football with my friends or hide and seek.

0:35:13.3 Participant 1: Okay, and so you're very extroverted and... Okay.

0:35:20.3 Participant 3: Oh, my parents don't allow me.

0:35:23.8 Participant 1: Yes, okay. So you... Okay, I think...

0:35:26.0 Director: I think we have two characters.

0:35:26.7 Participant 1: Yeah.

0:35:27.2 Participant 2: Do you guys feel like you have a grasp on who you are?

0:35:31.2 Participant 3: Yeah.

0:35:32.3 Director: Great.

0:35:33.6 Participant 1: Okay, good.

0:35:35.8 Director: So, then we'll pick a location. You guys... Are...

0:35:43.5 Participant 1: I think it makes it a bit boring maybe for a...

0:35:48.8 Director: A boring location, supermarket?

0:35:51.7 Participant 1: Yeah. Okay, an owl in a supermarket? -chuckle- Sure.

0:35:54.8 Director: Okay, we could do something else, maybe an outside location. You guys are all on the camp site.

0:36:05.1 Participant 3: We're at the campsite.

0:36:08.9 Director: Yeah.

0:36:09.8 Participant 2: Like a holiday destination place. -chuckle-

0:36:11.1 Director: Yeah, for instance. And you are having a problem of some sort and you are going to help with that.

0:36:24.6 Participant 3: I'm never bored here.

0:36:26.0 Participant 2: Can I just be bored and want to explore the world and take him with me on my exploration or is that not enough of a problem?

0:36:31.0 Director: That is definitely a problem.

0:36:32.8 Participant 2: Okay.

0:36:33.6 Director: Yeah.

0:36:34.5 Participant 2: Cool.

0:36:40.3 Participant 1: You're bored together. -chuckle-

0:36:44.8 Participant 2: Hey there.

0:36:47.4 Participant 3: Hey.

0:36:48.1 Participant 2: You seem, inactive?

0:36:53.0 Participant 3: Yeah, my mom and dad got me here and all my friends are in the beach playing, and I'm here with my parents just eating fruit.

0:37:07.6 Participant 2: Oh no.

0:37:08.1 Participant 3: What is your deal? What are you doing? Why are you flying so fabulous?

0:37:12.1 Participant 2: I just can't sit still -chuckle- you know. But hey, I'm also a little bit bored. So... And you know what I've always wanted to do is see a volcano.

0:37:24.7 Participant 3: A volcano?

0:37:26.0 Participant 2: Yes!

0:37:26.5 Participant 3: Is there a volcano around here?

0:37:29.8 Participant 2: Not close, but I feel like... Look, I can buy a ticket, I'm not like... I'm not good enough for flying to like, cross an ocean or something, so I need your help, you know. And I'm small, so I wanna be like in your pocket, and we can travel the world together and we can go to a volcano.

0:37:51.5 Participant 3: Okay let's go to a volcano!

0:37:54.0 Participant 2: Alright, do you know where the airport is?

0:38:01.0 Participant 3: You see that airplane? It's going there.

0:38:03.3 Participant 2: That's a very good observation.

0:38:06.2 Participant 3: There must be the airport.

0:38:07.8 Participant 2: Okay, well, let's go! I'll be in your pocket.

0:38:10.9 Participant 1: After a while, walking beside the road following the airplanes they see in the air.

0:38:21.0 Participant 3: We're doing what?

0:38:21.9 Participant 1: After a while, like 10 kilometers further, walking beside the road following the airplanes that they see in the air.

0:38:32.8 Participant 3: Look, look, look! It's landing!

0:38:34.6 Participant 2: Okay, great, we're almost there.

0:38:36.6 Participant 3: We're almost there, so...

0:38:39.7 Participant 2: Do you think you're ready?

0:38:40.3 Participant 3: I am ready. Wait... One, two, three...

-vocalization-

0:38:55.6 Participant 2: Woah, I don't think that's how you're supposed to...

-laughter-

0:38:55.7 Director: Well, now it is.

0:38:58.0 Participant 3: So where is this airplane going? I hope it's going to a volcano 'cause otherwise, what are we doing here?

0:39:04.2 Participant 2: Oh, oh my God, is this not the adventure I was hoping for? Oh, hold on, hold on, I can fly but you can still let go.

0:39:21.2 Participant 3: Oh, look, I think that's a volcano.

0:39:22.6 Participant 2: Okay, do you have a parachute? Please don't jump. -laughter- I see what you're trying to do. Someone, look, please. I quickly knock on the window of the airplane like, help, help, help. And people inside notice and they see the child falling and they go like...

-vocalization-

0:39:51.3 Participant 3: Oh, so I could just come inside the airplane? And then you have to go to...

0:39:53.9 Participant 1: What were you thinking? And my God, where's -0:39:58.6-

?

0:40:00.9 Participant 2: It wasn't though. It was my idea to go with the plane but this person want...

0:40:06.5 Participant 1: Where did you guys need to go?

0:40:10.3 Participant 3: By the volcano.

0:40:11.1 Participant 2: Yeah, we wanted to see the volcano.

0:40:11.9 Participant 1: Volcano? Oh, I think we're going to Hawaii and Hawaii is a big volcano, and then so...

0:40:18.2 Participant 2: Oh wow, you are going to Hawaii? Nice!

0:40:23.2 Participant 3: Yes, sure.

0:40:23.9 Participant 1: Go and sit down here and please give me the phone number of your mother...

0:40:31.7 Participant 2: I don't have a mother. -chuckle-

0:40:32.6 Director: After a long plane ride, they finally arrived at Hawaii and they landed all safely and nicely.

0:40:42.0 Participant 2: Sir, which way is the volcano?

-laughter-

0:40:52.6 Participant 1: So this whole island is basically a volcano, but if you wanna go to the crater you have to go to the highest point of this island.

0:41:00.9 Participant 3: Oh, let's do that!

0:41:03.8 Participant 2: I guess that's the highest point!

0:41:07.0 Participant 3: It looks like the highest point. Let's go!

0:41:12.2 Participant 2: Let's go to the highest point!

-laughter-

0:41:18.1 Participant 2: You know, my dad has always told me about volcanoes. They, well you've got active ones and inactive ones and active ones blow lava all over the island.

0:41:34.6 Participant 3: Is that an active one?

0:41:35.7 Participant 2: I don't know, let's find out!

-laughter-

0:41:41.9 Participant 2: Oh...

0:41:42.9 Participant 3: I see lava.

0:41:44.4 Participant 2: Awesome!

0:41:48.1 Participant 3: Does that mean that it's about to explode?

0:41:57.1 Participant 2: I hear some rumbling. Do you also hear the rumbling?

0:42:01.8 Participant 3: Aaaagghhh...

0:42:02.0 Participant 2: I think it might... Let's go away.

0:42:07.3 Participant 3: Run!

0:42:07.7 Participant 2: And I fly away... Boom!

-laughter-

0:42:10.8 Participant 2: Are we good? Oh, okay. -laughter-

-applause-

0:42:14.1 Director: Fine, we can get you right.

0:42:19.4 Participant 2: Actually it's worth it. The ending.

0:42:21.9 Director: You just managed to flee the lava and we're all good and the airplane...

0:42:27.4 Participant 2: And then our parents find us...

0:42:28.9 Director: Okay, what happened?

0:42:33.4 Participant 3: Well, we're both bored in camp site and then this owl appeared and said, "I wanna go see a volcano." I said, "Okay, let's do it." And then we were trying to find a way to go to the volcano, so at some point we followed the airplanes so that we go at the airport and we tried to jump illegally in one of them, but we were kind of caught and brought inside and then we landed safely. -laughter- And we landed in a volcano, and then we wanted to go see the centre of the volcano, the crater, we went there and we saw it just at the point before it explodes and then we started running to save ourselves.

-applause-

0:43:17.7 Participant 2: And we found our parents back or they found us back.

0:43:17.8 Director: Yeah.

0:43:21.7 Participant 2: And they told us, "Go, go, go... "

0:43:24.4 Director: Don't be as reckless but really nice -0:43:26.4- $_{foryourselfthatyou...-chuckle-Idon'tkn}$

0:43:26.5 Participant 2: What have we learned, children?

0:43:26.8 Director: Okay... Yeah.

0:43:27.3 Participant 1: There are active and inactive volcanoes. -chuckle-

0:43:37.3 Participant 2: And you don't wanna go to the active one.

0:43:39.5 Researcher: Take the activity to the volcano before he moves it. -laughter- Yeah, I think we have covered all of the things, we have really nice plot points and stuff that we can pick from this experience, we're also quite tired to my understanding? -chuckle-

0:43:57.9 Director: Yeah.

0:44:00.9 Researcher: So I think we can call it a day. Thank you so much!

-applause-

0:44:01.1 Researcher: Maybe we can take another five minutes of cookies to discuss the second kind of experience?

0:44:09.7 Participant 2: Five minutes of cookies is like an interesting unit of cookies.

-laughter-

0:44:13.7 Participant 3: We measure time in cookies.

0:44:15.3 Director: How many unit cookies...

0:44:15.3 Researcher: How many cookies per minute? I don't know that, I guess that depends on you.

0:44:21.6 Participant 2: Five minutes of... Yeah, it sounds like that quantity of cookies...

0:44:27.3 Participant 1: I've only survived -0:44:28.4- $_{onthemonthesedays.}$

-background conversation-

0:44:31.9 Participant 3: It's like light years, we measure the distance...

0:44:32.4 Participant 2: Mine is still C.

0:44:41.1 Director: Really nice performance today, huh?

0:44:41.2 Participant 2: What about you?

0:44:42.2 Director: Yeah. I really like the character.

0:44:42.9 Participant 2: Okay.

0:44:45.3 Director: Yeah.

0:44:45.6 Researcher: Yeah, it all was really fun. So I also have you look at consent forms.

0:44:51.5 Participant 2: Oh. Are we gonna fill it now?

-laughter-

0:44:56.7 Researcher: I am sorry for that, but I didn't want to interrupt you before so you can still sign them.

0:45:03.4 Participant 2: Where should I begin to sign them?

0:45:04.4 Researcher: This first one. So this...

0:45:06.1 Director: You're not recording right now, right? Can I sue you?

-laughter-

0:45:09.3 Participant 2: Okay. Actually, yes you can.

0:45:13.9 Director: Please don't.

-background conversation-

0:45:21.3 Researcher: So... I don't, I don't know. I'm guessing that you will need to be signing as well, and we'll be making enough for us, yeah. And other than that little detail that... Are you with me? -chuckle- We're having this kind of more long

stories. We've had a bit of bigger arc. So, which stories were there? George and Ms. Creative with the dinosaur time...

0:46:00.3 Director: Yeah.

0:46:01.5 Researcher: Elena and Bob in a detective story and the bored child with a travelling little owl. So we can finish with the signing bit, and we can discuss it. How did you feel about it?

0:46:26.7 Director: Yeah, I think it was very proactive, we got some very diverse and interesting talk points. Did I do well, to you guys?

0:46:35.2 Participant 3: I guess...

0:46:36.3 Participant 1: Oh yeah, I like your directing...

0:46:37.8 Participant 2: I guess it's just a little sad that you didn't play much...

0:46:40.1 Participant 1: Okay, this is...

0:46:40.6 Director: Oh yeah. I was intentionally...

0:46:42.2 Participant 2: I feel like maybe you could've added more as also a player.

0:46:49.4 Participant 1: Yeah, that's...

0:46:49.6 Director: Yeah. Maybe.

0:46:50.3 Participant 1: That's something I am upset about as well, that there was... It would be nice if you also...

0:46:54.2 Participant 2: Mainly in a sense of like, I feel like, Nefeli's could have been, done most of the directing and you could have like occasionally dropped in like, maybe, if here, if we do this...

0:47:03.7 Director: Okay.

0:47:04.6 Researcher: Yeah, I think it was really nice to have somebody who's doing the directing, 'cause I also had to do like running around the cameras, and making sure... Like I had a little problem with one of the cameras at the end so I wouldn't be able to give all of these guys a lot of attention.

0:47:15.8 Participant 1: What's the date?

0:47:17.9 Director: It's the 2nd of July.

0:47:21.0 Participant 1: That's seven.

0:47:21.8 Director: Second.

0:47:21.9 Participant 1: Yeah but, seventh month...

0:47:22.7 Director: Oh, July is second, seventh, yeah.

0:47:27.7 Researcher: July 2nd. So yeah, I think this is very nice. Wait, I made four of them, right, so there's one for you too.

0:47:33.7 Director: Well, I didn't get it.

0:47:37.9 Participant 1: Here.

0:47:39.9 Researcher: So yeah, it is, I think it was a really nice thing that we had, our dear...

0:47:53.5 Participant 3: What's that? Potatoes?

-laughter-

0:48:05.5 Participant 2: What? No copyrights.

0:48:10.5 Researcher: Yeah, I get all of the things...

0:48:14.0 Participant 2: No, it's published under free and open source licence.

0:48:17.2 Researcher: Yes.

0:48:17.5 Participant 2: Which means I can't get a percentage of your percentage, because you're not giving your percentage.

0:48:22.9 Researcher: It's a master thesis, I cannot get... I cannot copyright it anyway. And I don't plan to.

0:48:29.6 Director: Is that a rule?

0:48:30.3 Participant 3: I don't think so.

0:48:31.2 Researcher: No, it's not a rule, but I don't plan to copyright my thesis.

0:48:38.0 Participant 2: I understand that... I just like to make everything about money, I understand that the video -mumbling-. Yes.

0:48:48.4 Participant 3: So when are you graduating?

0:48:53.7 Researcher: I am graduating... I don't know, whenever this thing is done. There's so much to it.

0:49:00.8 Participant 3: Is it close?

0:49:01.6 Researcher: December...

0:49:01.9 Participant 3: The light at the tunnel?

0:49:02.5 Researcher: December is the closest date, but I think I am going to be doing things until December and then writing the thesis after that, because there's so much stuff to be...

0:49:14.2 Participant 3: Yeah, thesis are weird...

0:49:18.6 Researcher: And this one is like, I'm also making the robot itself and I'm not an engineer so that's going to be fun...

0:49:27.9 Participant 3: You're...

0:49:28.5 Participant 1: It's going to be...

0:49:29.3 Participant 3: You're assembling it mechanically and also programming everything.

0:49:33.8 Researcher: And there will be a technician. I hired my professor, or he hired himself as a technician. It is interesting.

0:49:42.3 Director: Well, that's fine then. Dr. -0:49:43.9- *candoalot.*

0:49:46.8 Researcher: Edwin is good at that. It is going to be... My biggest interest is this board game. Now I can tell you after the session, I plan to name it Dungeons and Robots because it's going to be a sort of a role play and board game that they will be using to like, in each little story, they will add in more stuff to that robot until... Wow, that's...

0:50:17.5 Participant 2: That's bright pink.

0:50:21.7 Researcher: Indeed.

0:50:21.8 Director: That's true.

-laughter-

0:50:22.5 Director: What a head.

0:50:25.1 Participant 2: You fill in your first name for name?

0:50:28.2 Director: Oh yeah. I could do my full name, but I probably should, shouldn't I?

0:50:39.5 Participant 1: You probably should.

0:50:40.5 Researcher: Yes.

0:50:40.6 Participant 2: So the... Nefeli, the "I give permission for the video, audio and text data that I provide to be archived in a portable transcript, audio and video recordings, photos and text files, so it can be used for future research and learning," that's just about like, maybe using some snippets...

0:50:56.8 Researcher: Yes.

0:50:57.7 Participant 2: In a future research?

0:51:01.4 Researcher: Yeah. I don't plan to make full videos available.

0:51:08.0 Participant 1: That is nice.

0:51:08.6 Participant 2: It sounds like quite a blanket statement of "Do whatever the fuck you want with this."

0:51:12.0 Researcher: Yeah, I just wanted to have all of the data available.

0:51:17.3 Participant 1: To be honest, I wouldn't care if you do whatever you want with this...

0:51:21.1 Participant 2: It's just funny because we won't be willing to give permission for snippets and quotes of the video, audio and text of this session to be published in a presentation related to the study, which seems like a much more tight...

0:51:27.7 Researcher: It is, I just added both. I decided to keep both, because I didn't know if Edwin wants to... Basically this is longer than this one, because the presentations of this study will be what, in a year from now? While the other one is if Edwin wants to keep some of the snippets to use like, in the social robotics classes later on, like for the years to come.

0:51:49.9 Participant 2: So it's more like in case someone says no on this one, you're not entirely fucked.

0:51:53.9 Researcher: Yes.

0:51:56.5 Participant 2: Okay. That makes sense.

0:51:57.1 Researcher: So in case somebody does not want this to be kept for, I don't know, the next ten years, then at least I get them for my own presentations. So yeah, let's see... How did the children of these scenes feel like? Let's go to each

scene and see a little bit of how the children felt, and how their sidekicks felt. So...

0:52:18.2 Director: They felt very soft, squishy.

0:52:24.1 Researcher: George, the Dinosaur and Ms. Creative. How did George feel like? Who was George? You were George? No. You were...

0:52:32.4 Director: George the Dinosaur was everyone.

0:52:34.6 Participant 2: It's a long story so everyone was George.

0:52:36.0 Participant 1: George felt like...

0:52:37.2 Researcher: Ah it was a story, yeah...

0:52:38.3 Participant 1: Helpless kid with a very courageous streak. -chuckle-

0:52:43.4 Researcher: Okay, so he was a courageous, but realizing he's a bit small and cannot do a lot of things.

0:52:49.0 Participant 1: Very shy, but if he needs to be, he can be courageous, very courageous.

0:52:54.3 Researcher: Okay.

0:52:54.4 Participant 2: Yeah.

0:52:54.4 Researcher: And Ms. Creative was a...

0:52:54.5 Director: I guess that George...

0:52:55.0 Participant 2: Not really a personality, I think.

0:53:01.3 Participant 1: Yeah...

0:53:02.5 Director: George wasn't that creative. -chuckle-

0:53:04.2 Participant 2: No...

0:53:04.6 Director: So it's like the creativity that George had was Ms. Creative.

0:53:10.8 Participant 3: So it's was the creativity of George personified.

0:53:15.0 Director: Yeah. That's a little bit how I see it.

0:53:18.4 Researcher: Okay, so... Oh, that would be a really nice metaphor. What about Elena and Bob? How do you find Elena? How did Elena feel?

0:53:31.5 Director: Elena had a lot of agency. It's really like, "Oh no, I'm going to solve this."

0:53:38.8 Participant 3: Yeah.

0:53:38.9 Participant 2: This is the detective story, right?

0:53:38.9 Researcher: "I will save this kitten."

0:53:39.5 Participant 3: Elena... Leadership... But... Initiative.

0:53:44.0 Director: Everyone around her was like, "Oh sure. We'll help." -laughter-

0:53:49.9 Participant 3: And grab some chicken.

0:53:51.5 Director: Yeah. Bob didn't do very well...

0:53:53.6 Participant 2: Most people just walked along. -chuckle-

0:53:57.0 Participant 3: Yeah.

0:53:57.5 Director: Yeah. But Kyle actually... I don't know.

0:54:00.3 Participant 1: And Kyle was just her friend.

0:54:00.9 Director: Yeah.

0:54:01.5 Participant 3: Kyle did... But he just... It just happened that he did something by random chance.

0:54:09.9 Director: That's true.

0:54:10.8 Participant 1: But he wouldn't have helped, otherwise he wouldn't just be in there at KFC.

0:54:12.1 Participant 3: He found the grandma. Yeah.

0:54:14.6 Director: True.

0:54:15.5 Participant 3: Maybe he joined just for the adventure, "Something is happening, I want to be part of it".

0:54:21.2 Participant 1: Yeah.

0:54:21.3 Researcher: Yeah, Kyle was a very willing person, just didn't realize the kind of input that he had, I think.

-laughter-

0:54:30.8 Researcher: That he's like the...

0:54:31.7 Director: He's like the...

0:54:33.4 Participant 2: Like a comic relief guy.

0:54:33.5 Participant 1: Yeah.

0:54:34.2 Researcher: "I sort of want to be there, but I'm not gonna put 100

-laughter-

0:54:38.6 Participant 3: And then he ends up putting the most...

0:54:41.1 Participant 2: But at some point, I lost Bob. I feel like Bob was mostly there to ride around Elena.

-laughter-

0:54:49.5 Participant 2: Yeah.

0:54:50.8 Researcher: Like sort of a Moon around the planet.

0:54:56.7 Director: Yeah.

0:54:57.1 Participant 3: He didn't even do anything.

0:55:00.5 Director: Yeah. He's being around and helping with very practical stuff but not something more.

0:55:06.3 Researcher: I honestly noticed that a lot of times they said, "They" and referring to the entire group instead of just "Elena" or "Bob" so there is a lot of... I think a lot of... This story did not have a specific person doing one or the other thing. So it can still be attributed to somebody, right?

0:55:22.0 Director: Yeah.

0:55:23.7 Researcher: It's possible. Okay, and what about the bored child in a camp site with a travelling little owl?

0:55:29.0 Participant 3: We didn't give names.

-chuckle-

0:55:31.0 Participant 1: I think they were very...

0:55:32.5 Researcher: They had fun. They were enjoying the time, yeah.

0:55:33.4 Participant 1: Very fun. Yeah, yeah.

-laughter-

0:55:38.2 Participant 2: I was thinking of something... Oh yeah it was the -

0:55:43.9- *Yeah, it was a little more extreme.*

-chuckle-

0:55:45.2 Participant 1: It was really fun to have like a really realistic helpless owl.

0:55:48.5 Participant 2: Like just jumping on the... Or did I misunderstand what you were acting out? Were you actually jumping on the side of a plane?

0:55:49.7 Participant 3: Yeah. -laughter-

0:55:57.3 Participant 2: Because that's where I was like, "Oh... "

0:55:57.9 Participant 1: But it was really fun to see that they cut me between a very helpless, very rational little owl and a boy who was just like, "Yeah, Let's go for it. Let's just... " -chuckle- "Let's do it!"

0:56:13.0 Researcher: So, how did the boy feel? Like you were the boy.

0:56:16.9 Participant 3: Yeah.

0:56:18.0 Researcher: How did you feel in that story as the boy?

0:56:21.2 Participant 3: Like I was repressed and when they gave me an outlet, I just...

0:56:26.0 Researcher: Went all out?

0:56:27.2 Participant 3: Yeah. And I expressed myself in any way I could imagine.

0:56:31.9 Director: Yeah. Yeah. I know it's tough.

-laughter-

0:56:35.9 Director: Very outgoing like, "Adventure."

-laughter-

0:56:39.4 Director: Grabbing the bull by the horns. Yeah.

0:56:43.3 Researcher: Okay. Good. And the Owl was, How did the Owl feel?

0:56:48.4 Participant 2: Well, just first like, "Cool, we can go on an adventure" and then like, "Oh, this is not what I had... " -laughter-

0:56:53.6 Researcher: "It's not that what I bargained for!".

-chuckle-

0:56:56.4 Participant 1: What I signed up for.

0:56:56.5 Participant 2: And then when we were in the plane it was like, "Okay, fine." And then the food came and we would have to... -chuckle-

0:57:03.1 Director: I did feel like Peggy was very much... He was very curious and enjoyed the things he learned along the way.

0:57:17.4 Participant 2: Yeah, and also just enjoyed like the enthusiasm and just like... Nice, I'll just go sit... Literally sitting in their pocket and just taking it all.

0:57:25.4 Participant 3: I think he was supposed to be the sidekick that started the story, but still a sidekick. And then as an Owl, he was the sound, the Reason. "What are you doing? You're jumping, look." "Yeah, I'm jumping." -chuckle-

0:57:40.7 Director: There was a nice balance, indeed. Yeah, you were the Reason and the...

0:57:44.7 Participant 2: Not completely his... -chuckle-

0:57:46.8 Participant 1: Yeah. -chuckle-

0:57:47.4 Researcher: I also really liked that the Owl didn't have a way... Didn't try to stop the child at all. It's like, "Okay we're doing that now, I guess". -chuckle-

0:57:57.0 Participant 1: It felt a little bit like...

0:58:00.4 Participant 3: "I would advise against but sure". -chuckle-

0:58:00.5 Participant 1: It felt a little bit like the Dragon from Mulan.

0:58:04.0 Researcher: Yeah, I think it did.

0:58:05.6 Participant 1: Yeah.

0:58:07.7 Participant 2: I did knock on the window too, "Please. Save. Child falling." -chuckle- But yeah, it was more indirect. No superpowers or power edible.

0:58:21.0 Participant 3: It was more like a...

0:58:22.4 Participant 2: -0:58:22.4-

0:58:22.7 Participant 3: Voice, yeah like the angel telling you, "Yeah, let's go do that! Whoa, but be careful here".

0:58:29.8 Participant 1: Pinocchio's.

0:58:31.0 Participant 3: Like that sound of consciousness.

0:58:32.0 Participant 2: I only initiated -0:58:32.6-

0:58:33.6 Participant 1: Yeah. Consciousness.

0:58:35.3 Researcher: If Ms. Creative was the creativity of the type impersonated, I think that this Owl was the reason.

0:58:42.4 Participant 1: Yeah.

0:58:42.9 Researcher: Impersonated in the little owl.

0:58:45.0 Participant 2: We could have an entire team of like, metaphors of the different aspects of the child.

0:58:50.4 Director: Yeah. And then in the end, there's only an empty hole left. -laughter- There's this person, but not really because their personality is split into Mrs Creative, Mr Steel, Peggy... -chuckle-

0:59:05.9 Participant 2: I guess, the child could still be the bored person and wants to do things.

0:59:11.5 Director: Yeah.

0:59:13.5 Researcher: Right. I really liked this session guys. That was really, really fun. Really cool.

0:59:17.9 Director: Yeah.

0:59:18.3 Participant 2: I think though... Yeah, I guess on hindsight now I feel like this kind of, the sidekick just being a voice works really well. We could have... Maybe if Ms. Creative was a voice instead of magic in an elevator then I could imagine that's more fun in a way or more...

0:59:36.7 Participant 1: But I also, I actively tried to not give Ms. Creative personality. To just let it sort of go along and see what happens, and then I can... Like a tool, for the child to be used in a way. Because she was so over powerful. I was like, "Okay", but then...

0:59:57.6 Researcher: -1:00:00.7- $_h asanagencyofyourownandthewaytomakeliterallyeverythinghappen.$

1:00:02.8 Participant 1: Yeah, then it's...

1:00:03.4 Researcher: Then it's basically God, you don't get anything from there. So having her not having a will of her own, make a lot of sense.

1:00:12.1 Participant 2: Yeah.

1:00:12.3 Researcher: And I really like how we tested to extreme agency levels, 'cause that was also something I wanted to test and could test on it's own -laughter- The little owl can do nothing -laughter- and Ms. Creative can do everything -laughter- And then the middle there is this kind of Steel dude -laughter- Mr. Steel that could do quite a few things, but not everything.

1:00:36.5 Director: That doesn't do everything, yeah. -chuckle-

1:00:39.0 Participant 1: And then we have Bob -laughter- That was also so weird in the middle of this. -laughter-

1:00:46.1 Director: Yeah. -chuckle-

1:00:46.6 Researcher: Closer to owl one could say -chuckle-

1:00:48.0 Participant 1: But the fun thing was, is that because you couldn't do anything, you could have so much more personality.

1:00:55.3 Director: Yeah.

1:00:55.4 Participant 1: You were one form of personality.

1:00:57.7 Director: Yeah.

1:00:58.0 Participant 1: And maybe Bob used to have a little bit more personality. -laughter-

1:01:01.3 Director: That was strange.

1:01:02.3 Participant 2: What are you doing... -chuckle-

1:01:04.4 Director: Yeah. Definitely, That was amazing.

1:01:07.4 Researcher: Beautiful. I think I can release you from your duties now. -chuckle- You can be free. You can have a talk.

A.8 Code for Miro-e locating the child and positioning it's self next to them

```python
import time
import miro2 as miro

# Describe this function...
def look_for_child():
    while not child_found():
        robot.joint_position(miro.constants.JOINT_EAR_L, 0.0)
        robot.sleep(1)
        robot.joint_position(miro.constants.JOINT_DROOP, 1.0)
        robot.sleep(1)
        robot.neck_angle(miro.constants.JOINT_LIFT, 9)
        robot.neck_angle(miro.constants.JOINT_LIFT, 59)
        robot.sleep(1)
        robot.neck_angle(miro.constants.JOINT_YAW, 54)
        robot.sleep(1)
        robot.neck_angle(miro.constants.JOINT_YAW, -54)
        robot.sleep(1)
        robot.neck_angle(miro.constants.JOINT_YAW, 0)
        robot.speed(+0.1)
        robot.drive_distance(+0.6)
        robot.sleep(1)
        robot.speed(0.0)


def child_found():
    i = robot.find_mirocube(miro.constants.CAM_L, prop=robot.vision.id)
    j = robot.find_mirocube(miro.constants.CAM_R, prop=robot.vision.id)
    if i != NULL:
        return i
    else if j != NULL:
        return j
    else return NULL
```

```python
def stand_next_to_child():
    ##position self in front of child
    robot.drive_distance(0.3)
    robot.turn_angle(90)
    robot.drive_distance(0.3)
    robot.turn_angle((-90))
    robot.drive_distance(0.3)
    robot.turn_angle((-180))



# connect to robot
robot = MirocodeInterface(pose_ctrl=False, cliff_reflex=False)

#### robot is now connected ####

look_for_child()
stand_next_to_child()
```

A.9 Results of the workshop with children and adults assistants

Adult notes in activity booklet from child 1:

Start/Introduction (10'):

Short discussion about the hospital.
Show the short video:
https://radboudumc.bbvms.com/p/niet_te_indexeren_door_google/c/4069688.html
Show Miro.
Brainstorm of what a robot can do to help them if they are in the hospital.

Game (60'):

Introducing the game (10'):
- Going through the story with their robot
- Introducing the 2 stories: fairytales and space
- Introducing the building station

Allow children to choose their story and setup based on the choices (10')

Play the game (40')

Final discussion (20'):

Interview by the assisting adult 10'
Final discussion 10'

Things to note while the child is playing the game:

Let the child read the story to you and tell you what is happening.
Try to pay attention and note the things the child finds interesting.

First page:

Has the child given a name and a gender (male female nothing) to the robot?

Name: Max, hond
Gender: Man

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Which panels did the child choose for this empty panel?
....
....
.....Robot was scared....,petted..

Other remarks:
....
....
....

Is the child engaged in the story?
Not engaged 1   2   3   4   5   6   7   8   9 Very engaged

Second page:

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Which panels did the child choose for this empty panel?
....
....
....

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Third page:

How long did the child spend on the game?
......minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 ⑧ 9 Very interested

Blue cat ears

Paarse oren → *maar dan in het blauw*

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Did the child give any remarks on the face characteristics it gave to the robot?
....
....
....

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Fourth page:

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....
....

Did the child give any remarks on the body characteristics it gave to the robot?

Blauw lichaam ... oren ... wil ook blauwe ogen.
Blue randomly; → continued with blue theme

Which panels did the child choose for this empty panel?

... huis ... daarna verkleden als wolf ... omdat ... gevaar was
2 pretended to be the wolf
1 hid before the hous

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 (8) 9 Very engaged

Fifth page:

Is the child deviating from the comic book? If yes, what is the deviation?

... kinderen rhmn sams ...
de klone ... niet gel ... en
words were hard to read

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7 8) 9 Very engaged

Sixth page:

Is the child deviating from the comic book? If yes, what is the deviation?

... de slavin wel loper ... met h- steutt tom snop.
... snoep lonal zodat h- kaput kand loffen
H and G were also children
wey being of candy

How long did the child spend on the game?
......minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 8 9 Very interested

Je kunt het lidraan wel goed benoemen. Het lijkt wel een hartje, is geen brook. Je kunt niet zeggen wat het lijf is.

name the bits (face, etc)

Which panels did the child choose for this empty panel?

robot flits ... doona paks onde dolan breig ze paarlero

Robot emits flashing light grabbed pares
to here

Did the child give any remarks on the accessory it gave to the robot? How will the child use it with the robot (e.g. play, calm down, communicate etc)?

others weren't chosen, because the robot has no arms

carrot is a vegetable >:c

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7 8) 9 Very engaged

apple would have been fun

Seventh page: 19:23u

Is the child deviating from the comic book? If yes, what is the deviation?

How long did the child spend on the game?
.....minutes

Was the child interested in the game?   *Steen*
Not interested 1   2   3   4   5   6   7 (8   9) Very interested

Which panels did the child choose for this empty panel?
toffee (treat)

Which statistic did the child put the point in?

Why?

Is the child engaged in the story?
Not engaged 1   2   3   4   5   6   7 (8) 9 Very engaged

Questions for the final interview:

Describe your robot to me.

.... Blic Koaren oPikolryen
.... nieb ease lachen, moof wel blik Goren
.... bliden niot te hard   Ook dansen mith hard kutspden
Qmae Schalige oopn lamemben .... nich /alintden: gje bent
.... =zelia: Knik in os Scherf [...]
– it s face should cheer you up (oon't have to laugh)
– not too loud, able to dance, wagging tail when recognising.

Is this the same robot as (Miro)?

Yes
No   welt neg steads als bestoande robots
           the robot   doesn't feel like theircown

If it is not the same robot what makes this robot unique?
....
....
....
....

If you were sick do you think this robot would be helpful to you? How?
....
....
....
....

Any other remarks:
....
....
....

Adult notes in the activity booklet from Child 2:

Start/Introduction (10'):

Short discussion about the hospital.
Show the short video:
https://radboudumc.bbvms.com/p/niet_te_indexeren_door_google/c/4069688.html
Show Miro.
Brainstorm of what a robot can do to help them if they are in the hospital.

Game (60'):

Introducing the game (10'):
- Going through the story with their robot
- Introducing the 2 stories: fairytales and space
- Introducing the building station

Allow children to choose their story and setup based on the choices (10')

Play the game (40')

Final discussion (20'):

Interview by the assisting adult 10'
Final discussion 10'

Things to note while the child is playing the game:

Let the child read the story to you and tell you what is happening.
Try to pay attention and note the things the child finds interesting.

First page:

Has the child given a name and a gender (male female nothing) to the robot?

Name: *thijs*
Gender: *man*

Is the child deviating from the comic book? If yes, what is the deviation?

....
....
....
....
....

Which panels did the child choose for this empty panel?

1.B, 1A, 1F..
....
....

Other remarks:

vind het soms moeilijk net over vragen...
....
....

Is the child engaged in the story?
Not engaged 1 2 3 4 5 ⑥ 7 8 9 Very engaged

Second page:

Is the child deviating from the comic book? If yes, what is the deviation?

....
....
....
....
....
....

Which panels did the child choose for this empty panel?
.. 2F , 2C ....
....
....

Is the child engaged in the story?
Not engaged 1   2   3   4   5 ⑥ 7   8   9 Very engaged

Third page:

How long did the child spend on the game?
.. 2 ..minutes

Was the child interested in the game?
Not interested 1   2   3   4 ⑤ 6   7   8   9 Very interested

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Did the child give any remarks on the face characteristics it gave to the robot?
.. o mdat het mooi is ....
....
....

Is the child engaged in the story?
Not engaged 1   2   3   4   5 ⑥ 7   8   9 Very engaged

Fourth page:

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Did the child give any remarks on the body characteristics it gave to the robot?

ged post yo-ell-tig blauur

Which panels did the child choose for this empty panel?

3 C 3 F

Is the child engaged in the story?
Not engaged 1 2 3 4 ⑤ 6 7 8 9 Very engaged

Fifth page:

Is the child deviating from the comic book? If yes, what is the deviation?

dacht 3 pannel ws een empty panel

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Sixth page:

Is the child deviating from the comic book? If yes, what is the deviation?

4 n 4 F kes niet voor het spel maar toch yes old

How long did the child spend on the game?
1 minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 8 9 Very interested

Which panels did the child choose for this empty panel?

......*Lie v. o uje.. Regina*......

Did the child give any remarks on the accessory it gave to the robot? How will the child use it with the robot (e.g. play, calm down, communicate etc)?

...*omdat thijn van koekjes houd ... te tijn om een koekje te ete ... allem koekje*...

Is the child engaged in the story?
Not engaged 1 2 3 4 5 ⑥ 7 8 9 Very engaged

Seventh page:

Is the child deviating from the comic book? If yes, what is the deviation?

......

How long did the child spend on the game?
...*Z*.minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 ⑦ 8 9 Very interested

Which panels did the child choose for this empty panel?
...~~en~~ *koekje presies dat zoved koekjes*...

Which statistic did the child put the point in?
zouaal...

Why? *leuk praten voa over dingen dat je so thijn heeft mee gemaakt*...

Is the child engaged in the story?
Not engaged 1 2 3 4 5 ⑥ 7 8 9 Very engaged

vond het wel leuk

Questions for the final interview:

Describe your robot to me.

blauwe ogen houd veel van koekjes en heel lief
slim zorgzaam leuk spelletjes te doen speels
balgooien

Is this the same robot as (Miro)?

(Yes)
No

If it is not the same robot what makes this robot unique?

If you were sick do you think this robot would be helpful to you? How?

ja o.mdat hij zorg zoumn

Any other remarks:

nee

~~zelf~~ leiding zelf meer rivier puzzels

NAAM ROBOT: meneer gek

Actief	lll				
Sociaal	llll				
Moedig	l				
Knuffelig	llll				

Adult notes in the activity booklet from child 3:

Start/Introduction (10'):

Short discussion about the hospital.
Show the short video:
https://radboudumc.bbvms.com/p/niet_te_indexeren_door_google/c/4069688.html
Show Miro.
Brainstorm of what a robot can do to help them if they are in the hospital.

Game (60'):

Introducing the game (10'):
- Going through the story with their robot
- Introducing the 2 stories: fairytales and space
- Introducing the building station

Allow children to choose their story and setup based on the choices (10')

Play the game (40')

Final discussion (20'):

Interview by the assisting adult 10'
Final discussion 10'

Things to note while the child is playing the game:

Let the child read the story to you and tell you what is happening.
Try to pay attention and note the things the child finds interesting.

First page:

Has the child given a name and a gender (male female nothing) to the robot?

Name: Lana
Gender: zij

Is the child deviating from the comic book? If yes, what is the deviation?

het was er heel lief uit en vond het er by passen
comic looked cute
Lana was uit het stopcontact gebruikt, lana was
een klein lampje die iemand weg wou gooien.
lana was a lamp that someone was
going to throw away

Which panels did the child choose for this empty panel?

De held aaide de robot en de robot 1f + 1c
bewoog naar de held.
the hero petted the robot 1f
and robot moved to the hero 1c

Other remarks:

het verhaal is nog niet zo spannend
story wasn't very exciting yet

Is the child engaged in the story?
Not engaged 1 2 3 ④⑤ 6 7 8 9 Very engaged

Second page:

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Which panels did the child choose for this empty panel?

2C omdat het lief is als lana dat doet

2c because it would be sweet if lana did that

Is the child engaged in the story?
Not engaged 1 2 3 4 ⑤ 6 7 8 9 Very engaged

→ nog niet heel spannend
not very exciting

Third page:

How long did the child spend on the game?
......minutes

⎧halve minuut 30 seconds

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 ⑧ 9 Very interested

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....
....

Did the child give any remarks on the face characteristics it gave to the robot?
→ het verhaal komt beter samen en
leuke opdrachtjes
the story is coming together → fun excercises

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 ⑦ 8 9 Very engaged

Fourth page:

Is the child deviating from the comic book? If yes, what is the deviation?
De held vraagt het lief aan de biggetjes
omdat lana stapot is en held woort
dat de biggetjes lana kunnen helpen

the hera is asking the 3 pigs kindly to help
because lana is broken

child give any remarks on the body characteristics it gave to the robot?

....

....

....

Which panels did the child choose for this empty panel?

B + C zodat de biggetjes onze helden kunnen helpen

B + C so the pigs could help the pigs heroes.

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7 8) 9 Very engaged

↳ exciting

Fifth page:

Is the child deviating from the comic book? If yes, what is the deviation?

niet heel spannend en een heel klein beetje saai, maar weet niet hoe het beter kan.

child didn't think it was very exciting → kinda boring
Doesn't know how to improve it

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7) 8 9 Very engaged

Sixth page:

Is the child deviating from the comic book? If yes, what is the deviation?

De sleutel is scherp en na het sleutel stukje een makkelijke puzzel

the key was sharp after they got the circle it was very easy

....

How long did the child spend on the game?
1 minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 8 9 Very interested

Which panels did the child choose for this empty panel?
......b.....die...is...het...schattigst...
......b,..because...it..is..the...cutest..

Did the child give any remarks on the accessory it gave to the robot? How will the child use it with the robot (e.g. play, calm down, communicate etc)?
....
....
....

Is the child engaged in the story?   Wordt erg spannend
Not engaged 1 2 3 4 5 6 7 ⑧ ⑨ Very engaged   very exciting

Seventh page:

Is the child deviating from the comic book? If yes, what is the deviation?
....
....
....
....
....

How long did the child spend on the game?
......minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 8 9 Very interested

Which panels did the child choose for this empty panel?
....
....
....

Which statistic did the child put the point in?
..knuffelig..........physical...
Why?
...hij houd er van om knuffets te
krijen en geven
because the child likes hugs
Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 9 Very engaged

Questions for the final interview:

Describe your robot to me.

het is een hondje, doet ook lief hejjes
little dog phants
lana haudt van opvrolijken
word ze zelf blij van den onze hotel
ook
lana likes cheering people up and is only
happy of the herd is happy

Is this the same robot as (Miro)?

Yes
(No)

If it is not the same robot what makes this robot unique?

lana kan veel andere trucjes zoals
springen en heeft langere pootjes
ze han een salto
lana can do tricks like jumping and backtflips → longer limbs

If you were sick do you think this robot would be helpful to you? How?

het afterlijk van de robot kan hem
erg blij maken en han eten op een
dienblad op haar rug dragen
the look of the robot will make the child happy

Any other remarks: and it can carry the food in little trays
on its back

Adult notes in activity booklet from child 4:

Start/Introduction (10'):

Short discussion about the hospital.
Show the short video:
https://radboudumc.bbvms.com/p/niet_te_indexeren_door_google/c/4069688.html
Show Miro.
Brainstorm of what a robot can do to help them if they are in the hospital.

Game (60'):

Introducing the game (10'):
- Going through the story with their robot
- Introducing the 2 stories: fairytales and space
- Introducing the building station

Allow children to choose their story and setup based on the choices (10')

Play the game (40')

Final discussion (20'):

Interview by the assisting adult 10'
Final discussion 10'

Things to note while the child is playing the game:

Let the child read the story to you and tell you what is happening.
Try to pay attention and note the things the child finds interesting.

First page:

Has the child given a name and a gender (male female nothing) to the robot?

Name: Wookie
Gender: male

Is the child deviating from the comic book? If yes, what is the deviation?

Yes, She made funny remarks at the start.
When asked about gender her initial response
was: "appartement". After we got into the story
she was fully focussed on the game.

Which panels did the child choose for this empty panel?
1. De robot lolde amat held been
2. De held aat de lobot
   IF and 2B

Other remarks:

ha

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7) 8 9 Very engaged

Second page:

Is the child deviating from the comic book? If yes, what is the deviation?

no

Which panels did the child choose for this empty panel?

2 F
2 A

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 ⑧ 9 Very engaged

Third page:

How long did the child spend on the game?
..2..minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 ⑧ 9 Very interested

Is the child deviating from the comic book? If yes, what is the deviation?

no

Did the child give any remarks on the face characteristics it gave to the robot?

"These look the most realistic and natural"

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 8 ⑨ Very engaged

Fourth page:

Is the child deviating from the comic book? If yes, what is the deviation?

Not at all

Did the child give any remarks on the body characteristics it gave to the robot?

"I think purple will rither yellow/gold"

Which panels did the child choose for this empty panel?

3C

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 (8) 9 Very engaged

Fifth page:

Is the child deviating from the comic book? If yes, what is the deviation?
no, she's engaged in the story. She mad one
little remark about the pig in the cage.

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 (7) 8 9 Very engaged

Sixth page:

Is the child deviating from the comic book? If yes, what is the deviation?
Didn't understand the game, there was no
"Spel 2" notice.

How long did the child spend on the game?
7 minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 (6) 7 8 9 Very interested

Which panels did the child choose for this empty panel?

4g + 4c

Did the child give any remarks on the accessory it gave to the robot? How will the child use it with the robot (e.g. play, calm down, communicate etc)?

"he needs a wand!" "he holds the wand in his mouth, like a stick"

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 7 ⑧ 9 Very engaged

Seventh page:

Is the child deviating from the comic book? If yes, what is the deviation?

no.

How long did the child spend on the game?
...2..minutes

Was the child interested in the game?
Not interested 1 2 3 4 5 6 7 ⑧ 9 Very interested

Which panels did the child choose for this empty panel?

Which statistic did the child put the point in?
Bravery

Why? Vanted the robot to be braver

Is the child engaged in the story?
Not engaged 1 2 3 4 5 6 ⑦ 8 9 Very engaged

Questions for the final interview:

Describe your robot to me.

loves watching Spongebob, just like me.
loves eating Mc Donalds
has Harry Potter like magic abilities, especialy
spells.

Is this the same robot as (Miro)?

Yes
(No)

If it is not the same robot what makes this robot unique?

Super powers

If you were sick do you think this robot would be helpful to you? How?

being by my side to cheer me up

Any other remarks:

NAAM ROBOT: _Wookie_

Actief			X			
Sociaal						X
Moedig					X	X
Knuffelig						X