How can we enhance presence in a distant relationship between adult children and their parents

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Abstract

This thesis explores the field of mediated presence in a distant relationship, with a specific focus on the introduction of “receptiveness” as the biggest factor, when designing to enhance this mediated experience. I have approached this field in a user centered manner since it is fairly unexplored thus far. Through related work, cultural probe, interviews and discussions with the target group I have explored design opportunities. These design opportunities are contributing to the field. This by revealing how the target group evaluate presence, to what extent they do so and the different needs the relationship have when experiencing presence. The introduction of “receptiveness” as the main factor to how we experience presence lead to prototyping and user testing in regard of manipulation of certain times and spaces. Resulting in different explorations to how mediated presence will be experienced as enhanced.
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Table of Contents

Abstract .......................................................................................................................... 2
Acknowledgement ....................................................................................................... 3
Table of Contents ........................................................................................................ 4
1 Introduction ............................................................................................................... 6
  1.1 Research question ............................................................................................... 6
  1.2 Structure .............................................................................................................. 6
  1.3 Impact of Interaction Design ............................................................................. 7
2 Design Methods ........................................................................................................ 9
  2.1 Participants ......................................................................................................... 9
  2.2 Chosen Methods ............................................................................................... 9
  2.3 Double Diamond Process .............................................................................. 12
3 Ethics ....................................................................................................................... 13
4 Theory ....................................................................................................................... 13
  4.1 Defining presence ............................................................................................. 13
  4.2 Mediums interacting with social presence ..................................................... 15
5 Related work ........................................................................................................... 17
  5.1 ............................................................................................................................ 17
  5.2 ............................................................................................................................ 17
  5.3 ............................................................................................................................ 18
6 Insights from Theory and Related work ................................................................ 19
7 Fieldwork .................................................................................................................. 19
  7.1 Interviews ......................................................................................................... 19
    7.1.1 Purpose ....................................................................................................... 19
    7.1.2 Procedure ................................................................................................... 20
    7.1.3 Findings ...................................................................................................... 20
    7.1.4 Interview takeaways ................................................................................... 21
  7.2 Cultural Probe .................................................................................................... 21
    7.2.1 Purpose ....................................................................................................... 21
    7.2.2 Procedure ................................................................................................... 21
    7.2.3 Findings ...................................................................................................... 22
    7.2.4 Probe takeaways ....................................................................................... 23
8 Refining a design problem formulation .................................................................. 24
  8.1 Design Opportunities ....................................................................................... 24
9 Design Phase ............................................................................................................ 26
1 Introduction

This thesis is exploring mediated presence in a distance relationship. The need for a personal commitment and emotional bonds is normally implied although the difference of relationships facilitates a different type of presence for these emotions to be welcomed. With this in mind majority of the research into mediated experiences has been done for romantic relationships between couples. This creates a different context for presence to be mediated. In the thesis we will explore how we are mediating presence between, parents and adult children, where the child is living by himself or herself on his or her own. The aim of the thesis is to present a design contribution by seeing to how we might enhance mediated presence in the distance relationship between child and parent.

The Design Contribution will be evaluated on whether this thesis manage to enhance the experience of mediated presence or not. This calls for the relevance of interaction design (IxD), since we are designing to enhance an experience. IxD will be used so the presented contribution generates the experience that is required for it to be perceived as enhanced.

1.1 Research question

“How can interaction design enhance the sense of presence in a distant relationship between adult children and parents?”

1.2 Structure

This thesis is divided and has broken down the topic into different chapters. Following includes a short summary of what information the different chapters consists of.

Impact of interaction design:
The thesis concludes how interaction design will be incorporated in the design process. It argues for why and how interaction design will make an impact on this thesis topic and design space.

Design Methods:
This chapter explains the means necessary that has been used throughout the design process. It consists of an explanation of the design process methodology and also which design methods that has been used, with arguments for why and how the methods have played a part during the design process.

Theory:
This part of the thesis consists of two parts, first chapter describes the academic research relevant for the concept of mediated presence and the second chapter discuss related work which gives insights into how mediated experiences have been approached in different fields.

The academic research is divided into three sub categories. Initially it defines the concept of presence, secondly it describes and explores the key concepts of mediated presence in distance relationships and thirdly an overview of interactive communication tools and how tools are impacting on the sense of mediated presence for different groups.
Fieldwork:
At this point the target group gets involved for the first time in the design process. This chapter consists of purpose for the target groups involvement through design methods, the procedure to receive information from the target group as well as relevant findings and takeaways that will be relevant going forward in the design process.

Refining a design problem formulation:
This chapter refines a design problem formulation based on the insights and takeaways from the target group gathered during the fieldwork. The refined design problem formulation act as a foundation for the upcoming chapter “Design Phase”.

Design Phase:
In this chapter the focus is on generating ideas and concepts that would work as solutions to our newly defined problem formulation. Throughout the chapter, the solutions and ideas are being narrowed down through arguments and user involvement to finally consist of the most prominent one.

Prototyping:
The most prominent concept is in this chapter being prototyped. Insights are gathered by user testing the prototype with the target group. Insights from the user tests are concluded and what is working, as well as not working, with the reasoning why will be described.

Iteration:
The insights from the user tests in the prototyping phase will be foundation for this chapter. The concept will be refined through sketching ideation, the new idea is prototyped and then user tested once more. The user test from this iteration will give the final insights to update concept, thereby ending the design process.

Discussion and Conclusion:
These are the final two chapters, they consist of a conclusion of the key findings and insights from the thesis. The Discussion chapter also consists of what the thesis could have done differently and potential future work within the field.

1.3 Impact of Interaction Design

To be able to enhance the sense of presence between individuals despite being physically apart, we are working with a sense of illusion of being present. The illusion is created by providing and conveying certain types of feelings that is the basis for experiencing the desired feeling of mediated presence. To create this illusion, the thesis will need to see to our target group, what are the feelings and emotions for these people that combined will create the experience. With this in mind I am working after a human-centered design perspective.
Donald Norman explains this as:

“Human-centered design is a design philosophy. It means starting with a good understanding of people and the needs that the design is intended to meet” (Norman, 2013, p.9)
The illusion opposes the physical space obstacle, which is the distance, it enables for the experience and receptiveness of presence between the individuals. The illusion will provide the individuals with the sense of being there for each other even though the physical space is not allowing us to, this is the need that our design will be intended to meet.

Donald Norman furthermore explains User Experience, “everything that touches upon your experience with the product, you don’t even have to be near the product, it can be when you are telling someone about it.” (Norman, 2016)

The explanation from Norman is important since the topic of thesis is about mediating an experience between individuals, interaction design will be exercised to make sure that the experience is positive

Norman (2013) furthermore explains that by the use of interaction design and seeing to the inputs and outputs of our design a smooth flow can be created. We won't have to step back and look to the technology to be able to understand it nor understand what to do, good interaction design lets us understand it and the steps within the technology comes naturally.

This will be important since the illusion is based on an experience where there is a connection between individuals, not individual – artefact – individual. Good Interaction design will help us to disregard Technology as an intermediary.

Ciolfi (2004) reported that

“Technologies are changing, not only in terms of their computational capabilities and appearance but also in the way they are physically arranged, perceived and used. These changes also affect the way we experience the spaces we inhabit and our sense of physical presence in a locale. Such technologies have the potential to influence many aspects of our lives: They can modify the spaces we inhabit, create new places or new forms of presence, and make physical presence itself a way of interacting with the system” (Ciolfi, 2004, p.37)

As explained, how we interact with technology, and what technology we are interacting with, results in different experiences. To be able to enhance an experience between the target group, I will see to different technologies and how the target group are interacting with these so I can explore which interactions generates what experience.

This thesis argues that the goal of enhancing presence can be achieved through good interaction design. With the use of interaction design processes, methods and intentions, a good sustainable experience can be designed.
2 Design Methods

The argument for my chosen design methods is that they build on gaining knowledge and insights to a mediated experience. The experience explored is based on the interaction between individuals (Parents and adult child) and the design methods will be used to compile information in regard to what matters and is important for these individuals. The design methods will be used to explore how we are stimulating, creating and relating to the experience of mediated presence.

2.1 Participants

During the thesis, I have identified a sample of the topics target population that have been involved during the design process. In total, I have identified 11 participants that have been involved from start to finish in the thesis design process, I have been working with the same 11 individuals throughout the process. The participants were chosen to get a fair representation of the target group. With this in mind I chose seven adult children, that fulfil the criteria. The criteria being recently moving away from their parents to their own living arrangement. Among the seven selected adult children three of them were females and four were males, I wanted a mixed gender distribution, so I don’t overlook any possible insights and miss out on any information. This is because gender may play a part in the topic of the thesis. The adult children varied in ages between 21-30 years old.

The participating parents were four individuals, these were chosen because they recently got separated from a child moving away to their own living arrangement. The participants also consist of parent and child within the same family, this is because it enables me to understand the same situation and experience from the child and parents’ different perspectives.

2.2 Chosen Methods

The approach for the design process is user oriented. In order to get necessary information and useful insights helping to understand what needs to be designed, it is necessary to look to the target audience and their needs. Since this topic requires a lot of focus on the users and their experience, a choice was made to work with methods that are suitable for me to get an understanding of not so much “what?”, but rather have the users explain “why?”, the thesis are interested in getting at qualitative data.

Interviews:
Interviews with the target group have been a recurrent method during the design process. These interviews take the form of basic design ethnography, using Semi-structured questioning. Constant dialogue with my target group has enabled me to see from their perspective which is to explore new design problems and openings. The method “interviews” are explained as an identification of insights into an issue from the perspective of participants. (Frances, Coughlan, & Cronin, 2009)

Since the participants during my interviews are the end users, I can gather information by seeing to their perspective and understandings, which enables me to design for them.
During the design process, “Semi-structured interviews” were used with open ended questions. Learning about the users helps to refining a sense of the design space. This method enables the participant to explain and both of us to reflect on both the questions and the answers together.

The target group consists of two parties in a relationship, adult child and parents. To prevent the individuals influencing each other I have divided the interviews, so they are done separately. Dividing the target group, separating parents from child, will make it easier to create a more genuine conversation, they won’t be hesitant to express how they feel because of the other individual present in the conversation. This will also enable us to explore whether parents and children have different needs in the relationship, this is important since the thesis is seeing to the relationship between them, therefore I need to understand both party’s needs.

**Cultural Probe:**
My design process requires that I acquire insights into my participants everyday life and the relationship between them. Transparency in other individuals’ relationships and living habits can be sensitive information, Cultural Probe as a method gives me an opportunity to gain insights without intrusion. The method gives my subject the ability to share information on their terms. Separate from other methods when seeking this kind of information, for example interview, where it can easily be perceived that I put them against the wall, or by the use of observation “fly on the wall” methodology, where my subjects’ actions and approach in situations may be not genuine because I am present.

Gaver, Dunne, & Pacenti (1999) Argues that the method “Cultural Probe” is used to provoke the users to look and think about their environment in new ways by the use of a collection of tools. In this thesis, I will be using a “diary” with different questions. The intent for this is for my subjects to reflect over certain things as they are happening. Also, for my subjects to see to their environment with a new approach by having my questions in the back of their mind.

Gaver et al. (1999) used the cultural probe method during their design process. The probe was part of a strategy of pursuing experimental design in a responsive way. They argue that a cultural probe is a good method when developing for unfamiliar groups, understanding mind-set and culture. In their design process, they argue for the necessities of understanding the local cultures, but at the same time they didn’t want their user group to constrain their designs by only focusing the probe on needs and or desires they already understood.

The focus with the probe was to lead a discussion with their target group towards unexpected ideas. (Gaver, Dunne, & Pacenti, 1999)

By using the probe, I give my subjects time to reflect and option for them to write down exactly what, how and why, they feel that they are doing in relation to when they are experiencing the experience. The diary with questions makes the participants relate to their surroundings with new perspectives, they look at situations with the probe questions constantly in mind.

By approaching your surrounding with these questions that you otherwise wouldn’t think about we are bringing forth insights and opportunities that otherwise may have been overlooked. Since the probe makes the
participants reflect in the present time, this method will contradict post-constructed and theoretical answers.

**Brainstorming:**
Brainstorming will be used in this thesis as a method to generate ideas for design solutions. Brainstorming as a method is a great way of generating ideas that you would not be able to generate by just sitting down with a pen and paper (Dam & Siang, 2018). Brainstorming sessions can be conducted very differently. In this thesis, we are working with a time limit during the brainstorming session. During the time limit the sole purpose is to come up with as many ideas as possible, aiming for quantity, the more the merrier. During this period, I am gathering all the ideas, no matter how crazy they may sound at the moment.

As Alex F. Osborn, the founder of the word brainstorming, explained: “It is easier to tone down a wild idea than to think up a new one” (Besant, 2016)

**Sketching:**
Sketching as a method is not only a way for yourself to visualize ideas, it also works as a way to illustrate for others what you are thinking. Sketching is a proven design method to help you explore a design space more fully, avoiding pitfalls of focusing on suboptimal design choices ahead of time (Rojas, 2019). Sketching will be used as a method in this thesis to further explore ideas. It is a useful method to visualize ideas, seeing to if it is plausible and how the idea could be carried out.

**Prototyping:**
Prototyping is the tangible representation of artefacts of various levels of resolution, either low-fidelity or high fidelity. In this thesis I will construct experience prototyping for the participants to actively engage them with the concepts and encounter a live experience with the concept. The prototypes will be used to explore and evaluate design ideas with the users, the prototypes are designed to gain critical feedback based on realistic scenarios. The prototypes are designed to explore values and features inherent in our design concepts through a direct and active participation, this requires the prototypes to have a level of functionality that allows for realistic engagement with the concept. (Martin & Hanington, 2012, p. 78)

**User testing:**
Evaluation Research” User testing” will be used to measure human expectations against my designed concepts, it will be used to determine whether something is useful, usable and desirable. It will be used to collect feedback on preference measure, aesthetical and emotional response from the target group. The Evaluative research will be iterated, based on the feedback from the user testing I will refine the concept details. (Martin & Hanington, 2012, p. 74)
2.3 Double Diamond Process

I have been working with my creative design process after the Double diamond design methodology.

Groeger and Schweitzer (2015) explains that all creative design processes consist of a number of possible ideas that are created (divergent thinking) before we refine and narrow these down to the best idea (convergent thinking). In the double diamond methodology, this is illustrated as a diamond. The double diamond consists of two “diamonds” that enables for the approach of first diverging your view to later converge it. Once to confirm the problem definition and once to create the solution. (Groeger & Schweitzer, 2015)

The double diamond method consists of four phases. **DISCOVER** is the first phase, during this stage I will get insight into my research question. I will gain the knowledge required so I can move on to define. **DEFINE** stage is where I conclude the insights I have gained and see to what design opportunities there are. This is where I define the problems, the problems lead me to develop ideas for solutions. **DEVELOP** phase is where I idea generate, sketch ideas that will work as solutions. The generation of ideas leads me to deliver phase. **DELIVER** phase is where I prototype my most prominent ideas/solutions and user test these with my target group. The feedback gained will lead me back to the **DEVELOP** phase with new insights I will iterate on.

When moving my project through the four steps of the process, I am always iterating the ideas by develop, test and redefining them. This cycle is an essential part for us to come up with a good design.
3 Ethics

This thesis aims at following the standards from an ethical point of view gathered in Codex rules and guidelines for Artistic sciences. The basic individual protection requirement can be made concrete in four general main requirements for research (Vetenskapsrådet, 2002). In this thesis the participants have been aware in regard to what is demanded by the four requirements.

**Information-requirement**
The participants have been informed of the purpose of what is being explored in this thesis. The participants have been informed of their role in the design process, that their participation is voluntary and that they can end their participation at any point and time during the process.

**Consent-Requirement**
Before the thesis have published any sort of information gathered from the participants, I have been asking for their consent to use the information. Since all of the participants are over the Swedish legal age of 18 years old, I have not been in need for the consent of the legal guardians for the participants.

**Confidentiality-Requirement**
I have together with the participants signed a confidentiality agreement, stating that I am the only person sitting on the participants personal information.

**Make use of-Requirement**
This thesis will not disclose any information for commercial use.

4 Theory

4.1 Defining presence

The routine sense of presence in a family between a child and its parents in a domestic setting is ruptured when the spatial setting changes and the child moves out. A debilitating sense of social isolation and emotional disconnection between the individuals can be created. These situations open up for interactive communication technologies to sustain the relationship. Through different interactive communication tools (Phone call, SMS, Email etc.) new ways of understanding each other, reconstituting the experience of living together that the new spatial living conditions allow. The feeling of presence lies at the center of all mediated experiences. (Gooch & Watts, 2014)

The distance in the relationship between our target group requires the individuals to project physical and emotional presence through interactive communication tools/medium, and through interaction experience it from each other. We are measuring Social Presence by seeing to what ability it is done.
Social presence Theory was defined by John Short, Williams Ederyn and Bruce Christie as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationships” (Short, Ederyn, & Christie, 1976).

The quote explains the initial explanation of the theory. To what extent the other party in the interaction are able of standing out in the interaction and the consequent stand out of the reasons making up the interacting party’s relationship.

In social presence theory, it is assumed that in interactions between two parties, they are concerned with acting out certain roles and developing, or as seen to my target group, maintain a personal relationship. This are measured by the use of the Social presence theory.

Short et al. (1976) explains that Social presence was primarily composed of two key terms: **Intimacy** and **Immediacy**, the social presence theory also holds two sub terms in: **Non-verbal communication** and **efficiency** relevant to the theory.

**Intimacy:**
Intimacy is the feeling of closeness and belonging between two individuals. Intimacy is created by how we interpret non-verbal cues. It is influenced by different factors, for example, physical distance, eye contact, smiling and body language etc.

When seeing to mediated intimacy in relation to the age group of the adult children in this thesis. It generally refers to romantic and or sexual relationships. Our everyday life practice of intimate storytelling in youth culture has become increasingly mediated. (Ridder, 2012)

This thesis is contributing to the field of mediated intimacy by considering a different relationship from the one most discussed in relation to mediated studies. Non-sexual, social and between child and parents.

**Immediacy:**
By giving urgency or importance to an exchange is how we define immediacy. By indicating the urgency when communicating with others we give them a sense of closeness and importance to the relationship.

**Non-verbal communication:**
To what extent the users can express themselves without speaking through Computer-mediated interactions. Example of such interactions can be, posture, facial expressions etc.

**Efficiency:**
Depending on message and audience, social presence theory sees to what medium may be the most efficient to getting the message across.

There is not a clear, agreed upon, definition of social presence. Instead researchers continue to redefine it, for example Leslie Gunawardana (1995) explains it as “The degree to which a person is perceived as a ”real person” in mediated communication”.

Patrick Lowenthal on the other hand explains that social presence theory enables for different focus areas, “Where a focus on interpersonal emotional connection between communicators” is on one end and a “focus on if someone is being present, there or real” at the other end. He also argues that most researchers tend to lie in the middle, retaining focus on both directions. (Lowenthal, 2011)

To get a better understanding of the Social Presence theory I will see to how it has been used in a practical context. The development of E-learning is an example of an environment where Social presence has played a part.

Online learning (E-learning) is defined as any class that offers their curriculum in the online course delivery mode, allowing students to participate regardless of different factors, physical location, time and place. The online space enables students to complete a course without being physically present and enable to meet face to face. Jennifer Richardson and Karen Swan have seen to how social presence affects the Satisfaction with an E-learning course. Their research showed a high correlation between perceived social presence and the students’ relationship to their perceived learning and satisfaction with course instructors. Social presence is used to mediate social cues and the sense of presence that a physical classroom enables and apply these to the digital E-learning space. (Richardson & Swan, 2003)

In similarity to E-learning, Social Presence will be used in the environment where a child has moved out from their parents. Social presence will be used to sustain the experience of still being there for each other and the experience of presence that a domestic living arrangement provides, through technical interactivity communication this thesis will explore how to oversee the distance and like E-learning still mediate a sense of presence between the individuals.

4.2 Mediums interacting with social presence

Gooch and Watts (2014) has in their study, by the use of Social presence, gathered material on to what extent certain mediums are being able to convey a sense of presence in distant relationships.

“Lee argues that Social Presence is a sub concept of such a generalized sense of presence, just by considering the coexistence and responsiveness of virtual objects that happen to be other people. However, Social Presence is not just a matter of nothing that other social agents coexist with oneself in an environment. As Biocca et al. (2003) observe, the requirements for incorporating other people into a workable mental model are rather different from other virtual objects or mechanisms because they must help one to infer the intentional states of others” (Gooch & Watts, 2014, p.508)

By seeing to the initial definition of Social Presence Theory by (Short et al., 1976). Gooch and Watts (2014) have treated Social presence in technologically mediated personal relationships as something constructed in the mind of an individual out of the representations the other has crafted with the medium.
Gooch and Watts (2014) constructed a longitudinal study, recorded over a 3-week period with 64 participants, around self-report activity from people who were asked to reflect on their communications with “a person you feel close to”. The study saw to the participants experience of Social presence and closeness in mediated encounters. The aim of their study is to consider how type of personal relationship and degree of physical separation might condition the social presence value of a range of media.

By seeing to the experimental studies done by Gooch and Watts (2014), we see the correlation between Social Presence and medium, based on individuals in a distant relationship, I get an insight into which mediums has what impact on social presence through their ranking conclusions.

![Figure 2, Study Conclusion](Gooch & Watts, 2014)

If we are seeing to technical communication mediums, Skype and telephone got the highest social presence rating. Interestingly when Gooch and Watts (2014) explored the relation to the sensation of “closeness” the ranks were different. Their rankings data for closeness and Social Presence support the idea that the experiences with media in personal relationships are differentiated, so that a certain medium are stronger in one aspect of relationship support than in another. Their research also proves how different relationship types are affected differently by mediums.

![Figure 3, Study Conclusion](Gooch & Watts, 2014)
Through their studies the conclusion is that Skype and telephone are the interactive mediums that got the highest rank from the target group when evaluated in relation to social presence.

5 Related work

5.1

Patel and Agamanolis (2003) have seen how the modern working life lead to a prolonged separation between loved ones. They argue that people have an innate desire to have an up to date understanding of the emotional and physiological state between each other. Awareness of each other is essential to convey feelings and needs to one another.

They have seen to a partner’s activities and biorhythms (sleeping, eating, socializing etc.) as indicators of their well-being. The concept “Habitat” are addressing these by the use of household furniture as a network of distributed ambient display appliances that center on the capture and visualizations of daily rhythms to convey a sense of awareness between partners separated by distance. (Patel & Agamanolis, 2003)

Figure 4, “Habitat” Product. (Patel & Agamanolis, 2003)

5.2

Biocca, Inoue, Lee, Polinsky, & Tang (2002) explore the design of Virtual environments. They are exploring the sense of presence in a virtual world. By seeing to what are the mechanisms that gives rise to presence and also how the senses and motor actions interact to create a stable virtual environment. Their study reports a link between these areas. They demonstrate that “the sensory stimuli interact to the point of creating synesthetic illusions, and that these illusions are related to the experience of presence”.

The paper results in two key findings. The findings give insight into how visualization of haptic feedback will simulate the subject to experience haptic illusions and also the connection between cross modal interactions and the experience of presence.
The text explores further on the study done by Biocca and colleagues (Biocca et al., 2001). Their study proved that users may experience haptic illusions when no haptic stimuli was presented (Biocca et al., 2002). Further exploration on the subject also revealed that a key cause of the illusionary haptic sensation is the visual cue of haptic feedback. For example, when pulling something in the virtual environment, the implementation of a visual analogue of a haptic force, such as a “snap” increased the sensation. They argue that the improvement of haptic sensations is done by adding visual cues and that these cues need not to be realistic.

Biocca et al. (2002) also found correlation between the haptic illusion and “feeling present”. The source of the illusion of feeling present was the intermodal integration of generating a coherent mental model of the environment. Cues from the physical world/environment are being used to fill a coherent virtual environment.

They conclude that the senses talk to each other, as mentioned, visual feedback can generate a sense of haptic illusion. The multimodal interaction between the senses are the foundation to create the illusion of a “real experience” even though it is virtually generated.

5.3

Vetere, Gibbs, Kjeldskov, Howard, Mueller, Pedell, Mecoles & Bunyan (2005) are focusing on mediated contact between parties, more specifically intimacy in relation to interactive technologies. They explore how we use technology to create and maintain intimacy in a relationship. Through their empiric work by the use of probes, interviews etc., they generate an understanding of intimacy and how it relates to interactive technologies and how these are supporting intimate acts. Based on their exploration and understanding of the subject they design their own concepts.

**Hug Over A Distance** is one of their presented concepts. By the use of wearable computing and “smart clothes”, they are equipping the individuals with a jacket, enabling for an open, ambient and physical channel of interaction, the sensation of a hug irrespective of the physical distance between the individuals. The jacket allows for an immediate and tactile interaction between the parties and results in an emotionally charged sensation. This concept is showcasing the possibility to send an emotional “ping” to a loved one regardless of distance by the use of a discreet and tactile interface. (Vetere et al., 2005)
6 Insights from Theory and Related work

To explore mediated presence, I am using Social Presence Theory. The theory is being used to evaluate to what degree we are being able to mediate an experience. I identified the fundamental building blocks for the theory (intimacy, immediacy, non-verbal communication, efficiency) and have seen how these have been incorporated in fields exploring mediated experiences.

- Further in the thesis I need to understand how the target group in the setting examined in this thesis (separate living at a distance), experience presence and to what degree. This is done, among other things, by exploring how the target group are relating to the different building blocks in their everyday experience of mediated presence. How the target group is evaluating the building blocks and to what extent do they feel that these play a part in to what extent they are satisfied with the mediated experience.

The thesis has gathered an understanding, to what degree todays interactive communication tools are being able to mediate presence for the target group. By the use of Social Presence Theory, the tools have been evaluated and the target group concluded that “Skype” is the tool that are mediating presence best.

- It is known what tools that are mediating presence and to what extent they are able to do so, but further on I need to understand why. Investigating why the participants experienced the tools as they did.

By seeing to related work, I am creating an understanding of how other people have been working with mediated experiences in different fields. Why and how they are approaching their opportunities.

- What is taken with us further in the design process is how an artefact in itself can communicate experiences between parties. An example of this is the concept “habitat”, it communicates our state of mind to each other by looking at our routines. Without having to involve todays common interactive communication tools (telephone etc.) an artefact can be designed to mediate an experience from a distance.

7 Fieldwork

7.1 Interviews

7.1.1 Purpose

The interviews were largely based on where I began to understand the theoretical ground. I have received information about how the target group relate to various interactive communication tools. Previously made research
showed that skype and telephony were each the media that resulted in highly experienced mediated presence in a parental relationship. My interviews are collated to find out why these tools mediate perceived presence best. By sitting down with the target group, we can together break down the insight about the media and presence. I can explore what within the mediums that meets what needs, this enables me to establish which factors plays what part in how todays communication tools generate presence. I will also see to which aspects do not work within the mediums and thus get insights in to what there are for improvement areas. I am also inclined to find out the differences between skype and telephone, how they generate experience, and understand how the experiences differ.

7.1.2 Procedure

The interviews were compiled by me together with all of the participants. The interviews were done separately, one by one, with 11 participants. I decided to keep the parent and adult child separated during the interviews. Because my interview is based on how individuals are experiencing tools and situations, I don’t want them to influence each other’s answers. Since I am designing for a relationship between parents and their children, I find it important to understand both parties’ perspectives. This enables me to be aware if, how and why their perspectives might differ.

7.1.3 Findings

After compiling the interviews, I can conclude that mediated presence is not based on the affordances of the media, instead it is based on other external factors. The participants believe that both skype and telephone have the ability to support perceived presence to the same ability as when you are physically present and interacting face to face. This is possible through the tool’s ability to visual and oral interaction and the tools constant real time feedback, synchronous communication.

The issue of being able to mediate presence does not lie in the ability of the technical media to convey the right experience, but rather it is depending on the individuals in the relationship. The experience is being dependent on if the individuals are being susceptible to presence or not. According to the participants, the biggest impact on the mediated experience was when the interaction took place. When the contact/communicating took place, was also the biggest difference between the communication tools, skype and telephone.

My target audience sees the phone as a tool that enables for direct communication. Skype was instead a host that was used when the parties had planned to interact via the tool. Since the individuals planned a contact through skype before the contact was made, both parties were “ready” to communicate and therefor had the right mind-set to experience presence. Through skype we can also indicate for each other if we are receptive to being contacted. This is done through their options of being “Online”, “Offline” and “Away”, this enables for the individuals to quickly get an insight about whether they are receptive for communication or not. This means that when the contact is made, both individuals are ready for the interaction and thus we are perceived as more present, this also made the subjects rate skype as the more superior tool when we look at how it is able to mediate the experience of presence.
This differs from the way we use the telephone to communicate. The majority of the cases it was the individual who started the interaction by calling the other one who was receptive for presence, how this individual felt that the presence was answered was up to the other person and to what extent he/she were susceptible for communication.

These tools and how they were used in different ways can be related to how their interactions took place in the home. In similarity to skypes features to show if we are receptive or not for interaction, my subjects used similar cues when they lived together at home. In their family home, it was common for the child to close their room’s door in order to indicate that one wants to be left alone and is not present for interaction. Compared to if the door was open, they were receptive for communication and presence. Separate from the phones type of interaction, where we overlook the cues, we don’t see too if the door is closed or open before making contact. When calling each other it is comparable to call out for each other at home, we don’t know if the door is closed or open, therefor we don’t know if the individual we are seeking to contact is amenable or not, therefore we don’t know if the contact will mediate a sense of presence or not.

7.1.4 Interview takeaways

- How we are able to mediate presence are dependent on **when** the interaction takes place.
- The target group experienced “Skype” as the superior tool in relation to mediating presence, this is because of its ability to show **receptiveness**. Also, the participants experienced they were more receptive to communication and presence when using this tool because in most cases an agreement to when the communication was going to take place via the tool had been made. The communication took place during a time and place when the parties were receptive to be present and experience presence.

7.2 Cultural Probe

7.2.1 Purpose

Through my interviews I saw the importance of being receptive and how that influenced my subjects to the feeling of presence and being present. The next phase of the fieldwork used the cultural probe, a well-known design strategy for obtaining information from people in an informal, qualitative and context-sensitive way. The probe was constructed to get insights into my target groups everyday life and how receptiveness plays into it. The focus of my probe is to make sure when, where, how and why my participants are receptive to communication with their child / parents. By examining this, I create design opportunities for how we can work with receptiveness in the child-parent relationship and how we can use this to enhance the feeling of presence.

7.2.2 Procedure

How we are receptive for communication in our everyday life is nothing that one usually is paying attention to. By conducting a probe, I make my subjects approach their everyday life with this framing of a question in the back of their mind and give them time to reflect on it.
I had seven participants taking part with the probe, two of them were parents and the other five were adult children. The probe was compiled after the participants had spent one week reflecting in the diary, Monday – Monday. I gave the participants a “diary” with belonging pens. The diary included four questions at issue in relation to how they are being receptive to presence and why, my participants were to reflect and write down their reflections and thoughts during the week.

7.2.3 Findings

The culture probe showed a lot of togetherness between my subjects and how they perceive their receptivity to presence. The biggest similarity we take with us is that evenings as a time of day and dinner as a situation are when my subjects felt most receptive of feeling presence to each other. The reason for this was due to their everyday life when they lived together. When the family lived in the same household, dinners were a situation that all my subjects did together, it was a situation during the day when everyone was at home and gathered together, the family was presently checking up on each other and their day. The evening time was due to similar reasons. Even then, the family was gathered together after having been at work / school during the day. In the evening when they lived together, one knows that everyone is gathered and thus one felt a sense of togetherness and if one sought each other's presence, everyone was within physical distance so that it could be answered. This phenomenon disappears during the separation of living arrangement, but the "routine" of how one used to be present for each other was still left to both the parent and the child, and this resulted in my subjects feeling themselves most prone to presence at these times.

In contrast, I can also conclude similarities about when the participants did not perceive themselves as receptive to each other’s presence. When my subjects were surrounded by other people, friends, schoolmates or colleagues. In these situations, they experienced no need for each other’s presence, and this resulted in them experiencing least receptiveness to presence. Because situations when interacting with other people often occur outside of their home, my subjects explained that the home and outside the home worked as the major difference to whether they were feeling present or not. The physical space was also something that was manipulated. An example of this is how a participant (young adult) explained that he used to leave his home, go out for a walk, when he did not want to experience presence from his parents. He used the physical space (outside) to avoid the presence from the parents. With this being said, there were situations in the home when the parties were not receptive to presence, activities such as watching movies, playing computer games or listening to music.

The main reason why the home vs outside was spaces that generated a difference in susceptibility was how they felt in these physical spaces. How they felt in the physical spaces and how it related to receptivity was also a big difference between parent versus children. The children concluded that a reason why the home was where they felt receptive to presence was the feeling of solitude. The children live alone, when they come home they are alone, apart from how the children did not feel receptive to presence outside the home. Then they were around and could interact with people and therefore did not feel alone. The feeling of loneliness was not something that
made an impact for the parents in the same way, they never had to be by themselves, when they were at home, they had their partner present. This also resulted in a difference about how we want to experience the presence, what the parties wanted out of it. The need to feel presence was not as important for the parents, the great importance for them was to be present for their child. They wanted to be there for their children and be assured that their child is taking care of themselves. The children, on the other hand, sought the presence with their parents when they felt themselves the loneliest and wanted someone to talk to. It was because of this that the above-mentioned activities, playing computer games, watching movies and listening to music were activities that could answer the requirement of presence, since when interacting with these activities there is a value in being alone. These activities served as an escape for the children not to feel alone.

Because the focus on why we want to be present for each other differed between children and parent, we could see clear differences about how the parties showed whether they were receptive to presence or not. How the parties interacted with technical communication mediums differed. The communication between the parties used in the culture probe was done by telephone. When the children did not feel loneliness and thus did not want to communicate and feel presence, the majority used to put the phone on silence. They chose to ignore and not answer the calls from their parents. This method is counterproductive. The parents explained that their focus was on wanting to know that their children are doing well. The children’s method of not answering the calls from the parents does not just serve as an indication that they do not want to be disturbed. The parents explained the concern that something might have happened or that the child is not doing or feeling good, if they did not respond. This did in some cases result in the parents continuing to ring their child, to seek contact. As a result, this method resulted in both parties “interfering/disrupting” each other and thus not feeling any desire for presence between each other at the moment. This is because the method of indicating their susceptibility did not work to meet the needs of the individuals (not being disturbed and know about well-being).

7.2.4 Probe takeaways

- Eating dinner, the situation where the participants (parents and child) were most receptive to presence
- Evening, the time of day when the participants were most receptive to presence
- Interacting with other people, least receptive to presence
- More receptive to presence at home, less receptive to presence in public
- How we approach presence differed between the parents and adult children. In the distant relationship between the parties, the children felt it most important to receive presence from their parents when they were in need of it. Whereas the parents felt it most important to be available for their children and emit presence for their children.
- Telephone as technical medium don’t have a good way of indicating receptiveness.
8 Refining a design problem formulation

The decisions taken in the thesis until this point, they have been based on the research question (“How can interaction design enhance the sense of presence in a distant relationship between adult children and parents”) and what information that is required to be able to answer it. The next step in the design process will be to design for all the relevant information that has been compiled in the thesis, a problem statement will now be refined according to the gathered insights.

By gathering the insights from previous chapters, the thesis identifies “receptiveness” as the fundamental to what extent the target group are being able to experience mediated presence.

Receptiveness as a concept enables for design opportunities and will be the focus for the problem formulation. By seeing how we can work with receptiveness from a distance and designing with this in mind, the information compiled from the target group argues that I am answering the thesis initial Research question. Previous understanding of mediated presence has been based on the four building blocks gathered by social presence theory (Intimacy, immediacy, non-verbal communication and efficiency). Receptiveness gives the design process a fifth building block applied to the theory. Receptiveness is based on the target group’s individual’s agency, i.e., the capacity of individuals to act independently and make their own free choices. Make their choice when communication is being made for the experience of presence being well received and perceived as high.

Therefore, I am refining a design problem formulation focusing on receptiveness, by designing for this formulation I will be designing a potential revision to the initial Research Question.

“How can we enhance the sense of presence by designing for receptiveness in distant relationship between parents and adult children”

8.1 Design Opportunities

In this stage of the thesis design process, I started to open up for ideas. Insights from the target group were categorized that treat the new problem formulation, which means insights in regard to receptiveness.

This resulted in different approach angles to find design opportunities working with the new problem formulation in mind. This led to 3 new design situations with relevant opportunities to be explored.

1. **DESIGN SITUATION 1: Dinner time equals family time**

Dinner is a situation during the day that the participants related to being together. It was related back to when parents and child lived in the same household, it was a situation when they gathered, talked and checked up on each other. The target group explained this
situation as engraved family time and a sensation that was lost after the living separation. It is a sensation that is missed and during the situation the target group felt receptive to being present for each other.

“During my upbringing dinner time has worked as family time. It is an “activity” that we did together. When I'm now living alone, dinner makes me think about my family and this makes me receptive for their company” – (Participant)

2. DESIGN SITUATION 2: Coming home, receptiveness trigger
Children in the target group explained how coming home to an empty house resulted in the emotional state of feeling lonely and worked as a trigger to being receptive to presence from their parents

“From being awakened until you come home from work, you are surrounded by people, which means that when you return home in the evening to an empty home it suddenly becomes so extremely quiet, this makes me extra receptive to presence” – (Participant)

3. DESIGN SITUATION 3: Indicate receptiveness through technical medium (telephone)
No good way of indicating or showcasing for our contacts whether we are receptive or not for communication through telephone.

“I put the phone away and turn it upside down so I do not see the screen light up, I do not see sms or calls and people who try to contact me may simply wait for a response” – (Participant)
9 Design Phase

In this phase of the design process the focus is on the three different design situations. The methods of brainstorming and sketching will be used to generate ideas on potential solutions.

9.1 Brainstorming

The brainstorming session was executed by dividing the three different design situations on separate post it notes. Ideas were generated and potential solutions in regard to the different situations design opportunities, (See figure 6.)

The session was conducted by brainstorming for each of the design situations at a time. A timer was set on 15 minutes for each of the brainstorming sessions, and this time were devoted to generating as many ideas as possible.

I gathered the different ideas and solutions on post it notes and placed them next to the design situation it was answering to.

The brainstorming session enables me to see which different design situation generates the most design ideas and design opportunities. With this in mind I narrowed down the design focus from three design situations to two.

From the brainstorming session, I conclude that the thesis will focus on the design situations “Dinner time equals family time” and “Coming home receptiveness trigger”. Based on the brainstorming session I argue that these two design situations result in more design opportunities and interesting design ideas that are plausible and can be conceptualized (See figure 7).
9.2 Sketching

At this stage, the ideas from the brainstorming session will be visualized through the design method: sketching. The sketches are divided under which of the two design situations they are belonging to. The sketching technique enables to explore design opportunities in a graphical way, also get a visual on how the ideas could be plausible to carry out. Depending on the results from the sketching, a decision will once more be taken to narrow down the design situations to one instead of two.

**Design Situation 1: Dinner time equals family time**

1) **Projected food with smell**

![Projected food with smell](image)

Physical plate that projects an illustration of food which releases associated smell of food. The plate is supposed to be triggered and start to project and smell when parent and child in separate household are making dinner. This would be an indication of
receptiveness for presence, enabling for wanted communication during the time the plate is projecting. It plays with the illusion of being together during this situation that the target group identified as family time.

2) **Interactive kitchen chair**

![Figure 9, Concept Idea 2](image)

The idea behind the interactive kitchen chair is simulating being together by having the chair vibrate during the opposed household’s dinner time. This gives insights into when we are having dinner, are receptive for presence. The chair that became empty when the child moved out, are with this idea now being “used” by the child again, results in the feeling of the child being present during the dinners once again. For the child, this idea would result in the same illusion. The normally static chair now “comes to life” which makes the household not feeling so empty, the parents are with you in motion during the dinners.

3) **Interactive cookbook**

![Figure 10, Concept Idea 3](image)

The interactive cookbook works by placing one of the books in one household, the other book in the other household. The cookbooks are identical and are interacting with each other. The Parents and children use the books to indicate for each other when they are cooking dinner, and also what they are making. When they are opening the book on a page, this would trigger the same cookbook in the other household opening the book to the same page spread.
4) **Kitchen sounds**

![Image of kitchen sounds](image1)

*Figure 11, Concept Idea 4*

Illustrating the sounds that are common in a kitchen when you are preparing and cooking dinner. By the use of sound that triggers at each other’s household when it is dinner time, we are indicating what we are doing and also relating back to when the focus group lived in the same household and the sounds from the kitchen relates to dinner and therefore family time.

5) **Tracking kitchen modules**

![Image of tracking kitchen modules](image2)

*Figure 12, Concept Idea 5*

When interacting with kitchen artefacts (Oven, freezer, microwave etc.) lights in opposed household will be triggered on the same artefacts. Subtle way of showcasing the other parties’ movement in the kitchen, identify that dinner is being prepared and that we therefore are receptive to communication.
Design Situation 2: Coming home, receptiveness trigger

1) Illuminated miniature house, art installation

![Figure 13, Concept Idea 6](image)

Miniature art installation of a house, the installation has two modes, illuminated or darkened. The installation is placed in both the child and parents’ household and are triggered by the others front door. When the door is opened from the outside, someone is coming home, the miniature house will illuminate. Indicate for the parents and child that the other is in a physical space (at home) where they are receptive for presence. Vice versa, when the front door is opened from the inside, you are going out, this will turn off the miniature house, darkening it, indicating for each other that you are in a physical space where you are not receptive for presence.

2) IoT, moving lights

![Figure 14, Concept Idea 7](image)

By the use of your smartphone and triggers in the rooms of your household, the phone knows in what room you are in and this will be showed in the opposed household by light indications. For example, if the child is in his living room, the living room at the parents will light up. Since the households’ layouts very rarely are the same at the child and parents, this will only work in rooms that are available in all households (kitchen, toilet, bedroom and or living room). This is not only an indication whether we are at home or not, it gives us insights into our lives, and results in us feeling present since we get insights into our everyday lives.
3) **Interactive doormat**

*Figure 15, Concept Idea 8*

The doormat would indicate whether we are at home or not by projecting our shoes. If the child or parents are home, their shoes would be visible on the doormat by projecting their shoes for the other household. This lets us know whether the child/parents are at home and therefore receptive for presence.

4) **Active picture frame**

*Figure 16, Concept Idea 9*

The picture frame as an artefact consists of a picture of the parents/child with their household as default background. The person (parents or child) are visible in the frame when they are at home and not visible when they aren’t home.
9.3 Narrowing down ideations

I’m choosing one of the situations to take forward and explore further with the target group. The two situations are being evaluated on their different ideas and which of these opens up for most design opportunities. Based on this I am choosing the ideas within the situation “Dinner time equals family time”. This design situation with its ideas will be brought forward and discussed together with the target group.

9.4 Interview with target group

Interviews with the target group were compiled to make a decision on which of the remaining 5 ideas have the most potential and why.

![Figure 17, Printed Sketches](image)

The interview was concluded with me printing out the five sketches with belonging explanatory texts (see figure. 17). The participants were asked to arrange the sketches from most promising to least. This followed up with a discussion, the participants arguing for their sake, explaining for me their thought process and why they arranged their ideas as they did.

I concluded discussions with 11 participants and created a point system in regard to their arrangements of the sketches. Depending on where, from top to bottom, the ideas were arranged they received points. 5 to 1 from highest to lowest. The point system gave me a fast and evident overview of my target groups preference to the different ideas.

![Figure 18, Ideas Ranking](image)

We can see that the concept “Projected food with smell” were the most prominent idea according to the target group (See figure 18). The participants argued for the idea since they thought it was:
- A clear and subtle way for transparency into each other’s life.

- The artefact simulates an appreciated situation, one gets to remember the feelings that arose when having dinner together.

- Overlooking distance, simulates being together.

- Interesting and different way of showcasing availability

- More than just an identification that we are present to communication. The artefact itself has the potential to create a sense of presence, its functions simulate that we are doing the activity (eating dinner) together, which results in us experiencing an increased presence towards each other.

I decided to include the target group in this decision making because they are the end-users. I need their opinion on the ideas and understand how they are relating to them. My discussion with them gave me arguments for why and how “Projected food with smell” were the most prominent idea. With this in mind the design process is moving forward with this ideated concept into the prototyping phase.

10 Prototyping

During this stage of the design process a prototype will be designed. The prototype will simulate the different features of the concept that will then be plausible to carry out and tested with the target group.

10.1 Prototype

The prototype is designed to explore following aspects of the concept:
- Will simulating having dinner together mediate an enhanced experience of presence between each other.
- Is this a good way of indicating when we are receptive to presence
- If communication when the artefact is showcasing receptiveness results in an enhanced mediated experience.
- Thoughts on smell as relaxed, non-instant, type of feedback.
- Insights in regard to the aesthetics of the concept.
- Feedback in regard to interaction of the concept.

The concept consists of a projection of food. This prototype is designed to mimic the food projection by the use of lights shining through an image of a dish (fig. 22). This is done by the use of an Arduino controlling two 12W led stripes (fig. 20), the lights together with the Arduino are placed inside the physical plate (fig. 19). The “projected dish” is a printed sandwich glued to a plastic circle that are placed on top of the physical plate, hiding all the Arduino components and enabling the lights to shine through the image (fig. 21).
The smell coming from the “food” are being controlled through a jar within the glass opening and closing (see fig. 23 & 24). Herbs are being put in the jar and through a servo motor connected between the hidden Arduino board and the jar, the servo are opening and closing the jar to either spread or contain the smell.

The prototype is being controlled through an ON/OFF button. When the prototype is turned on the plate starts to illuminate the dish and open the “smell jar”, when the button is pressed again (OFF) the smell jar closes, and lights turns off.

Showcasing of the prototype, how it works in practice (see figure 25).
10.2 User testing

The user testing was conducted in the homes of the participants. In total nine participants from the target group carried out the user test, three of them being parents and six of them adult children.

The technical design of the prototype has an ON/OFF button triggering the prototype to start. Since the button is not part of the concept, I wanted my testers to disregard it. This resulted in me being present during the user tests when the participant lived alone, so I was the one turning the prototype on/off enabling for the tester to disregard this technical limitation, since I didn’t want it to affect the experience. I chose to not be present during the user test when the participants were not alone, then I communicated with the other person when to start the prototype.

The participants were briefed on the test, depending on if I was present or not during the test, they were asked to write down their reflections on the experience. When I was present during the user test, I asked the participant to “think aloud”, describe their feelings, experience and thoughts. This technique gives me insights into what feature/functionality results in the testers perception. (Goodman, Kuniavsky, & Moed, 2013)

The user test was carried out for 30 minutes. The idea was to simulate the parent and adult child having dinner, therefor the prototype started, and the user test was conducted somewhere from 18-19 o clock.

10.2.1 Insights

Concern about variation in their cooking
The participants raised a concern about their variation in cooking. Their argument was that their lack of variation in cooking would lead to the same illustration of dishes for other party and the same smells for the most part. this raised the concern of the concept being tiring rather than intriguing. With this in mind they argued that the dishes should be randomized instead and the projection not illustrating what you are actually cooking.

Physical Plate counterproductive
The physical plate as part of the concept were a bit counterproductive. When you were having dinner “together” with the plate artefact it worked as a way to simulate closeness between the family members, the participants felt that the plate enhanced the sensation of being together with each other. At the same time, they explained how the plate resulted in yearning and sadness. This is because the plate is put out and present on the table all the time, at the empty seat where the parents/ adult child is supposed to sit. The participants explained how this sensation resulted in them reminiscing back on the situation of having dinner together as something that has passed and won’t happen again.

Messy kitchen space
The functionality of the artefact required it to be present on the dining table at all time, so you would notice the smell and projection. From an aesthetic point of view this wasn’t appreciated. It felt like the kitchen never got tidied up because there was always a plate left on the table.
Non-instant feedback
The smell as a way of identification varied in how it was received by the participants. During the user test it was mostly appreciated, they enjoyed how it was a very different and intriguing way to identify that something was going on. The smell was also a very fitting way to identify the sensation, it made sense that a smell of food was the trigger that dinner was served. The type of feedback a smell gives was also very appreciated; the participants enjoyed the not instant feedback that the smell gives. They also explained that since the prototype are simulating an ongoing process/situation, it made sense for the feedback to be ongoing as well. They also explained how in their everyday living the feedback are instant, the constant “plinging” of notifications on their smart products and how this type of feedback can be very stressful. Therefore they appreciated the smell as a type of non-stressful feedback. Some concerns of the smell were raised as well during the user tests. They explained how the strength of the smell could be a problem, the smell needs to be strong enough, so it can be detected when you are in another room than the kitchen, but at the same time not too strong/intense when you are in the kitchen, need to find the right balance of odor. During the user test some of the participants felt that the smell worked well when you weren’t eating, but if the smell were triggered at the same time you were having dinner it was disturbing, this is because the smell didn’t correspond with the taste of their own food.

Insight into each other’s habits
The participants explained how the concept resulted in them getting insights into each other’s everyday life and habits without the feeling of them prying.

Effect of the concept
The participants explained how they normally are longing for each other’s presence during dinner time, this concept worked as a solution for this, not only by indicating that it’s a good time to take contact, but also because of the effect the physical artefact in itself had. The participants explained that the artefact showcasing what was happening from a distance and then enabling them to “do it together”, this idea of having dinner together that the prototype mediated worked as a way for the parties to feel a different and more enhanced sense of presence between each other. This was done by manipulating a situation where we already are longing for each other’s company, and by the use of the prototype indicating that both parties are being present in that situation, a strong sense of presence were being mediated between them.
11 Iteration

The iteration is being based on the insights from the user testing of previous prototype. The feedback proved some aspects in need of improvement. The ones being taken into account are following:

- Randomizing dishes, not mimicking what you are cooking.
- No physical plate.
- Artefact only being visible when it’s “active”, don’t want the artefact visible at all times since it resulted in sadness as well as making the kitchen look untidied.

The prototype is being iterated by applying these improvements gathered from the user feedback. Also making the iteration keep the factors that the users appreciated and that had an effect of them experiencing presence enhanced.

11.1 Iteration, Sketching

The iteration is being sketched, visualizing and ideate how the feedback would be applied to a new prototype.

I want the artefact to be hidden when not in use and visible on the table when in use, this without having to physically interact with it (having the users hiding and putting it out themselves). This is enabled by hiding the artefact in clear sight, implementing the projected dish onto something that is always visible on the table. The projecting will therefore be made on a placemat. Having the placemat illustrating the projection (see figure 26).

When the projection is active the placemat will light up with the illustration, when it is turned off, you will only see the placemat on the table. This will answer to the feedback in regard to enabling the kitchen to look tidied. The idea is that this will also prevent the counterproductive experience from the previous prototype. Their feedback was that interacting with the prototype resulted in different experiences. When the artefact was being used, the users expressed how they experienced presence. When the artefact was not being used (the plate not projecting anything), the empty plate put out in front of the empty chair resulted in an experience of something good that has passed. The idea is that this iteration will simulate the same experience as the previous prototype when being used but at the same time solve the “negative” experience when not being used.

Figure 26, Sketch of Iteration
11.2 **Iteration, Prototype**

![Figure 27, Iterated Prototype turned ON](image)

![Figure 28, Iterated Prototype turned OFF](image)

The prototype consists of a tablemat with a sheared space where I have placed an iPad. The color choice of black is for the two artefacts (tablemat & iPad) to be able to blend in together to some extent when it is not active (see figure 27). This is done to simulate just an ordinary, not interactive, tablemat. When the prototype is activated, the iPad screen lights up with an illustrated dish within the tablemat (see figure 28).

11.3 **Iteration, User test**

The user tests were being conducted in the homes of our users. I composed the user group by revisiting five of the participants from the previous user test. Because of this I kept the brief very short. I was not present during the user-tests, so the participants took note on their experiences. I provided them with a pen and paper for them to reflect on. Out of the five participants, one of these were a parent and four of these were adult children.

The participants were asked to evaluate the prototype to what extent they felt it mediated presence, compare it to how they experienced presence without the prototype. They were also asked to explore how this concept adheres to the improvement areas discovered from the previous prototype.

The user tests were carried out over a two-day period. The participants had the prototype in their homes for two days, simulating two dinners. With this prototype smell wasn’t incorporated, without a notice system that the prototype would go of, the participants were instructed that the prototype would be active from 18-19 o clock.

11.3.1 **Insights**

The iteration was partially being designed to explore potential “solutions” to the issues brought to light from the previous user test. The users evaluated this iteration in regard to those issues as following:

**Visibility of the prototype.** How did this prototype adhere to the feeling of sadness and also tidiness created by the physical plate prototype, how will this design compare?

- The participants explained how the design of this prototype didn’t relate to the sad emotion of “longing for something that won’t be again”, the emotion generated from the previous prototype, where
the empty seat together with the empty plate mediated this emotion of something that has passed. This is because when the prototype wasn’t active it blended in with the other tablemats and therefore it didn’t mediate any type of emotion or experience. In relation to the tidiness of the kitchen space, this design was also preferred. Tablemats are always placed on the table; therefore, it didn’t feel out of place or relate to the urge of putting it somewhere else for the kitchen to be seen as tidied.

**Randomized dish projection**

- With the prototype projecting a randomized dish the participants experienced a more calm and positive feeling towards the other party’s well-being. The participating parent explained how the randomized dish projection, illustrated that their child ate “good and a lot of food”. Even though they were aware that the projected dish didn’t mimic what the child actually was eating, they still argued that this made them feel calmer, they experienced that their child took good care of themselves by the visualization of the child eating well.

In regard to how this prototype was being able to mediate an enhanced sense of presence, the participants argued that this concept succeeded.

The users expressed how this concept made them feel an enhanced sense of presence when having dinner together with the prototype. The concept simulated the activity of being together during the dinner situation, which resulted in them feeling presence towards each other because it felt like they were eating together. The prototype is indicating a situation where we are feeling presence, because of this situation making the target group to reminisce back dinner time as family time. Therefore the prototype being active when one from the relationship having dinner is indicating a good time to communicate. The participants argued that when they took contact when their prototype indicating the other party having dinner resulted in good conversations where both the parties were receptive for communicating resulting in the communication mediating presence. Even though the participants explained how the prototype in itself didn’t affect their perceived presence during the other times of the day. They argued that experience of presence mediated from the dinner time did “spill over” to the general experience of presence in the relationship. They explained that with the concept they had a situation during their days when they knew were going to be “together” with each other. This was enough. A participating young adult explained: “You don’t need, or want for that matter, the presence of your parents every hour of the day”.
12 Discussion

The initial aim of the project was to make a design contribution by exploring mediated experience in an uncharted field. The uncharted field being the relationship between parents and adult children who recently moved away and are living alone, and the mediated experience being presence. This topic was being explored by stating a research question “How can interaction design enhance the sense of presence in a distance adult child and parents’ relationship?”.

The design contribution concludes of gathered insights throughout the design process and conceptualizations of ideas that would serve as potential “solutions” to the research question.

The whole design process works as a contribution to the topic. It has identified an additional building block relevant to the theory “Social Presence Theory”, the building block being “receptiveness” and its impact on how mediated presence is being evaluated. This Thesis’s design process consists of a way that people can work with mediated experiences within this field, opening up for future possibilities on how the topic can be further explored.

With that being said the most prominent findings compiled throughout the design process being:

- **Finding: Interactive Communication tools**
  The interactive communication tools being used in today’s society have the capability to mediate presence almost to the same extent that a face to face conversation have.
  - **Finding influencing the field of the topic.**
    This finding is influencing the field because of the realization that mediated presence is not dependent on the tool itself. When working with mediated presence the focus is not on the tools themselves. Enhancing the tools already existing features will not enhance mediated presence because the tools are already able to mediate presence to such a high level, rather the focus should be on external factors. This also argues for the need to move the focus from the interaction tool itself when we are seeking to enhance mediated presence. This opens up for future work in regard to what additional factors plays a part in mediated presence between the individuals in the target group.
  - **What could have been done differently?**
    This thesis was fast to narrow down the design process to focus on one external factor (receptiveness). With a different approach, focusing on understanding which other external factors may play a role and to what extent would have been interesting. Also explore how these factors could be combined and implemented differently may have made this design contribution even more nuanced.
• **Finding: Receptiveness**
Concluded from the design process, the most important factor in how this thesis target group experience mediated presence is to what extent they are receptive to experience presence.

  o **Finding influencing the field of the topic.**
  This finding gives the topic additional information in how we evaluate mediated presence. The realization of receptiveness being a new “building block” in mediated presence, opens up for further exploration with receptiveness at the center of it all. Paving the way for a different approach when exploring and designing for mediated presence.

  o **What could have been done differently?**
  Through the design process the focus have been on using situations where the subjects were the most receptive to mediated presence, these situations were identified and later manipulated. Instead of focusing on situations when the participants already experienced a longing for presence, the project could have taken a different approach. This by focusing on situations where the target group felt the least receptive to presence. Future implementations exploring how receptiveness can be mediated during situations when the target group today are not receptive for presence. Interesting approach that has the possibility for a lot of design opportunities.

• **Finding: Smell**
Smell was viewed upon as an interesting way of notifying an event through feedback in non-instant type of way. Big contrast to how notification is usually being used today, with notifications usually intended to be instant.

  o **Finding influencing the field of topic.**
  The target group showed appreciation in regard to smell and how it was being implemented in a concept. The non-instant way of giving feedback that smell as a concept possesses is a different type of way to showcase something going on. This opens up the opportunity to explore further different arguments to scenarios where non-instant feedback is being preferred. Also, the exploration on how smell can have an impact of mediated presence from a distance, this because everyone has their own sense of smell and it’s something that disappears when moving from each other. Therefore, it would be interesting to explore the relation between each other’s sense of smell and to what extent it can be implemented to mediate presence from a distance.

  o **What could have been done differently?**
  I quickly realized that smell is a big field in itself. I decided to take a step back from this subject since it requires a lot more research for me to understand what value it can bring. With that being said I see potential in smell as its own concept when working with mediated presence. This is because research in different fields have seen to the impact of olfactory stimuli and its’ relationship to perceived presence (Ili, Neer, Beidel, & Jentsch, 2016). Since smell has proved to be influential in perceived presence this opens up for future implementations in how smell can be applied to the topic of
this thesis, explore how smell can be implemented in a distance relationship between adult children and their parents to enhance their mediated presence.

- **Finding: Parent vs adult child**
  The target group consists of two parties (parent and adult child), these parties have different needs when exploring their relation to mediated presence. The children felt it most important to receive presence from their parents when they were in need of it. Whereas the parents felt it most important to be available for their children and emit presence for them.

  - **Finding influencing the field of topic.**
    By the exploration for the needs of both parties in their relation, in regard for them to experience mediated presence. This thesis is creating an understanding for the field of which needs that matters, which needs to be designed for. This to be able to successfully enhance mediated presence. When designing for the parents the focus is on their capability to be available for their child and emit presence. When approaching this field by designing for the adult child the focus is on being able to mediate presence from their parents when the child is in need of it.

  - **What could have been done differently?**
    A different approach would have been to focus on one party in the target group. Focusing the design process to explore only the needs of either adult child or parent. This would have resulted in more focused findings, resulting in more tailored concepts for the needs of the explored party.

With these insights we are contributing to the field of the thesis as well as opening up for further exploration and future implementations.

13 **Conclusion**

This thesis has been taking a very user centered approach. This is because a small amount of research of the topic in relation to the field has been made. This thesis is designing for an experience for a target group that have not been thoroughly explored thus far.

The projects design process consists of research on how mediated experiences have been explored through other studies in different fields. By exploring other studies, this thesis has gathered an understanding of what plays a part when designing with mediated presence in mind also how different interactive communication tools are being evaluated in regard to what extent they are able to mediate presence.

The target group were being involved to explore and understand how the insights from these studies relate to them, relate to this projects target group.
Through various design methods, such as: Interviews, Cultural probe, sketching, brainstorming, prototyping and user testing. New insights were gathered to explore and understand what factors plays a part for the target group, for them to experience an enhanced sense of presence.

One of the most prominent insights is that today’s interactive communication tools have the capability to mediate presence in par with a face to face conversation. This by the tool’s capability of oral and visual interaction and the tools constant real time feedback, synchronous communication. With this in mind the thesis argues that the issue of being able to enhance mediate presence does not lie in the ability of the technical media, but rather it is depending on the individuals in the relationship. For mediated presence to be experienced as enhanced the focus therefore shifted to external factors. External factors such as “when?” are the young adult and their parents receptive for each other’s presence.

This insight paved the way for the project to focus on receptiveness. Since the initial research question “How can interaction design enhance the sense of presence in a distance adult child and parents’ relationship?” are depending on the receptiveness from the target group, a problem formulation was being refined “How can we enhance the sense of presence by designing for receptiveness in distant relationship”. With the design focus on the new problem formulation the participants gathered insights to when, how and why they were being receptive to presence from a distance. The target group identified two scenarios where they were most receptive to experience and emit presence. The scenarios being a time of the day, “coming home from work”, and also a daily situation, “having dinner”. A decision was made based on which of these scenarios consists of the most design opportunities. This resulted in the thesis to focus on the dinner situation.

During dinner time the target group were receptive to communication and experience presence from each other. This was because since childhood when the family lived in the same household, dinner worked as family time. It is an activity that they did together, and the longing for this experience “family time” was still being missed when they separated household. Through concepts user tested by the target group a discovery was made that by using the sentiment that dinner entails an enhanced sense of presence is being experienced between each other. Simulating having dinner together from a distance enhanced the sense of presence in two ways. It gave an identification that communication could be made during this time, because we are receptive towards each other during this time and because of the capability of mediating presence from today’s interactive communication tools, the communication enabled for the experience of presence to be perceived as enhanced versus when communicating during other times of the day. The simulation of having dinner together in itself resulted in the emotion of being together and that the missing party were present in the moment with them.
Bibliography


