

Niina Hautala

**CREATING EMOTIONAL VR GAME
NARRATIVE**
Experimental Game Design Research

Faculty of Information Technology
and Communication Sciences
Master's Thesis
April 2021

ABSTRACT

Niina Hautala: Creating Emotional VR Game Narrative – Experimental Game Design Research
Master's Thesis
Tampere University
Game Studies
April 2021

The main objective of this study was to explore how one can create an emotional VR game narrative. This was done by creating a VR game prototype that aims to evoke the emotional experiences of loneliness and social exclusion. The game Prototype was designed iteratively according to the Play Centric Design Process described by Tracy Fullerton (2014).

The chosen research method for this study was the Experimental Game Design research. This method was chosen because it suited the iterative and experimental nature of the research. During the research, the VR Game Design Process was carefully documented in research diary and the game prototype was iteratively created and playtested during six iteration cycles and final four playtests.

The first version of the game narrative was designed based on four theoretical categories. It was assumed that emotional game narrative is evoked by certain narrative elements, experience of presence and empathetic relationship with the game character. The first version of the game narrative was also based on authentic experiences that inspired the story of the game.

The first game narrative was playtested and iterated with the help of Experience Prototyping method. Four different experience prototyping sessions were held. Based on these playtests, the game narrative was iterated and improved.

After the Experience prototyping sessions, the actual VR prototype was made. The VR prototype was first playtested by three participants and improved after each playtest. Finally, the prototype was playtested by four final participants. After the final four playtests it was evaluated if the final prototype was successful in evoking emotional experiences.

Based on the observations, think aloud protocol, research diary and interviews, the game design process and final playtests were analysed and reported. The results of this research suggest that the game design process was successful in producing a VR game prototype that evoked emotions. The final VR game prototype was able to evoke emotional empathy in three of the final four participants and cognitive empathy in one of them.

The results suggest that the game prototype was able to evoke emotions because it was able to evoke empathy towards the player character. Empathetic emotions were evoked by narrative elements such as environmental storytelling, immersive experience of presence and because the game narrative had felt authentic to the players.

Keywords: Experimental Game Design, Playcentric Design Process, Emotions, Empathy, Game Narrative, Experience prototyping

The originality of this thesis has been checked using the Turnitin OriginalityCheck service.

Table of Contents

1	INTRODUCTION.....	1
2	THEORETICAL FRAMEWORK.....	3
	2.1 Emotions in games.....	3
	2.2 Presence in games.....	6
	2.3 Game Narrative.....	8
3	METHODS.....	13
	3.1 Experimental Game Design.....	13
	3.2 Playsentric Design process.....	14
	3.3 Experience prototyping.....	14
	3.4 VR Game Prototype.....	16
	3.5 Data Collecting.....	16
	3.5.1 Research Diary.....	17
	3.5.2 Playtests and Experience prototyping.....	17
	3.5.3 Think aloud protocol.....	17
	3.5.4 Thematic Interviews.....	17
	3.6 Data Analysis.....	18
4	ANALYSIS.....	19
	4.1 Experience Prototyping Sessions.....	19
	4.1.1 Iteration Cycle 1.....	19
	4.1.2 Iteration Cycle 2.....	22
	4.1.3 Iteration Cycle 3.....	25
	4.2 The VR Prototype 1.....	27
	4.2.1 Iteration Cycle 4.....	27
	4.2.2 Iteration Cycle 5.....	30
	4.2.3 Iteration Cycle 6.....	32
5	THE FINAL PLAYTESTS.....	34
	5.1 The Narrative Elements.....	35
	5.2 The Experience of Presence and Immersion.....	38
	5.3 Empathy.....	39
	5.4 Emotions.....	40
	5.5 Authenticity.....	41
6	CONCLUSIONS.....	43
	6.1 Overview of the results.....	43
	6.1.1 Research Questions.....	43
	6.2 Final Reflections.....	47
	REFERENCES.....	49
	APPENDIX 1. THEMATIC INTERVIEW QUESTION.....	52

1 INTRODUCTION

The idea for this research was first born over a year ago. I found myself from a situation that suddenly reminded me of my past experiences. Along with the flood of memories, also awoke an array of powerful emotions that I had already forgotten about. This experience got me thinking, could I awake similar kind of emotional experience in others through a game narrative?

I decided to explore the idea further by examining how one can design an emotional VR Game narrative. This was done by designing and creating a working VR game prototype that strives to evoke the feelings of loneliness and social isolation in a player. The chosen research method for this Master's thesis was the Experimental Game Design method. Experimental Game Design is a research method which utilizes game design process as a research tool. The purpose of Experimental Game Design is to create a game prototype in order to research a certain topic of interest and to gain new knowledge about it (Waern and Back 2015, 341). Therefore, I believed that the best way to study a Game design process is to utilize the Experimental Game design method.

During the game design process, I also utilized Experience Prototyping Approach as a part of the design process. Experience prototyping is an interactive approach for communicating design ideas in real life (Buchenau & Fulton Suri, 2000). In this research, the experience prototyping was utilized by arranging physical prototyping sessions to simulate the designed game narrative. Based on the sessions I used the gained knowledge to create a digital prototype. It was also important to determine through play sessions how the physical and digital game narrative could be improved and if they were indeed found to be emotional experiences by the players.

I decided to explore the design of emotional game narrative because I believe that emotions have a very profound role in games as well as in our lives in general. My best game experiences have been emotional ones and they have affected my life outside the games, and I do believe this applies to many other people as well. However, the process of creating emotional game narratives has not been widely researched with experimental methods. Therefore, I believe that the topic of this research is well worth exploring in the field of Game research.

According to Coulton & Hook (2018, 98) Research questions for design research are usually somewhat open rather than specific. On that note the research questions for my Master's Thesis are not clear hypotheses but rather directional research questions. Here are the following three research questions for my study:

1. What kind of design choices can be used to create an emotional first person VR game narrative?
2. How can experience prototyping sessions help create an emotional game narrative for a VR game?
3. What kind of principles should be taken into consideration when designing an emotional VR game narrative?

2 THEORETICAL FRAMEWORK

The aim of this research was to design a game narrative that will evoke emotional experiences in the players. This was attempted by creating a game prototype that is based on specific design choices. These choices were derived from the theory that will be introduced in this chapter. The theory in this chapter can be summarized in the Figure 1 below.

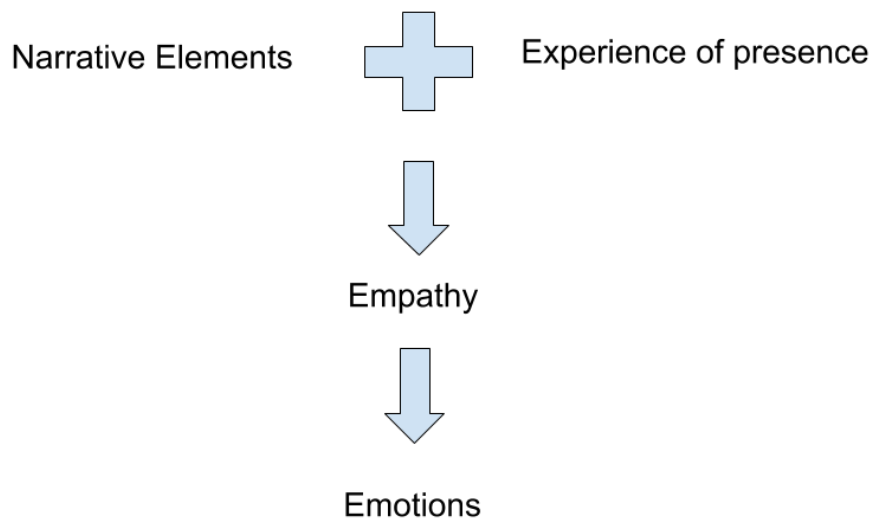


Figure 1. Theory behind the Emotional Game Narrative Design

According to the theory presented in this study, the VR Game *My Story* was designed based on three narrative aspects. First of all, the game was designed to consist of such narrative elements that would evoke emotional responses in the player. Also, the game was designed to support the experience of presence with VR environment and narrative. Lastly the game was designed to evoke the experience of empathy by trying to encourage the player to relate with the game character and their narrative experiences and emotions. In the end these three factors were assumed to lead to an emotional game experience.

2.1 Emotions in games

Emotions in games are usually perceived from the perspective of enjoyment or entertainment. In other words, it seems that the discussion over emotions in games is usually focused on the feelings of enjoyment or fun. (Hemenovera & Bowman, 2018, 3).

In this study I am interested in emotions on a larger scale than just the feelings of “fun”. However, this raises the question of whether games do have room for a wider spectrum of emotions?

Hemenovera & Bowman (2018, 9) suggest that games indeed do have room for a large scale of emotions. It is even important to study the role that emotions have regarding games. This is because emotions have a great impact on our society and games are a media that evoke emotions. Therefore, we should be interested in what kind of impact games can have in society. Games can for instance evoke positive emotions such as gratitude or compassion and promote self reflection and introspection.

According to Hemenovera & Bowman (2018, 4) in addition to the feelings of joy, games can elicit more discrete feelings such as horror, guilt or sadness. These kinds of feelings are possible when the player is so engaged with the game that they can experience genuine emotions evoked by the game experience. The aim of this research was to create discrete emotions such as loneliness, sadness and compassion towards the game character. But how is it possible to create such an engaging experience that a game is able to evoke emotional experiences in the player?

According to Hemenovera & Bowman (2018, 1-2,4) Game developers have made conscious efforts to create emotional games in recent years. Emotional experiences have been attempted in many ways, for instance by creating engaging game stories. One of the ways to experience emotions in games is for the players to identify and engage with their game characters. This can happen to the extent that they are able to adopt the very feelings of the game characters.

Video Games seem to have the potential to arouse powerful emotions and even compassion in the player. Wulansari et al. (2020, 11) found in their research that games can indeed help players experience another person’s perspective and even grow the player's empathy skills. According to Wulansari et. al (2020) games are a form of media that has the power to evoke powerful emotions and the experience of empathy.

It seems that emotions and empathy can be seen as a closely connected phenomena in video games. According to Papoutsis & Drigas (2016, 1) experiencing empathy means that a person can understand another person’s emotions and is able to share their emotional experience. The concept of empathy can be explored even at a deeper level, however.

According to Belman and Flanagan (2010, 8) there are two types of empathy. Cognitive empathy means that a person is able to understand another person's experience, but this empathy does not involve emotional experience. Emotional empathy on the other hand means that emotions are involved in the experience. Both types of empathy are usually needed to reach a positive change in attitude or behaviour. In this research I am mostly interested in the emotional empathy and how it can be evoked with a narrative game experience.

Wallentin et al. (2013, 137-138, 150) connect empathy with narrative experiences. They call this concept narrative empathy. Narrative empathy means that narratives are able to convey emotional experiences through empathetic processes. In other words, when we empathize with a narrative story, we experience emotions.

According to Wallentin et al (2013, 139) there are two kinds of empathetic emotions that can be induced by narratives. The so-called pre reflective responses mean that a reader can empathize with the story on a very personal level because they experience the emotions in the story as their own feelings. This can also be called an affective empathy. Reflective Empathy on the other hand makes it possible for the reader to imagine what kind of feelings the characters are going through even though they do not experience the same feelings personally.

In this study I was interested to see if the designed game narrative will evoke either affective or reflective empathy experiences. Either one of the empathetic emotions is desirable. However, it could be questioned, are game narratives able to evoke empathetic emotions as well as the more traditional forms of narratives?

Inducing Empathy in video games is actually not a new phenomenon. According to (Belman & Flanagan (2010, 5) there have been plenty of games that were created especially for the purpose of awakening empathy in players. The goal of games like these is usually to help players understand other people better. Games are particularly suitable for this purpose since they can offer a way to experience the viewpoint of another person in an engaging way.

Papoutsi & Drigas (2016) agree with the notion that empathy can be induced especially by taking another person's perspective in a game and by identifying with the game characters. According to Kors et al. (2016, 92) empathy can be however aroused in many other ways in games as well. Empathy can be aroused through interactivity, goals as well

as with various opportunities for role taking. All in all, games can be seen as an interesting instrument for evoking empathy.

Empathy and games seem to be a great match then, but some might ask, for what purpose should we create games that evoke empathy? According to Belman and Flanagan (2010, 7-8) empathy is an important skill to improve since empathy has been proven to improve positive behaviour and attitudes. On the other hand, the lack of empathy has been proven to link with more negative behaviour and attitudes. According to Papoutsis & Drigas (2016) Games also seem to have the potential to develop our insight and teach us socioemotional and prosocial skills as well as empathy.

In conclusion, it might be said that empathy in games can improve our personal growth and make us more broad minded. Therefore, there seems to be many reasons and ways to induce empathy and emotions in games. According to Hemenover & Bowman (2018, 4) there is however one more important factor that needs to be considered when creating empathetic game experience. This factor is the feeling of presence. Hemenover and Bowman (2018, 4) even claim that the feeling of presence is so important that we are not able to evoke emotions or compassion in a game without experiencing immersion or presence first. Next, I will explore how the experience of presence can induce empathy and emotions.

2.2 Presence in games

The concept of presence is often paired with the concepts of immersion and flow. According to Weibel & Wissmath (2011, 1) flow, immersion and presence have clear differences, however. Flow or immersion is often seen as an active involvement in a certain activity. Presence can on the other hand be seen as a form of spatial immersion in a virtual environment. While the concepts of immersion and flow can be closely related to the concept of presence, in this chapter I am going to concentrate specifically on the concept of presence and its role in an emotional VR game narrative.

Presence in video games has become quite an intriguing subject for video game research lately. Creating even more vivid and interactive games has become an attractive interest for many. (Tamborini & Bowman 2010, 87.) But what exactly is presence in video games? According to Bohil et al. (2009, 2) presence in video games means that a person is so absorbed in the video game world that they lose track of their physical reality and

begin to experience the virtual world in a very similar way to the real world around us. According to Weibel & Wissmath (2011, 2) VR technology is an especially powerful tool for creating a compelling and vivid experience of presence.

Tamborini & Bowman (2010, 87-89) argue that there are three aspects of presence in video games. The first one is the “Spatial presence”. Spatial presence means that the player experiences are actually located in the virtual world. The second aspect or presence in video games is the “Social presence”. Social presence means that the player feels as if they are with actual people when they are associated with virtual game characters. The third aspect is the self-presence, which means that the player is able to experience the game world through the game character they are playing.

The game *My Story*, which I created for this thesis project, was created with VR technology to enhance the experience of presence as much as possible. It was especially important to try and evoke the experience of “self-presence” so that the player could empathize with the game character whose role they are playing. However, this goal raises more questions. What kind of design choices can possibly raise the experience of presence in a VR game?

According to Tamborini & Bowman (2010, 90) the experience of presence can be enhanced with a concept called “natural mapping”. Natural mapping allows the player to interact with the game as naturally and intuitively as possible. In a VR game this means that the player is able to interact with the game world with similar kinds of gestures as in real life. For instance, in a VR game an object can be grabbed with a handheld controller instead of a mouse.

Another way to evoke the experience of presence in VR games is to pay attention to the VR environment. An engaging VR environment is one that captivates the player by lively surroundings, natural body based interactions as well as by surrounding the player with authentic sounds and convincing visuals. (Bohil et al. 2009, 3.) In other words, it is important to try and create a game environment that is relatable and believable to the player in order to achieve the experience of presence in a VR game.

Creating an engaging and relatable VR environment for the *My Story* was one of the goals of the game design process. However, since this research is exploring the possibility of evoking emotional experiences especially, it could be asked, how can the experience of presence help induce emotions in a VR game?

According to Kors et al. (2016) the experience of presence is a powerful tool for evoking emotional experiences especially in a VR environment. This is because the immersive VR experiences are especially effective in eliciting empathetic experiences in a player. VR experiences encourage the player to take another person's perspective and experience their emotions. This way the player is able to empathize with their player character. (Kors et al. 2016, 100.) In other words, VR environments can help players to "walk in someone else's shoes" and experience another person's experiences in quite a vivid way.

Experience of presence can help players to relate to another person's perspective, Hemenovera & Bowman (2018, 13) also argue that VR technology has the ability to evoke strong experience of presence and therefore powerful emotional experiences.

The experience of presence in VR context seems to elicit emotional experiences by allowing the player to experience empathy towards the game characters. In addition to this Kors et al. (2016, 92) claim that the feeling of presence can also be born from an engaging narrative. Blom & Beckhaus (2005) agree with this notion. They claim that the very purpose of narrative has always been to awake emotions, and VR is particularly suitable for conveying emotional stories. Next, I will explore the concept of game narrative further.

2.3 Game Narrative

The concept of Game Narrative is in a very important role in this research. However, game narrative is quite an abstract and broad concept and before it can be discussed, it should be properly defined (Juul, 2005). Therefore, the first aim of this section is to define what the concept of game narrative stands for in this study.

For many years now there has been an ongoing dispute about the narrative nature of games. According to so-called "narratologists" games are always narrative in some way. This kind of statement has led to a different kind of party called "ludologists". Ludologists believe that games should be considered as a separate entity from game narratives, focused more on game mechanics and other elements that are inherent for games. (Frasca 2003, 92.)

According to Frasca (2003, 92) this kind of opposition is however more of a misunderstanding than an actual debate. Frasca states that ludologists do not necessarily

deny all narrative elements in games and games do not necessarily have to be narrative. Salen & Zimmerman (2004, 379) argue that the debate whether all games are narrative or not is indeed not fruitful when actually designing games.

In this research I agree with the former notions and will not delve further into the discussion whether all games are narrative or not. Instead, I will state that some games are narrative and the game created for this study is one of them.

The concept of Game Narrative naturally involves the story of the game. However, this study will examine the concept even further. According to Salen & Zimmerman (2004, 404) a Game narrative is quite a complex system that contains many more elements than just the game story. Jenkins (2004, 129) also sees game narratives in a more broader sense. According to Jenkins, games have the potential to convey stories in many ways. For instance, the game environment can be a narrative space that has an important role when designing game narrative. Therefore, game designers do not simply tell stories. Instead, we should consider designers as “narrative architects”.

According to Jenkins (2004, 126-128) game stories are not simply told to the player. Rather, game stories are constructed in the players' own minds. This is possible because constructing a game narrative is an interactive process. Players can find clues about the game story and the characters by exploring the game environment. This way they can make interpretations about the game narrative. Game narrative can be seen as a kind of a puzzle that the player needs to put together in order to form the game story in their minds.

It makes sense to examine game narrative as a complex phenomenon instead of a synonym to a game story. However, this also raises a question. How should game designers create such complex systems as game narratives?

According to Salen and Zimmerman (2004, 404) In order to create a successful game narrative, one needs to take into consideration different elements of the game narrative. These elements contain the most obvious components such as the game story and characters. However narrative elements also contain components such as the audio world, lighting, and user interface of the game. All these elements together help build the narrative mood and experience for the player. (Salen & Zimmerman, 2004, 404). In this study, I consider the game narrative to be this kind of complex system.

According to Salen & Zimmerman (2004, 404) to create a game narrative, one needs to create a narrative system that holds many different elements. Together these narrative elements create meaningful experience for the player. One might then ask what exactly are these narrative elements? According to Salen & Zimmerman (2004, 401) there is plenty of potential for narrative elements in games. Any part of the game can be narrative as long as they have the potential to communicate the game story for the player. Therefore, narrative elements are not just the story of the game or the cutscenes, but any representational narrative element, or as Salen & Zimmerman call it: “a narrative descriptor”. (Salen & Zimmerman (2004, 401).

In this study I am especially interested in five specific narrative elements and how they can be designed in a game context to create emotional narrative game experience. Next, I will examine these narrative elements.

1. Audio World

The audio world in games communicates narrative meanings to the player. Not only does the audio world create specific moods in the game environment, sound effects are also used to communicate narrative meanings of objects, characters and events. (Salen & Zimmerman, 2004, 399). For instance, sound effects can communicate specific narrative events such as approaching threats.

Music is also a powerful way to create a specific mood in a game. It can also guide the players motivations and actions. (Schell, 2008, 291.) Music can then have a powerful impact on a player's emotions during the game experience. Therefore, the game narrative that was created for this study, benefited greatly from music that was meant to create specific moods during the gameplay.

2. Game Environment

Salen and Zimmerman (2004, 390) call the game environment “Narrative space”. This means that the game does not just take place in a specific environment. Rather the game environment communicates specific narrative meanings to the player. Game environment can for instance change in a metaphoric way in order to reflect player’s choices or the mood of the game. (Salen & Zimmerman, 2004, 392).

Jenkins (2004, 123) Also sees game environments as places where the player can discover the game narrative. Jenkins talks about “Environmental storytelling” which means that

game environments in themselves communicate game stories and narrative meanings to the player,

With the VR game *My Story* that was created for this study, the aim was to create a game world that could utilize environmental storytelling. The aim of the environmental storytelling was to convey the emotions of the player character to the player. For instance, I created a distorted hallway in the middle of the space in order to describe the lonely and confused emotions of the game character.

3. Story

Game story is naturally an important part of game narrative (Salen & Zimmerman, 2004, 401). Game stories, however, can be seen as a one element of the game, rather than as a detached part of it. The purpose of the game story combined with the interactive game mechanics is to produce experiences for the player. (Schell, 2008, 262-263.)

In *My Story*, the game story was in a very important role. It was told through the dialogues that are heard in the game, but the story is also embedded in the other elements of the game as well. Therefore, the game story will be considered to be part of the game narrative in his study.

4. User Interface

User interface can be seen as a one part of a game that gives the player guidelines on what is possible for them to do and what is not (Schell, 2008, 286-287). In this research, the game UI is in an important role since the designed game is a VR game and the VR interfaces have quite unique features.

Rachevsky et al. (2018, 10) found in their research that especially VR games have a great potential to create a strong feeling of presence and immersion in a game. A VR game that has as natural a user interface as possible was found to create more immersive game experience. For this reason, I chose to create a VR game especially. My aim was to create a game that feels as natural as possible. This way the game could let the player experience the game character's experiences and evoke similar feelings in the player that the character is going through.

5. Characters

Game characters have an important role in the game narrative because the characters enable the player to experience narrative emotions (Frome, 2007, 832-834). According to Salen & Zimmerman (2004, 453) the player can indeed have an emotional bond with their player character because they are able to relate to them in an immersive way.

In the game *My Story*, the characters will be in a very important role. The main purpose of the game will be to communicate the emotions and experiences of the main character to the player.

In this chapter I have introduced the theoretical background that was utilized when designing the game narrative for the *My Story*, VR game. In the next chapter I will explore the research methods that were used in this study.

3 METHODS

For this study, I chose to utilize the Experimental Game Design as a research method. I chose this method because I was interested in the game design process specifically, and experimental game design method suited this research well in that perspective. In my study I designed and developed a narrative VR game that was aimed to create emotional experiences in the player. During the design process I utilized Experience prototyping as a game prototyping tool as well as a VR game prototype.

The data was collected via semi structured thematic interviews, playtests and observation, research diary and think aloud protocol.

3.1 Experimental Game Design

According to Waern & Back (2015, 342) Experimental Game Design enables researchers to create a deeper understanding of game design. For one to be able to use Experimental Game Design as a research method, it is not enough to simply experiment with a game design. In Experimental game design, the purpose of the design must be to extract more knowledge and understanding of games and the principles of game design (Waern & Back 2015, 341).

In the planned research, my aim was to explore how one can design a VR game narrative which awakes emotions and specifically the experiences of loneliness and social isolation. For this purpose, I decided that the best way to research a game design process was to design and develop a narrative VR game prototype while following the principles of Experimental Game design, introduced by Waern & Back (2015).

Experimental Game Design does not yet have specific guidelines as a research method. However, Waern and Back (2015) have brought up some instructions which I decided to follow in my research. First of all, Waern & Back (2015, 344) point out that the purpose of Experimental game Design is to apprehend how certain design choices affect the player's experiences instead of concentrating on how "entertaining" or "good" the game design is. I found this very important in my study since I am most interested in the psychological experiences that the game might evoke instead of the entertainment value of the game design.

Waern & Back (2015, 350) also point out that even though Experimental game design research can be done in quite an open way, it is still important to pay attention to the careful documentation of the process and the possibility of unanticipated research results. It is also important to note that the game that is researched, must be in comprehensible and playable form in order to achieve plausible research data. Waern & Back (2015, 350) also bring up that a great resource for Experimental Game Design research is the Tracy Fullerton's Playsentric Design process (2014).

I decided to follow these instructions by documenting my research process in my research diary and by recording the play sessions and interviews. I also tried my best to create clear and understandable game prototypes and decided to utilize the playcentric design process during this research.

3.2 Playsentric Design process

In this research, I used the playcentric approach when designing the experimental game prototype as well as the VR prototype. The Playcentric approach to game creation is a practical method for creating games. Playcentric approach concentrates on the player's point of view and utilizes prototyping, iterating and playtesting as a game design methods. (Fullerton, 2014).

In this research I created the two game prototypes in an iterative and playsentric way. After each design cycle I improved the design based on the player experiences. This was very important because in a playcentric approach, the player is the very central factor in the game design process and the designer's job is to see that the player's voice is heard. (Fullerton 2014, 2-3).

3.3 Experience prototyping

During the research I utilized the experience prototyping approach. According to Schell (2008) the aim of Game Design is to create Experiences. Therefore, I found that experience prototyping can be a good way to research a game design process.

For this research I arranged four physical prototyping sessions where the playtesters played the game prototype in real life. The purpose of the Experience prototyping sessions was to simulate the game narrative and game experience as closely to the VR experience

as possible. The purpose of the sessions was to utilize the experience prototyping sessions as a tool for the game design process.

The first version of the experimental game prototype was based on the theory I had gathered about game narratives, emotions, and empathy. I attempted to create believable characters and story and paid attention to the music, and the objects that were used in the experimental game prototype. The game story was written based on my own experiences and experiences that I had heard or read about. The aim of the story was to feel believable and evoke empathy towards the player character.

The first narrative prototype consisted of four imagined rooms that were connected to each other in chronological order. The first room being the child's room, the next one being a living room, the third one being a classroom and the final being a school corridor. Each room represented a different time period from the player character's life. My role was to describe each room for the player, and they imagined exploring the imaginary space. Each room contained a few actual objects that triggered monologues or dialogues to describe the life of the game character. One of the interactable game objects can be seen in the Picture 1, which was taken at a physical prototyping session. The players were told to imagine that a teddy bear is sitting on a bed.



Picture 1. Photo from the physical prototyping session.

The Experimental prototype sessions were held once indoors and three times outdoors. The players were instructed to imagine that they were playing an actual VR game from the first-person perspective. The participants were instructed to emphasize with the game story and comment their thoughts out loud.

Each physical session was recorded with action camera that was fixed in the players forehead. After each session I also interview each player with semi structured interview. I iterated and improved the prototype after each test cycle and changed the story contents from monologues to dialogues based on the feedback and observations.

3.4 VR Game Prototype

For the research, I designed and developed a narrative VR first-person game. The Game was developed mostly with Unity Game Engine, Steam VR plugin and Blender software. The game experience was short (about 15 minutes) and abstract and artistic. The aim of the game prototype was to awake emotional experiences in the player through the game narrative. Narrative elements were woven into the game by the game story, the game environment, player interactions and audio world. The player was able to interact with the game world by picking up objects and examining them in their hands as well as by teleporting from one place to another.

The first VR prototype was created based on the results I had acquired from the Experience prototyping sessions. At first, I created four 3D rooms with most important objects. Then I implemented a first-person VR character controller and set up the ineractive objects in the scene. When the first version of the VR game prototype was finished, I was able to have the first playtest session.

I improved the prototype after each playtest in an iterative way. I ended up adding an intro room for the game, as well as improving lighting and textures and optimizing the game more. I also improved the UI, audio, game flow and added more objects to the scenes. The narrative story however stayed mostly the same during the VR prototyping process.

3.5 Data Collecting

For the purposes of the research, I gathered data by four ways:

3.5.1 Research Diary

During the design process I kept a research diary. In other words, I wrote down my thoughts and experiences during the whole research process. I used my research diary reflections as one source of my research data.

3.5.2 Playtests and Experience prototyping

According to Fullerton (2014, 248) playtesting is a vital tool for making sure that the game is able to realize objectives that the game designer has set for the player experience. During this research, playtests were used for this purpose but also as a data collecting method. During the Experience prototyping sessions, the players were “playing” a game prototype in physical space and acted like they were playing the actual game in VR world. I used the experience prototyping method at the very early state of my game concept prototyping. Later, the participants playtested the actual VR prototype. During both physical and VR play sessions I observed the play sessions and gathered video and audio footage for the research.

3.5.3 Think aloud protocol

I utilized the think aloud protocol during the playtests. According to Knoll (2018, 189) Think aloud protocol is a usability research method where the user is asked to describe their thoughts out loud. Think aloud method is a very useful tool in game research because it can explain player behaviour very well (Knoll 2018, 191). I utilized this method by asking players to describe their experiences during Experience prototyping sessions. I also showed the final four VR players video capture of their play session and asked the participants to describe their thoughts about their play experience afterwards. This helped the participants to remember their play experience in a more vivid way.

3.5.4 Thematic Interviews

After each playtest, I collected player experiences with thematic interviews. According to Bromley (2018, 173), interviews are a very central method for finding out why players act like they do and how games work. I utilized semi structured thematic interviews so I could see if the game iterations had succeeded in waking emotional experiences or not and how the next iterations should be improved.

3.6 Data Analysis

For this research I analysed four different kinds of data. I utilized all of the data sources during the game design and development process. During the game development cycles I read through my research diaries and the interviews and I also went through the videos. I extracted the most relevant sections from the data and was then able to use them to improve each game iteration.

When the final play sessions were finished, I then transcribed all of the interviews and coded the data based on cohesive themes. I was then able to write down each of the research cycles in chronological order with the help of research diaries, interviews and video footage. Finally, the last four interviews were transcribed and coded based on cohesive themes which rose from the data. The final themes formed five categories that were seen to contribute to the emotional narrative experience.

The final analysis was guided by the chronologically advancing game design process. The final four interviews were, on the other hand, analysed based on emerging themes to explore if the final game prototype was successful in evoking emotions. The purpose of the analysis was to answer the research questions that were presented in the introduction.

4 ANALYSIS

4.1 Experience Prototyping Sessions

In this section I will present three iteration cycles. Each cycle included a different version of the experience prototype. The prototype was iterated and improved based on the feedback I received from the physical play sessions. The key findings from the interviews are illustrated here with a selected interview quotes. The excerpts have been translated to English, but the original Finnish-language quotes have been included as well to preserve the nuances. I have changed the actual names of the participants to pseudonyms.

4.1.1 Iteration Cycle 1

The very first experience prototype session was held at my home. The session was held in March 2020. Covid19 had recently emerged and therefore the government encouraged everyone to practise social isolation. Therefore, I asked a person I know to be my first participant in order to keep with my research schedule. The participant is called Jasper in this research.

The prototype session began with me positioning the required game objects in three different rooms at my home. I also made sure I had the game narrative at hand as well as the game music. At the beginning of the session, I gave instructions to the participant. We settled on rules that I was playing the part of the computer and the player would imagine playing a VR game.

The player was able to move around in a specific room and grab specific objects. The player had an action camera fixed on his forehead so that the session would be recorded for later analysis if needed. The camera was also designed to imitate the experience of carrying technological solution similar to the VR head mount. I made the choice not to record the player themselves because I felt it could have affected the players concentration and ability to immerse themselves in the situation.

The Experience prototyping season began from the first room. I described the room to be a child's bedroom. The player was able to interact with a blush toy, picture frame, cardboard box and a ball. Whenever the player picked up a specific object, I read aloud a piece of narration that described a specific event and emotions that were connected to the object. For instance, when the participant picked up a teddy bear, he would hear how the

blush toy was given to the narrator when she was a child and how she had felt in the situation.

When the player had interacted with three specific objects, I told him that a door had opened, and we moved to another room. In the second room I asked the participant to imagine they were in a kitchen-living room. The player was able to interact with an empty birthday invitation, book, and a backpack. In the third room the player was described to be in a classroom. I described that there was a chalkboard at the wall and a note on the player's school desk. As soon as the note was picked up, I changed the music to reflect the sad atmosphere. Picking up the note also resulted in changing the room in the game to a school corridor. At the corridor, the player was able to interact with a diary and a book. After this he was described to be able to see a glowing character and he could proceed to approach the character. When the player reached the character, he was told how the character found a new friend and the game ended.

After the Experience prototyping session, we had a semi structured thematic interview with the player. The interview was held in Finnish in order to get the most authentic response from the participants. The interview was recorded and later on transcribed and the most important parts of it were translated to English. The transcription was coded based on themes that rose from the data.

Based on the interview, the participant found the game prototype interesting, and he reported that the story was easy to comprehend. At the same time, the story was however deemed to proceed too quickly at the end. This caused the game narrative to feel implausible.

Jasper: *“sieltä selvästi tulee se tarina esille, että tarinasta saa selvän, että mihin ollaan menossa. Loppu oli aika semmonen nopea, että miten se yhtäkkiä tapahtu, muuttu se niinku väri siinä hommassa eli ensin oli synkempi ja synkempi ja synkempi ja sitten hetkessä tapahtu ihme ja sitten kaikki parantui yhtäkkiä, se oli aika nopea. Se voisi olla hitaampi se mystinen parantumisprosessi.”*

Jasper: *“The story was clear, and you could see where it was headed. The ending was pretty fast, how it suddenly happened. The mood changed pretty fast, first it was darker and darker and darker and then a miracle happened in an instant and then everything healed suddenly. It happened pretty fast. It could be slower, that mystical healing process.”*

The implausible ending was something that left the player discontent with the experience. Therefore, I decided to pay attention to the ending of the story in the future and try to iterate it for the next cycle.

When asked how the experience felt, the player reported that he had felt melancholic emotions on behalf of the player character. At the same time, he had felt that the experience was “pretty heavy”, and he wouldn’t like to play the prototype “for fun”. The fact that the play session felt “heavy” and not “fun” could be a sign that while the player indeed experienced emotions, he did not deem these emotions to be enjoyable. When asked how the experience could be improved, the participant reported that the game environment could be improved by adding elements that would “lighten” the mood of the game.

Jasper: *“Miljööstä löytyis jotain sellasia juttuja, jotka vois olla vähän keventäviä, että kaikki ei olis pelkästään negatiivisia, siellä vois olla jotain positiivistakin sekaan.”*

Jasper: *“There could be something in the environment that could lighten up the mood, that everything wouldn’t be just negative, there could be something positive as well.”*

Based on this first playtest session, the participant had apparently experienced negative emotions and had empathized with the character on some level. However, the narrative had obviously room for improvements. While the narrative was indeed designed to arouse negative emotions expressing the loneliness and anxiety of the protagonist, the purpose of the narrative was to leave the player in a positive or even empowered state of mind in the end. Therefore, I decided to make some changes for the next iteration.

First of all, I decided to change the language of the narration from English to Finnish during the prototyping sessions. I chose to do this because I felt the player had missed some information due to my awkward pronouncing and it was harder for me to read the monologues in an empathetic way in English. I also modified the game story. I added a scene with a mirror to the last room in the hopes that it would better describe the protagonist's emotions and make the ending less abrupt. I also added a small change in the story to better clarify the protagonist’s social status.

4.1.2 Iteration Cycle 2

The next iteration of the experience prototype took place in early May. This time the session was held outdoors due to the ongoing Covid19 situation. Originally, I planned to have the sessions indoors, but the situation did not allow this. I had two playtesters this time. Due to the Covid19 situation the participants were familiar to me in advance. The participants are called Oliver and Alisa in this research.

The prototyping proceeded very much in the same way as it was described before. The participant, Oliver, found the experience pleasant but he too felt that the story ended too abruptly. He described that there was too little time for the positive feelings in the end. He wished there were more time to linger in the positive ending. He also felt that the game environment could have been described in a more detailed way.

Oliver: *“Kannattaa varmaan mielenmaisemana maalata ne huoneet aina aluksi, just se tahditus ei ollu mitenkään liian nopee, että siinä se oli sopivan rauhallinen. Siinä ehtis vielä kuvailla, kuvittele mielesi silmässä tässä on tällaiset.”*

Oliver: *“It could be a good idea to paint the rooms at the beginning as a mental landscape. The pacing was by no means too fast, rather it was suitably calm for it. You could ask the participant to imagine the rooms in their minds.”*

It seems that the game environment was left too vague since it wasn't properly described, and this might have affected the participants ability to engage with the game narrative. The playtester reported that there were some emotions that arose from the prototyping experience. Mostly the emotions were sad and negative. He estimated that perhaps 30% of the emotions were positive. When asked about how he would change the experience, he responded that he would further explain the backstory. This was something that I believed that environmental storytelling could help with in the future.

The second participant, Alisa, reported that the experience prototyping session was overall quite enjoyable. This time the player reported that she did not find the game narrative to arouse any emotions. According to the analysis there were quite a few reasons for this.

First of all, it appears that the game narrative itself did not arouse much interest in the player at the beginning. Instead, the player found the game narrative implausible and therefore not interesting.

Alisa: *“Tuntui jotenkin epäuskottavalta tai riittämättömältä, että kun tää lapsi sai tämän (pehmolelun) lahjaksi niin siitä päättelin, että tässä on joku tilanne. Tietyllä tavalla vastusti sitä tarinaa siinä lastenhuone vaiheessa. Mun pitää nyt pakottaa itseni kiinnostumaan tästä tarinasta, mikään ei ollut vielä kiinnostavaa.”*

Alisa: *“It seemed somehow unbelievable or insufficient that when this child received this (plush toy) as a gift, that I would deduce that there was some kind of situation here. In a way, I opposed that story when I was in the kid's room. I had to force myself to take an interest in this story, nothing was interesting yet at that point.”*

When examined further why the game narrative was not found credible there were two reasons for this: the lack of empathy towards the main character and the lack of player agency.

The player reported that she did not find the game narrative credible because she could not empathize with the main character. This in turn was resulted from the inability to actually experience the game narrative in present time.

Alisa: *“Syvällisemmän ehkä silleen, että olis joutunut pelaamaan ne hetket. Olisit ollut aktiivisesti mukana niissä hetkissä, kun ne tapahtuu, ei niin että joku muistelee niitä jälkeenpäin, koska se tuo tietynlaisen distanssin, se irrottaa sua siitä kokemuksesta.”*

Alisa: *“More profound perhaps in a way that you would have played the moments yourself. You would have been actively involved in the moments when they happened. Not like someone reminisces them afterwards because it creates a certain kind of distance. It detaches you from the experience.”*

The fact that the player did not feel that their actions had any impact, lowered their experience of agency. Together with the lack of credibility, this seemed to result in the experience that the game narrative itself was not able to evoke emotional experience in the player.

Alisa: *“Joko vois viedä siihen suuntaan, että vahvistaa sitä tunnekokemusta, että joutuu konkreettisesti eläytymään ne hetket. Vahvistaisin tunnekokemuksen reaaliaikaisuutta, kun eläytyy sen läpi, kun se asia tapahtuu.”*

Alisa: *“You could reinforce the emotional experience by empathizing with those moments concretely. I would reinforce the real-time nature of the emotions by experiencing it in the moment when it happens.”*

The lack of player agency and credibility lead to the experience of feeling distant from the player character. This was in the end pinpointed to the narrative format of the game. The descriptive style of the narrator and the past tense that were used in the manuscript prevented the player from engaging emotionally with the main character and the narrative.

Alisa: *“Jos sä taas haluat, että siinä samaistutaan siihen hetkeen, missä se lapsi elää niitä, niin silloin sun täytyy ehkä muuttaa koko se narraatio sen näkökulmaiseksi. Et sitten se ei ole muistelua, vaan se on sitä sellasta enemmän hetkessä elämää.”*

Alisa: *“If, on the other hand, you want the player to identify with the moment that the child is living currently, then you may have to change the whole narration into its perspective. Then it is not a remembrance of the past, but instead, life in the present moment.”*

Based on the second iteration cycle I decided to make certain changes to the game narrative. First, I decided to change the form of the narration drastically. In order to help the player empathize more with the player character, I decided to give up the narrator's role and the past tense of the narration. Instead, I decided to try how a more present form of storytelling would work.

I also changed the monologues in the script to dialogues instead. Therefore, instead of hearing a narrator tell the player how they are feeling, the player would discover pieces of dialogues from interacting with the game world. This way I anticipated I could also strengthen the experience of player agency. Now the player would be able to construct their own version of the game character's feelings and experiences more freely, and they had a more active role in the story itself in this way. I also hoped this would make the ending of the game feel more positive for the player.

Lastly, I decided to add more details to the description of the game environment and try to bring more environmental storytelling to the physical prototyping session. I presumed that a more specific environment would give the player more information about the player character and her experiences.

4.1.3 Iteration Cycle 3

The last experience prototyping session was held in late May 2020 and was located at a small park outdoors. The area was peaceful and pretty private. The last participant is called Elisa.

The overall experience of Elisa was clearly more emotional, empathetic, and positive than in the previous sessions. Descriptions of emotions and emotional experiences were mentioned four times more than in any of the other interviews. Also, Elisa mentioned directly experiencing empathy for the game character.

The most prominent reason for Elisa's emotional experiences appeared to be her ability to empathize with her player character and the character's emotions.

Elisa: *“No siis niinku ahdistavaa olla siinä. (koitko itse ahdistusta) Joo kun mä eläydyin siihen tyyppiin joo, ja sit samoten sit myöhemmin niitä muita tunteita, sitä helpotusta ja onnea siitä uudesta kaverista ja kyllä mä ainakin pääsin käsiksi niihin tunteisiin, voi kun sillä oli niin kamalaa ja yksinäistä ja se oli niin yksinäinen. Pystyin eläytyyn siihen hahmoon.”*

Elisa: *“The situation felt anxious (did you experience anxiety yourself?) Yeah, because I empathised with the character and later, I felt the other feelings as well, the relief and happiness from that new friend and, I at least was able to tap into those feelings, oh, how she felt so horrible and lonely and she was so lonely. I was able to empathize with her character.”*

She described to have felt quite a wide range of emotions from heavy anxiety to very positive and even relieved emotions. She reported that she was able to leave the experience in a positive mindset which was the desired emotional state for the end of the game. She even described that the game could give hope to some people who are struggling with similar experiences that were presented in the game. The Picture 2 below was taken from the prototyping session.

Elisa: *“Kyllä se joo meni tunteisiin ja siis varmaan sellaselle, joka elää tosi sellasessa ahdistavassa tilanteessa, niin se vois palauttaa mieleen sitä toivoa siitä ja silleen.”*

Elisa: *“Yes, that was emotional and probably for someone who is living in such a distressing situation, this could remind them of that hope.”*



Picture 2. Player felt that the notes and pictures in the prototype evoked emotions.

There was naturally room for improvement also. Elisa reported that there was some confusion about the fact what her name was and who she was. She wished to know her name earlier in the game.

Elisa: *“Sen mä olisin halunnut tietää, oman nimen vähän aikaisemmin alussa. Se vois lukea jossain huoneen ovesta tai paperissa tai olisin halunnu tietää sen nimen aikaisemmin.”*

Elisa: *“I would have liked to know my name earlier in the beginning. It could be written somewhere, on the door of the room or in a paper.”*

Based on the third iteration cycle it seemed that the change I made with the form of the narration was successful. Changing from the narrator's role to the more present form of narration through dialogues seemed to engage the player with a more empathetic and emotional way.

It should be considered that there might be some other reasons for the participant's ability to relate to the game character as well. At one point the participant mentioned that they had had similar types of experiences in their own life. This could have contributed to the player's ability to empathize with the game character. In any case this particular prototyping session was successful in evoking emotional experiences in the player.

Considering the success of the session, the limited time resources and the situation with the Covid19 I decided to move on to the next stage of the research: creating the first version of the VR prototype.

4.2 The VR Prototype 1

Based on the experience prototyping sessions, I created the very first VR version of the game. In this section we will go through three iteration cycles that were based on three different play sessions with the VR prototype.

4.2.1 Iteration Cycle 4

The very first playtest with the VR prototype was once again held in my home in June 2020. The participant was again Jasper from the very first physical prototyping session. I asked him to be my playtester again due to the COVID19 situation but also because I wished to compare his experience with the physical prototype to the experience with VR prototype. The VR prototype was played in my living room and we used HTC Vive Pro VR setup. The participant was already familiar with VR headset and controllers and he had no problems moving and interacting in the game world.

The participant described the VR experience as interesting. He was naturally already familiar with the story, but he described the game to be more “polished” than the physical prototype. The VR experience seemed to support the same emotions that were awoken last time. When the participant was asked if he experienced emotions during the VR session, he described that most of the time he felt anxiety and frustration.

Jasper: *“Se oli oikeestaan se loppukohtaus. Siihen asti se oli sellasta ärsyttävän epämiellyttävää. Mut sit siinä lopussa, silleen et sieltä löytyy samanhenkinen ihminen, että kyllä se oli sellanen liikuttava hetki. Sitä ennen se oli silleen jäytävä, turhauttava oikeestaan. (miten) No silleen, että se oli sitä koulukiusaus tematiikkaa, kun ei se pelaaja sille oikein mitään voi, kun ei sille mitään voi, niin kuin oikeekin kiusaaminen.”*

Jasper: *“It was really the final scene. Until then, it was kind of annoyingly unpleasant. But in the end, there was a like-minded person out there, and yes, it was quite a moving moment. Before that, it felt gnawing and frustrating. (How?) Well, there was that bullying theme, but the player can't really do anything about it, because there's nothing that can be done about it, just like in actual bullying.”*

It was apparent that the player felt frustration and anxiety due to the fact that they could not control the player's situation. Player apparently felt that he had not enough agency in the situation. At this point I decided to monitor if other players would also experience the lack of agency and how that affected the play experience. In this particular test case, the lack of agency had evoked emotional response and therefore it had served the emotional experience which was a desirable outcome.

The participant reported that they also experienced frustration due to the fact that they got stuck in the game in the very first room. When they had interacted with three specific objects, the door to the other room was opened but the player did not realize this. They were confused about the white "wall" that emitted light inside the doorway and believed that they could not step through it. The problematic door can be seen in the Picture 3 below.



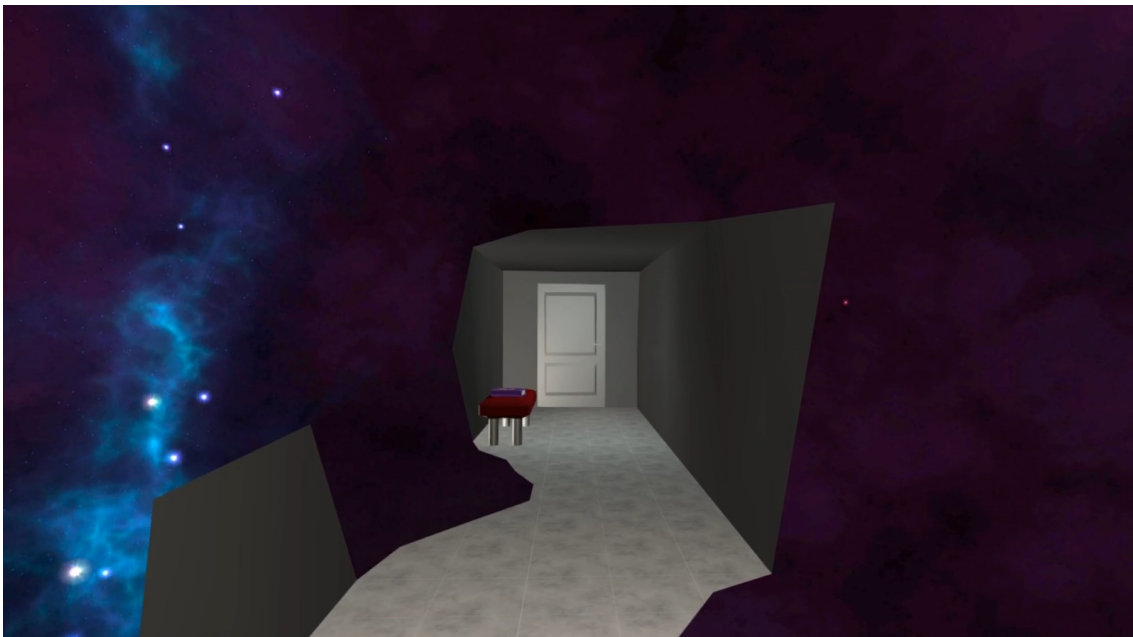
Picture 3. Screenshot from the VR game. The Player was confused about the door to the next room

After the player had stepped through the door, they reported that it felt unnatural to step inside a "white wall". This was clearly an issue with the game flow and therefore I decided to add a sound of door opening for the next iteration and see if this was enough to let the players know that they were supposed to go through the open door and white wall. There were also some other minor technical issues that seemed to interrupt the players immersion and experience. For instance, some objects from the previous rooms also spawned to the next rooms.

The participant also reported that he liked the fact that the game had interactive objects that he could look at and pick up. He hoped to have even more of these objects to bring even more depth to the game story and characters. The game environment seemed to support environmental storytelling otherwise. The participant was especially impressed by the last room which was a broken school corridor hovering in space. The space can be seen in the Picture 4 below. When asked about what was the most memorably part of the game, he described the corridor especially.

Jasper: *“Ehkä se avaruusjuttu, missä piti mennä kapeemmasta kohdasta, se oli hauskaasti tehty. Hänen sisäisessä maailmassaan oli ilmeisesti sellasta se liikkuminen, vaikka hän olis ollut koulun käytävillä, hän joutui väistelemään jotain olemattomia asioita.”*

Jasper: *“Maybe it was that space thing where you had to walk from the narrow point, it was made well. In her inner world, her movements were apparently, like that. Even when she was walking the school corridors, she had to dodge some non-existent things.”*



Picture 4. The participant found that the broken corridor symbolized the character's inner world successfully

The participant felt that the ending was still a bit too sudden, but he also said that he would not change the story on itself. I decided to see if other playtesters would feel the same way. Based on the first VR playtest I decided to fix the technical bugs that were found, and I added a sound effect for the opening door. Otherwise, I decided to see what kind of feedback I would receive next before making bigger changes to the prototype.

4.2.2 Iteration Cycle 5

The second playtest with the VR prototype was again at my home in August 2020. The setup was the same as last time. This time I asked Alisa to be my playtester again. Because Alisa had played the physical prototype previously and was familiar with the story, she reported that the game did not awake much emotional experiences for that reason. When asked if she preferred the physical prototype or the VR prototype she stated that both of them had their own advantages. She felt that the physical prototype offered more visual and auditory stimulus because of the real-world environment. Whereas the VR experience was a more intimate experience.

Alisa: *“Mikä taas on VR:ässä parempi, niin oot paljonkin helpommin yksin sen tarinan kanssa. Et fyysisessä tilassa on taas ne fyysiset tilat myöskin niin sillai, selkeesti, tiedät, että joku toinen on läsnä. Tossa taas paljon helpommin unohtaa, että muita ihmisiä on läsnä niin sillai se on sitten helpommin henkilökohtaisempi kokemus.”*

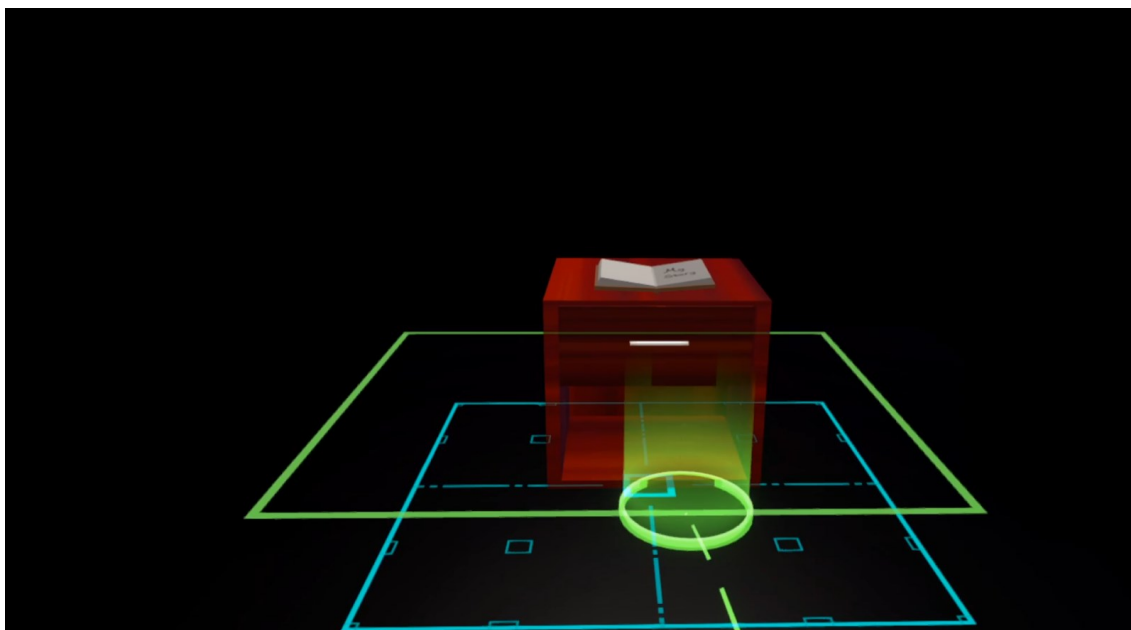
Alisa: *“What is better about VR is that it's much easier to be alone with the story. In the physical space it is apparent that someone else is present as well. In VR, it is much easier to forget that other people are present, and it is more easily more personal experience.”*

This was a very desirable result because the theme of the game is to explore the experience of loneliness and therefore the VR environment seems to fit this particular theme better than a physical prototype, where the researcher is clearly present. The biggest problem with the VR prototype seemed to be the actual VR interface. The participant had not used a VR headset or controllers beforehand. Therefore, she reported that she was not able to concentrate on the game story and dialogues. All of her concentration at the beginning of the game went to learning how the VR interface worked.

Alisa: *“Nyt siinä vaiheessa, kun mä vasta opettele, miten mä otan kiinni jostain objektista, niin siinä alko tuleen jo sitä tarinaa, kun vaikka yritin keskittyä niin menee pikkasen ohi, kun ei oo vielä orientoitumassa siihen. Kun siinä fyysisessä tilassa, kun sä puhuit ite sen niin, kun vaan se että sä kuvailit sen niin ehti orientoitua.”*

Alisa: *“Now, at the point where I am still learning how to take an object into my hand, the story has already begun. Even though I tried to focus on the story, I can't because I am still orienting to the VR still. In the physical state, when you spoke and described the space, I had the time to orientate.”*

Because orientation to the VR interface was clearly an issue in the prototype, I decided to try and fix this issue by adding a tutorial / intro to the game. The game intro would familiarize the player with the teleporting feature as well as the object interaction interface. I hoped that this solution would support the experience of presence and immersion in the game. I also added the title of the game “My story” to the intro. I did this because I tried to guide the player to better take the role of the player character this way. A screenshot from the intro can be seen in the picture 5. below.



Picture 5. Screenshot of the intro that was added to the VR prototype after the test session.

Another problem with the prototype was that the sound of the narration distracted the player because the voices were too similar with each other. I had voiced all of the dialogues of the prototype myself and had manipulated the pitch in each of the dialogues to make them sound different. After this test session I asked my friend to help voice some of the dialogues to better distinguish the dialogues from each other. There was also some confusion about the timeline of the game story.

Alisa: “Siinä on ehkä semmonen, en tiää onko siinä sellasta selkeää eroa sen lastenhuoneen ja sen (olohuoneen kanssa) en tiää kuinka pitkä matka siinä tapahtuu ajallisesti. Siinä lastenhuoneessa ei niin helposti hoksaa, että tää on vähän nuoremman lapsen kuin sellaisen, joka on ihan kouluikäinen.”

Alisa: “I don't know if there is a clear difference between the timeline from the children's Room and the (livingroom) and I don't know how much time passes. In that kids' room it

is not so easy to notice that it is a younger child's room instead of a child's that is already in school."

Based on this playtest and the previous one, I decided to add more objects to the game. After this session I added an ABC book and a storybook to the child's room to make it clearer that the child is quite young. I also improved the voice acting and added the intro scene to the prototype.

4.2.3 Iteration Cycle 6

In the third VR playtest I asked Elisa to test the VR prototype as well. This decision was once again mostly dictated by the situation with the Covid19. I knew I would have a hard time recruiting VR game testers for the final test sessions, so I had a limited number of participants available for my play sessions. The playtest setup was the same as the previous two sessions and the session was held in late August 2020. The participant reported that the VR experience felt very similar to the physical prototyping session.

Elisa: "Ylipäätään se fiilis oli samanlainen, just tuollaiseksi mä sen kuvittelin. Tossa oli aika selkeesti silleen, että mitkä on niitä interaktiivisia iteijä. Ne erottu sieltä tarpeeksi hyvin, mut sai niitä vähäsen sillai sai kattoo. Ja se oli hauskaa, että kokeili tietty kaikkia, että mitkä siellä liikkuu mut silleen. Niinku siinä oli hauskoja juttuja niin mun mielestä se oli ihan toimiva. En varmaan muuttaisi mitään."

Elisa: "In general, the feeling was similar, just the way I imagined it to be. It was pretty clear what those interactive items are. They stood out well enough. And it was fun to try out which items moved. There was fun stuff so in my opinion it worked well. I probably wouldn't change anything."

When asked about the beginning of the game, the participant stated that the beginning was unobtrusive and worked well. The participant reported that she was able to empathize with the character partly because of the text "My Story" in the beginning. Therefore, the new intro seemed to work as expected.

Elisa: "Mä vaan aattelin, että oon se hahmo varsinkin ku se alko My story ni mä aattelin, että se on se vanhempana ehkä muistelee sitä. Joku sellanen epämääräinen mä vaan muistelen, mut kyllä mä silleen kun siinä oli sitä avaruutta ja kaikkea ja ylipäätään et sä kuulet niit fläshbäkejä kyl se niinku tuntu että mä oon se jolle ne jutut on tapahtunut mut ehkä muutamia vuosia myöhemmin."

Elisa: *“I just thought that I was that character, especially when it started with the My story. I just thought that I was older and maybe reminiscing. Something vague like that, I am just reminiscing. But yes, there was that space and everything and the flashbacks, so it felt like I’m the one to whom those things happened to but maybe a few years later.”*

However, Elisa had used VR setups before and therefore it remained unclear if the new intro would work properly as a tutorial as well. Elisa reported that she would not change anything in the game story, but there was still one confusing element in the game. Elisa was confused about the name of the player character. She suggested that the name of the player character would be shown somewhere in the room. I decided to add a nameplate to the child’s room.

When asked if the game environment supported the story, Elisa agreed. She felt that the game environment lightened the game's atmosphere that could have been too dreary otherwise. She felt that especially the interactable objects and drawings caught her attention in the game environment.

It seemed that adding objects to the game environment worked well. Adding the intro / tutorial seemed to be a good solution since the intro did not obstruct the game experience but rather encouraged the player to empathize with the game character. I decided to add the nameplate to the child's room to highlight the player's own name and lessen confusion about the player character's identity. Other than that, I decided not to change much with the game. I felt quite positive about the game prototype and looked forward to the last four test sessions with the VR prototype.

5 THE FINAL PLAYTESTS

After the initial playtests were completed, I was ready to arrange the final playtests and interviews. The purpose of the final four play sessions and interviews was to see if the final game prototype was able to evoke emotional experiences in the players. Due to the peaceful situation with the COVID-19 at the time, I was able to have the playtests at a local game cafe (Bar & cafe late game) in September 2020. None of the final playtesters had played the game prototype before. A photo from the playtest situation can be seen below in picture 6.



Picture 6. Photo from the VR playtest session.

While I planned not to make any changes to the game prototype at this stage, I ended up making one change to the game based on the first three playtests. Players reported that they had difficulty to understand how the door game mechanic worked at the beginning.

This disrupted the game immersion and therefore I decided to change the feature for the last playtest. I created a simple UI change which helped the player see that they were supposed to move from one room to another when the door opened. This apparently worked since the last playtester did not have any problems with the mechanic.

After the playtests, I analysed the interviews and ended up dividing the most important findings to five categories: Narrative Elements, Experience of presence and immersion, Empathy, Emotions and Authenticity. These categories were almost the same as the categorization I made in the theory chapter. However, one new category emerged from the data, which was the category of *Authenticity*. Next, we will explore these categories in more detail.

5.1 The Narrative Elements

In the interview data, the participants brought up several narrative elements that they felt that contributed to the mood or the emotional charge in the game. These kinds of elements were for instance: lighting, audio, story, and characters. These elements were all grouped under the category of “narrative elements”. However, to better understand this category I categorized the narrative elements to four subcategories. These were: Environmental Storytelling, Audio world, Story and Characters.

Environmental Storytelling

Environmental storytelling covers environmental elements that communicated the story and awoke emotional experiences. Participants reported that these kinds of objects were for example the drawings that the player character had drawn, books that told something about the character and her life and notes that were found from the environment.

Leo: *“Siellä luokassa oli se lappu, joka taas herätti sen (tunteen) kuinka julmia lapset voi olla... Seuraava oli se piirretty kuva, joka vahvisti sitä miten yksinäinen joku voi olla. Ja sitten se loppu taas herätti, että aina on toivoa.”*

Leo: *“There was that note in the class that again evoked (the feeling of) how cruel children can be... Next was the drawing that confirmed how lonely someone can be. And then the ending aroused (the feeling) that there is always hope.”*

Daniel: *“Kyllähän noi kuvat, mitä oli piirretty, oli semmosia, että varmasti on sellasta yksinäisyyttä ehkä kumminkin lapsuudesta saakka.”*

Daniel: *“Those pictures that had been drawn were such that there must have been loneliness, perhaps ever since the childhood.”*

Players also reported that the rooms in the game communicated different meanings to the player. The way the rooms were furnished and represented through lighting and colours, shed a light to the game characters situation or inner experiences.

Anna: *”Aika pienistä asioista siinä kyllä nopeasti sai kiinni, että mistä siinä tarinassa oli kyse ja sitten se musiikki yhdisty siihen ja totta kai ne ympäristöt oli sen kaltasia, että tuli sellaisia tuttuja tunteita, että aha tästä tässä oli kyse.”*

Anna: *“You could quite quickly deduce from the small cues what the story was about, and then the music merged with it and of course those environments reminded from such familiar feelings like, aha that was what this was about.”*

Audio World

Narrative elements category also included the audio world that was reported to communicate emotions to the player. All of the participants reported that the game music contributed to the mood of the game at least in some way.

Julia: *“Sit se niinku se äänimaailma oli aika tärkeä siinä. Et jos ei olis vaikka ollu sitä taustamusiikkia, tai silläki musta aika äkkiä välitty se filis ja tietty ne puhekohdat. Ja sit se millasta se ääni oli, semmonen eläytyväinen.”*

Julia: *“Then, the audio world was pretty important. If there wasn't for that background music... I mean it conveyed certain vibes pretty quickly and of course those speeches. And how the voices where, they were like, empathetic.”*

In addition to the game music, the voice acting was also mentioned a few times. The way that the game characters spoke, was mentioned to communicate what kind of feelings the game characters were going through. This in turn awoke empathy or sympathy towards the characters.

Julia: *“Jotenki se sano (puhelimessa) et oikei huomenna, tai niinku raukka, se oli niin pettyneen kuulonen. Totta kai ku tollanen lapsi yrittää pyytää kaveria ja voi parkaa. Siihen niinku pysty (eläytyyn).”*

Julia: *“Somehow she said (on the phone) that, ok, tomorrow, poor thing... She sounded so disappointed. Of course, when a child is trying to ask for a friend and... poor thing. You can, like (empathize).”*

Story

The word “story” was probably the most often used word in the interviews. In *My Story*, the story element was communicated to the player via dialogues which the player was able to hear. According to the data, the participants felt that the story had a very central part in this game. All of the players reported that the game had a clear story and all of the players found that the story communicated some kind of experience or a “lesson” of either loneliness, social exclusion, bullying or the importance of friendship.

Leo: *“Kokonaisuutena jäi ihan sellanen tarina johon pystyy samaistumaan, joka kertoo syrjinnästä ja yksinäisyydestä ja kuitenkin siitä, että kyllä sieltä yleensä joku samanhenkinen löytyy, kun vaan yrittää tarpeeksi.”*

Leo: *“As a whole, there was a story that you could empathize with, which tells about discrimination and loneliness, and yet about how you can usually find someone like-minded when you try enough.”*

Characters

The player character was important because she enabled the players to empathise with her experiences and awoke emotional experiences in that regard. Participants also brought up the relationships between the player character and the other characters such as parent, classmates and friend. The so-called side characters were important as well because they shed a light to the main characters history and situation and had an important part in the emotional journey that the player character went through.

Anna: *“Siinä oli mukava, kun se uusi ystävä puolusti että älä kuuntele muitten mielipiteitä, että meillä on tää oma yhteinen juttu, se oli niinku se tärkein.”*

Anna: *“It was nice when that new friend advocated to not listen to the opinions of others, that we have this thing in common, it was the most important thing.”*

5.2 The Experience of Presence and Immersion

Players reported repeatedly that they felt that the game was “immersive”, and they felt as if they “were there”. Players especially linked the experience of immersion and presence in this game with the VR element.

It could be deduced that the VR experience in this particular game evoked the feelings of presence, of being in the game world, which in turn created the experience of immersion, the experience of “being part of the game”.

Julia *“Varmaan kun se on niin tästä muusta maailmasta sinne omaan kuoreen tai siin aika äkkiä unohtaa, että sä et oo, vähän niiku alkuun se tuntuu siltä peliltä, kun miettii niitä ohjaimia mut sit siihen pääsee niinku et se ei tunnu et sä et mieli koko ajan et sä oot pelissä vaan menee siihen mukaan.”*

Julia *“It is like you are isolated from this world and inside of your own shell. You quickly forget that you are not... like at the beginning it feels like you are playing a game when you think about the controllers, but then you stop thinking about how you are inside of a game and you just go along.”*

Leo *“No immersio on paljon isompi (kuin tavallisissa PC peleissä) siinä näkee, tuntee olevansa enemmän siinä maailmassa kuin 2D versiossa.”*

Leo: *“The immersion was much bigger (than in regular PC games), you see, feel like you are more inside of that (game) world than in 2D version.”*

The experience of presence and immersion were clearly connected to the experience of authenticity and empathy. When players were able to immerse themselves in the game world and feel as if they were “inside the game” it was also easier to empathise with the game character and relate to the game events.

5.3 Empathy

The experience of empathy in *My Story* was linked strongly with the experiences of authenticity, experiences of immersion and presence as well as with different narrative elements. The players reported that familiar objects and events evoked empathetic emotions towards the player character.

Julia: *“Siis siinä tuli niinku vähän sellasia ahdistavia muistoja, että en muista että olisin ollu rajusti kiusattu, mut kyl siel kaikki sai osansa, et ei ees muista, et se oli semmosta. Ja sit tuli silleen tosi surullinen olo sen päähenkilön puolesta, että ne joille se on ihan todellisuutta niin.”*

Julia: *“It awoke kind of distressing memories. I don’t remember being severely bullied, but everyone got their share. I didn’t even remember that it was like that. And then I felt really sad on behalf of the protagonist, that it’s reality for some people.”*

Leo: *“Varmaan ne tämmösiä niin sanottuja arkisia asioita oli justiinsa syntymäpäiväjuhlat ja pyydetään leikkimään ja näkemään kavereita ja käytiin koulussa ja äänet, kyllä ne tietenkun ne on kaikki sellaisia asioita, joita jokainen on kokenut omassakin elämässä niin on helppo samaistua.”*

Leo: *“Probably those so-called everyday things. Like birthday party and being asked to play and see friends and going to school and the voices. They are of course things that everyone has experienced in their own lives so it’s easy to relate.”*

Anna *“(Ainekirjoitus) herätti sympatiaa päähenkilöä kohtaan, ja selkeästi se yksinäisyys heijastui tälläkin arvosanoihin.”*

Anna: *“The (essay) aroused sympathy towards the protagonist, and clearly that loneliness reflected in her grades as well.”*

The experience of empathy towards the player character, was in turn linked with emotions. In other words, based on the interviews it seemed that when the player was able to experience empathy towards the player character, they were also able to experience empathetic emotions such as anxiety, hopefulness, or loneliness.

Anna” *No kyllä yksinäisyys on sellainen tunne, johon pystyy samaistumaan jos on sitä itse nähnyt tai kokenut. “*

Anna: *“Well, loneliness is a feeling you can identify with if you have seen it or experienced it yourself.”*

5.4 Emotions

According to the interviews, two out of four testers reported very clearly that they had felt emotions during the gameplay of *My Story* and one of the three players reported that they had empathized with the player characters emotions. All of the emotional experiences were clearly linked with the experience of empathy towards the player character.

Julia: *“Siinä siis just tuli tää yksinäinen ilmeisesti kiusattu tää henkilö ja jotenki siinä tuli niitä aika voimakkaasti, vaikka oli ihan siinä oli jotenkin se ääni ja tunnelma. Tuli semmonen mitä on nyt oikeassa elämässäkin, niin kuin koulumaailmassa niin oli kyl aika voimakkaita tunteita.”*

Julia: *“There was this lonely, apparently bullied person, and somehow there were quite strong (emotions), there was somehow that sound and atmosphere. There were pretty strong emotions that you encounter in real life and in school world as well.”*

When asked what kind of factors evoked emotional responses, the players reported quite a many different game elements. These narrative elements were the game world, dialogues, music, voice acting as well as the game objects such as the drawings and notes.

Leo: *“Joo ja oli ne muutamat tavarat kieltämättä, se piirretty kuva ja toinen, joka jonkun verran pysäytti ja se luokassa ollut lappu.”*

Leo: *“There were those few items, that drawing and the other one that somewhat, stopped, was the note in the class.”*

The two players reported experiencing several different emotional states by empathising with the player character. These emotions were sadness, anxiety, loneliness and hope in the end.

Leo: *“No ensinnäkin just ensimmäinen kohta joka eniten herätti enemmän tunteita niin se puhelu sille kaverille, että se juurikin sieltä tuli kunnolla se yksinäisyyden tunne välittyi ja siellä luokassa oli se lappu, joka taas herätti sen kuinka julmia lapset voi olla...”*

Seuraava oli se piirretty kuva, joka vahvisti sitä miten yksinäinen joku voi olla. Ja sitten se loppu taas herätti, että aina on toivoa.”

Leo: *“Well, the first point that aroused more emotions, was the call to the friend. It really conveyed that feeling of loneliness and there was the note in the class that aroused how cruel children can be... Next was that drawing which confirmed how lonely someone can be. And then the end again aroused that there is always hope.”*

Julia *“No siis tietyllä tapaa ehkä jopa ahdistava tai niinku semmonen jotenki niinku tietty siinä oli ihana vähänninku onnelline loppu tai sellanen. Mutta tota joo tosi sellanen niinku huono olo (laughs) niinku kauheita tunteita.”*

Julia: *“Well, in a way, maybe (the experience was) even distressing. There was a happy ending. But, yeah, it felt quite awful (laughs), like, terrible feelings.”*

Even though all four players did not report experiencing emotions themselves, all of the players did recognize the themes and emotions that the game character felt. These emotions and themes were loneliness, sadness, and friendship. Based on the interview, the game was able to evoke emotional empathy at least in some way in three players and at least some level of cognitive empathy in one player.

The reason why the game was not able to evoke emotional empathy in all of the players was not clear. The one person who did not report emotional empathy towards the player character did not report experiencing empathy towards the player character either. The player also reported that they did not play story-based games in their free time which might suggest that they were not the target audience of the game. It would be very interesting to research in the future further why some players do not empathize with the game character of *My Story*.

5.5 Authenticity

Authenticity was a new category that I did not anticipate when I compiled the theory for this research. However, the experience of authenticity emerged from the research data so strongly that I could not ignore its importance.

The experience of authenticity or familiarity was mentioned by each of the four playtesters. The players reported that they felt that the game world and events that had

happened had felt “down to earth” or “familiar”. Therefore, the players were able to relate to the story and many of the events that had occurred.

Leo: *“Pystyy siihenkin ihan helposti (eläytymään), vaikka ei ihan vastaavia omia kokemuksia ole, mutta on kuitenkin siihen suuntaan olevia kokemuksia. Siinä mielessä hyvä tarina, että siihen pystyy samaistumaan, että se ei täysin ollut utopistinen se vaikka se muuten on vähän surrealistinen toi peli itessään, mutta se tarina on maanläheinen jos voi sanoa näin.”*

Leo: *“I could easily (empathize), even though I don’t have exactly the same experiences of my own, but there are experiences that are similar. There is a good story in the sense that you are able to relate with it, that it was not completely utopian, even though it is quite surreal game in itself. But the story is down to earth.”*

The game events and environments that felt authentic were the ones that the player had either experienced or witnessed in their own life. Therefore, the familiar events felt authentic and awoke emotions from the players own experiences in the past.

Julia: *“Sit se oli mun mielestä hieno kohta se kun tuli se lattia ja se avaruus ja se oli jotenkin sellanen yläaste kokemus, mikä on ollu yläasteella, ku se on aika kamalaa kun siellä käytävillä ahistuneena kävelin. Kyllä aika hyvin kuvailtu siihen se tunne. Ja sit muisti kuinka raskasta se on ollu silloin joskus.”*

Julia: *“Then it was great when it came to that floor and that space and it was somehow such a middle school experience, when I walked those hallways anxiously. It was pretty well described how it felt and I remembered how burdensome it felt at that time.”*

The experience of authenticity was strongly connected to the experience of empathy and emotions. The ability to relate to the familiar game narrative also awoke empathy towards the game character as well as emotional experiences. Therefore, the experience of Authenticity regarding the game narrative is in a very important role in the research results.

In the next chapter we will discuss the final conclusions.

6 CONCLUSIONS

6.1 Overview of the results

In this research I aimed to create a narrative VR game prototype that would evoke emotional experiences in the players. I began the process by designing a story script and testing the script and other narrative elements such as music with experimental prototyping sessions. Based on the player experiences I then created a VR game prototype and run player tests again.

All through the process I iterated the game design based on the play centric design principles introduced by Tracy Fullerton (2014). The game story, game environments, music and game mechanics were altered according to the feedback. At the end of the research process, I held four final interviews to see if the final prototype was successful in evoking emotions. Based on the interviews it seemed that the final game prototype was able to evoke emotional empathy in three of the playtesters and cognitive empathy in one of them.

The capability to experience emotions during the game experience was tightly bound with the experience of emotional empathy towards the player character whose role the playtesters were playing. The narrative elements such as the environmental storytelling, authentic game story and the characters and dialogues enabled the players to experience empathy towards the player character. Also, the experience of presence from the VR strengthened the players experience of immersion and helped the players engage with the game world in a deeper level.

6.1.1 Research Questions

At the beginning of the research, I defined three research questions. I hoped that the research questions would help me learn more about the process of creating emotional VR Game narrative. Next, we will return to these research questions and discuss how they were answered:

- 1. What kind of design choices can be used to create emotional first person VR game narrative?**

The most significant design choice that was made during this prototyping process must have been the choice to utilize the playsentric design approach. The aim of the player centred mindset was to consider the user's perspective and iterate the game design based on the player experiences. Based on the research data, it could be argued that the game design seemed to improve after each iteration. For example, based on the first VR prototype tests, the players had many problems with the gameplay and flow. Based on the play sessions, these problems were corrected, and the experience of immersion and flow seemed to improve, resulting in more empathetic and emotional play experience.

Another significant design choice at the very beginning of the prototyping process was to use the research theory as the base of the game narrative. When designing the narrative prototype, I tried to consider the different narrative elements which could contribute to the emotional experience. I also tried to pay attention to creating empathetic game story. My aim was to evoke emotional experience by evoking empathy towards the game characters and story. The game narrative was also designed to fit a VR game in order to evoke the experience of presence as strongly as possible. Based on the interviews, many of these elements succeeded in evoking emotions such as the game audio, characters, and the environmental storytelling.

The third important design choice was one that I did not make consciously. I decided to write the game story based on real experiences of myself and other people. This proved to be important decisions because the players reported that the story seemed to evoke empathy especially because the story had felt authentic. This was a surprise but a pleasant one. Writing authentic story based on real experiences seemed to be an effective strategy for evoking empathy even though it wasn't planned that way originally.

The last notable design choice was to create a VR prototype specifically. This decision was based on the presumption that the VR experience would support the experience of presence. Based on the interviews, this seemed to be the case. It was brought up couple of times how the players had felt as if they were able to immerse with the game world and the narrative better because of the VR element. One of the playtesters even mentioned feeling as if they had forgotten that they were playing a game altogether. According to Weibel & Wissmath (2011, 2) this kind of experience is the very indication that the person has been able the experience presence in the game.

VR also seemed to be a good choice for this particular game because it was mentioned that VR was a good media to address the experience of loneliness. This derived from the experience that in VR world the player was able to experience being “by themselves” even though the researcher was in the room.

2. How can experience prototyping sessions help create an emotional game narrative for a VR game?

Before this research I had made countless game prototypes from pen and paper prototypes to virtual ones. However, before this research I had never used experience prototyping as a prototyping tool, at least not consciously. However, when I found out about experience prototyping, I realized it would suit my research very well. According to Buchenau & Fulton Suri (2000, 424-425) the purpose of Experience prototyping is to explore how a certain experience feels like. This can be done with any medium that helps us understand what it is like to engage with the product that we have designed. Since my research is concentrated on emotional experiences, the experience prototyping seemed like a great fit for my research.

The experience prototyping sessions provided a practical solutions for prototyping and testing the game narrative and especially the game story. It was easy and quick to change the game story based on feedback. Based on the prototyping sessions, the whole format of the game story was changed from monologues to dialogues and this design choice seemed to make the story more powerful. Also, the game flow and game mechanics were improved from the original version based on the physical prototyping sessions.

I found that utilizing the experience prototyping at the beginning of the game design process, was a great learning experience. I found that the experience prototyping was fast and extremely enlightening experience and it gave me the confidence to go forward with my narrative design. If I had not used experience prototyping, I would have had to rewrite and implement the whole story twice to the virtual prototype. Therefore, experience prototyping saved me a lot of time and energy and proved to be a very practical and effective prototyping tool.

3. What kind of principles should be taken into consideration when designing emotional VR game narrative?

This question was probably the most complicated to answer. At the beginning of the research, I formulated four theoretical categories that I used as the theoretical base for my narrative game prototype design. My goal was to try and create emotional narrative experience based on the four elements. This categorization can be seen in the following Figure 2.

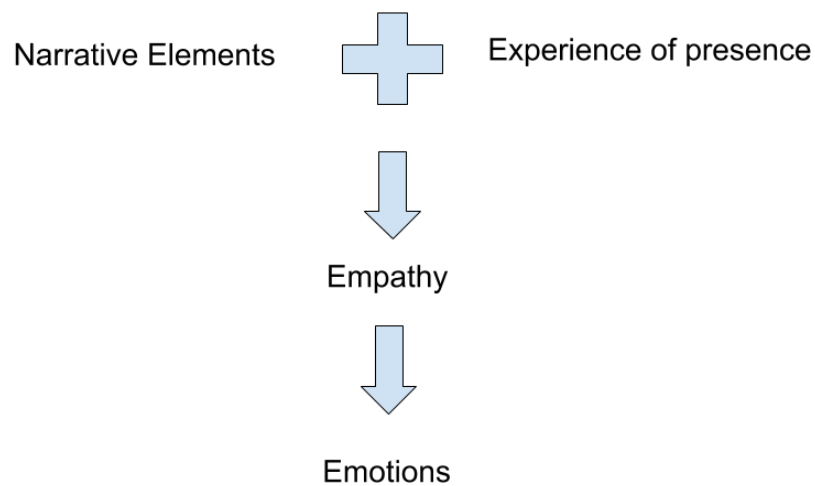


Figure 2. Theory behind the Emotional Game Narrative Design

After I had analysed the final interviews, I found that the theory was lacking one important category which was the element of Authenticity that can be seen in the Figure 3. below.

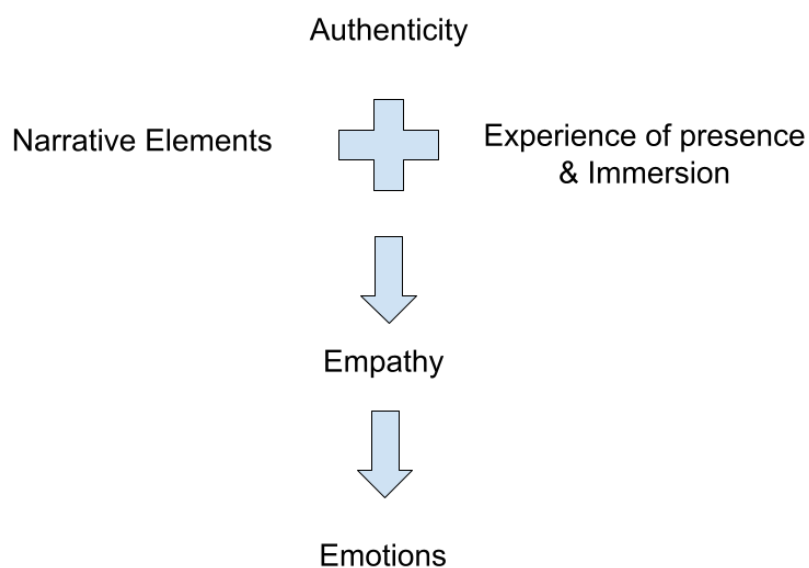


Figure 3. Final Categories of Emotional Game Narrative Design

Based on the final interviews the players found that the different narrative elements such as environmental storytelling and audio world helped create emotional charge and atmosphere. Also, the experience of presence helped the players to engage with the game world. However, the surprising new element that the players described continuously was the experience of Authenticity.

Authenticity was brought up by every one of the last four players. They described that the game story and the game world had felt authentic or believable and somehow relatable. All four players had experienced that they could better understand the game character and her feelings because she was undergoing experiences that were relatable and felt familiar or authentic. This goes to show that the experience of authenticity helped the players feel empathy towards their player character and her experiences.

Together the Narrative elements, experience of Presence and Authenticity seemed to enable the players to feel empathy towards the player character. The empathetic relationship with the game story and the player character was then able to evoke emotional experiences and sometimes even powerful emotions.

6.2 Final Reflections

This research was very inspiring and interesting for me personally but most of all it was very educational, and I learned a lot. Mistakes were made during the design process, but I found that mistakes are the best teachers after all. Game design process relies on designers making mistakes and correcting them one iteration at a time. Designer must start somewhere and by listening and observing the playtesters we can see what kind of changes makes the design better.

Mistakes were made concerning the research process as well. During the research I found that I should have had a wider pool of research participants. The current situation with the pandemic of course had a great impact on this matter but it is a very good observation, nevertheless. Also, some practical details could have been arranged better during the study, such as arranging more peaceful experience prototyping spaces. All of these small errors were, however, a great learning experiences that I would have not experienced without the practical experiments.

Lastly, I believe it is relevant to ponder if this research was successful as an Experimental Game design research. According to Waern & Back (2015, 344) Experimental Game design research is not aimed to find out what kind of design choices make the best possible game, but rather explore what kind of impact different design choices have on the player. In this regard I feel that my research was quite successful. I was able to reflect my design choices and what kind of emotional impact they had in the players. The very purpose of this game prototype was not to explore what kind of design choices would make the game most pleasant experience but rather try to evoke all kinds of emotions, even unpleasant ones. I believe that by experiencing unpleasant emotions of loneliness and social exclusion in a game, we can better understand others who are experiencing these emotions in their real life.

In the future it would be interesting to explore further why some playtesters were able to empathize with the player character on an emotional level while some stayed at the cognitive level or did not experience empathy at all towards the game character. It could be interesting to explore does the participant's personal history play a role on this matter or was it the narrative style or mechanics that appealed to different players in different ways. In any case these kinds of psychological factors could be interesting topics for someone interested in researching emotional VR game narratives.

All in all, this research helped me understand the game design process in a deeper level, and especially the narrative game design process. This research also brought me new insight and tools for creating emotional game narratives in the future. Perhaps the most important insight this research offered me, however, was quite a personal one.

At the very beginning of this research, I described the motivation for creating this research. I wondered if I could awake powerful emotional experience with a game. During this research more than one playtester described how the narrative prototype had awoken familiar memories or even powerful emotions that they could relate to. I found that these results were the most meaningful for my self personally. I was glad that I was able to make an emotional impact with a game because I believe that it is the greatest accomplishment that a game designer can achieve.

REFERENCES

- Belman, J & Flanagan, M. 2010. *Designing Games to Foster Empathy*.
<https://tiltfactor.org/wp-content/uploads2/cog-tech-si-g4g-article-1-belman-and-flanagan-designing-games-to-foster-empathy.pdf>
- Blom, K & Beckhaus, S. 2005. *Emotional storytelling*.
- Bohil, C & Owen, C & Jeong, E & Alicea, B, Biocca, F. (2009). *Virtual Reality and Presence*.
https://www.researchgate.net/publication/263619590_Virtual_Reality_and_Presence
- Bromley, S .2018. *Interviewing players*, in *Games User Research*, ed. Anders Drachen, Pejman Mirza-Babaei, Lennart Nacke, Oxford University Press.
- Buchenau, M & Fulton Suri, J. 2000. *Experience prototyping*. DIS '00
- Colton, P & Hook, A. 2018. *Games Design Research through Game Design Practice in Game Design Research*, ed. Lankoski, P & Holopainen, J (Carnegie Mellon University: ETC Press, Pittsburgh, PA.
- Frasca, G. 2003. *Ludologists love stories, too: notes from a debate that never took place*. DiGRA Conference.
<http://www.digra.org/wp-content/uploads/digital-library/05163.01125.pdf>
- Frome, J. 2007. *Eight Ways Video Games Generate Emotion*. Proceedings of DiGRA. 2007.
https://www.researchgate.net/publication/252984061_Eight_Ways_Videogames_Generate_Emotion
- Fullerton, T. 2014. *Game Design Workshop: A Playcentric Approach to Creating Innovative Games*. CRC Press.
- Hemenover, S & Bowman, N. 2018. *Video games, emotion, and emotion regulation: expanding the scope*. Annals of the International Communication Association, 42:2.
- Jenkins, H. 2004. *Game Design as Narrative Architecture*. In *First person: new media as story, performance, and game*, edited by Wardrip-Fruin, Noah, Pat. Harrigan, and Michael. Crumpton. MIT Press, Pub place, Cambridge, Mass.
- Juul, J. 2005. *Half-Real*. Cambridge: MIT Press
- Knoll, T. 2018. *The think-aloud protocol*, in *Games User Research*, ed. Anders Drachen, Pejman Mirza-Babaei, Lennart Nacke, Oxford University Press.

- Kors, M & Ferri, G & Spek, E & Ketel, C & Schouten, B. 2016. *A Breathtaking Journey.: On the Design of an Empathy-Arousing Mixed-Reality Game*.
https://www.researchgate.net/publication/309476632_A_Breathtaking_Journey_On_the_Design_of_an_Empathy-Arousing_Mixed-Reality_Game
- Papoutsis, C & Drigas, A. 2016. *Games for Empathy for Social Impact*. International Journal of Engineering Pedagogy (iJEP)
https://www.researchgate.net/publication/310814723_Games_for_Empathy_for_Social_Impact
- Rachevsky, D & Costa de Souza, V & Nedel, L. 2018. *Visualization and Interaction in Immersive Virtual Reality Games: A User Evaluation Study*.
https://www.researchgate.net/publication/329028887_Visualization_and_Interaction_in_Immersive_Virtual_Reality_Games_A_User_Evaluation_Study
- Salen, K, & Zimmerman, E. 2004. *Rules of play: game design fundamentals*. Cambridge, Mass: MIT Press.
- Schell, J. 2008. *The Art of Game Design: A Book of Lenses*. London: CRC Press.
- Tamborini, R & Bowman, N. 2010. *Presence in video games*. Immersed in Media: Telepresence in Everyday Life.
https://www.researchgate.net/publication/283995961_Presence_in_video_games
- Waern, A & Back, J. 2015. *Experimental Game Design*, in *Game Research Methods*, ed. Petri L & Staffan, B, Digital: ETC Press.
- Wallentin, M & Simonsen, A & Højlund, A. 2013. *Action speaks louder than words: Empathy mainly modulates emotions from theory of mind-laden parts of a story*. Scientific Study of Literature.3.1.
- Weibel, D & Wissmath, B. 2011. *Immersion in Computer Games: The Role of Spatial Presence and Flow*. Int. J. Computer Games Technology.
- Wulansari, O & Pirker, J & Kopf, J & Guetl, C. 2020. *Video Games and Their Correlation to Empathy: How to Teach and Experience Empathic Emotion*.
https://www.researchgate.net/publication/339995588_Video_Games_and_Their_Correlation_to_Empathy_How_to_Teach_and_Experience_Empathic_Emotion

Respondents:

Iteration Cycle 1: Experience prototyping, Jasper, male, 34, 29.3.2020,

Iteration Cycle 2: Experience prototyping, Oliver, male, 32, 9, 5.2020,

Iteration Cycle 2: Experience Prototyping, Alisa, female, 33, 9.5.2020

Iteration Cycle 3: Experience Prototyping, Elisa, female, 34, 31.5.2020

Iteration Cycle 4: The VR Prototype 1, Jasper, male 34, 13.6.2020

Iteration Cycle 5: The VR Prototype 1, Alisa, female 33, 20.8.2020

Iteration Cycle 6: The VR Prototype 1, Elisa, female 34, 24.8.2020

The Final Playtests: The VR Prototype 2, Anna, female, 29, 19.9.2020

The Final Playtests: The VR Prototype 2, Daniel, male, 34, 19.9.2020

The Final Playtests: The VR Prototype 2, Leo: male, 30, 19.9.2020

The Final Playtests: The VR Prototype 2, Julia, female, 25, 22.9.2020

APPENDIX 1. THEMATIC INTERVIEW QUESTION

For bodystorming and playtest interviews.

1. Have you played this kind of game before? What did you think about it / them?
2. What did you think about the game prototype?
3. What do you remember the best about the game prototype?
4. What did you like best about the game prototype?
5. What did you like the least about the game prototype?
6. What do you think of the story in the game prototype?
7. What would you change in the game story?
8. Did you find the game story affective or emotional somehow?
9. What would make the game experience more powerful in your opinion?