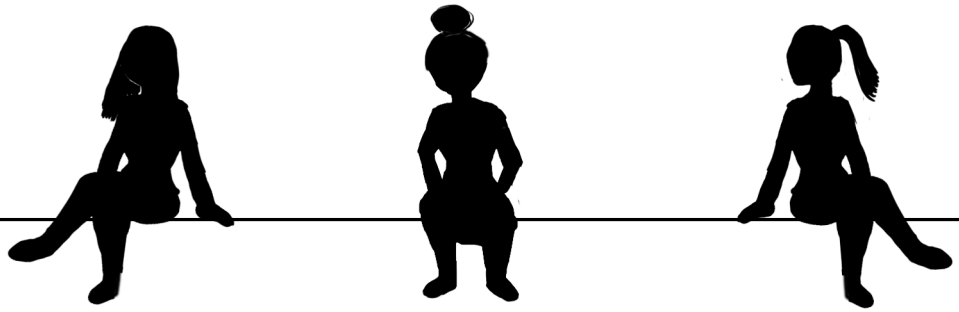

Exploring Female Preferences Within Game Design

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Abstract:

This thesis explores how games can be designed to appeal to the female audience. Research suggests that the current way of designing games often neglects narrative, deep characters, and emotional content. Most games focus on creating goal-related tasks, such as collecting, navigating, or shooting, which are components that are mostly preferred by the male audience. Therefore, this thesis explored which game components appeal to women through empirical data collection and through existing literature by using the Exploratory Research Approach.

A number of design components were identified and used to develop three prototypes that focused on various design components. Three qualitative tests with women, who do not usually, play games, were conducted, to explore the identified components. The findings indicated a number of design features that are important to focus on when designing games that target the female audience. By following these design guidelines, it might be possible to design innovative games that potentially can attract a new audience such as women with little prior gaming experience

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PREFACE

This Master's Thesis is written by Kathrine Midtgaard Stone on the final 10th semester at Aalborg University Copenhagen.

The APA reference style is used for the bibliography. All citations are interactable and the reader can therefore be directed to the cited section, table, figure, or reference by clicking on the citation.

For each chapter and section in the report there will be an introduction and a summary. These can be used to get a quick overview of content. A video showcasing the thesis is available on `https://youtu.be/9ZTmx7HeVc8` or in the appendix (A, 5/i).

I would like to thank my supervisor Henrik Schønau Fog (`hsf@create.aau.dk`) for his support. In addition, a special thanks to Chris Crawford who, throughout the project, has provided technical and academic input.

CONTENTS

CHAPTER 1

MOTIVATION

My personal motivation for this project started when I began talking with game designer Chris Crawford. Over the past year (starting from summer 2017) I have had the honor of having weekly meetings with Crawford, where we have discussed games and interactive storytelling with a focus on the issues and limitations that exist within the game industry. One of the issues, we kept returning to, was the lack of games directed at females. I have had a difficult time finding games that appeal to my interests and I therefore have a big motivation for investigating this area more in depth. Furthermore, I got the chance of working together with Crawford throughout the development of one of the prototypes, and got the chance to learn from one of the game design pioneers.

Crawford has emphasized the importance of interactivity in games, and have criticized the game industry for developing games that often revolve around the same game mechanics. The game industry is mostly focusing on developing games that focus on simulating physics and objects, such as action and strategy games. He argues that the focus should be shifted from the physical side of games, to focus more on intangible concepts such as emotions and the complexities within relationships, to create innovative games that can appeal to a new audience such as women. To address the female market, it is necessary to create games around meaningful interaction with characters and focus on social reasoning. In this way, Crawford argues that the game industry is failing to target the female market.

The problem with few games directed at women have been under debate for the past three decades. Even though, there has been many advancements within games for females, games today are still more than often targeted at the male audience. One problem is the minority of women in the game industry. It is therefore often men that develop games for the male audiences. In order to improve the market for females and potentially attract more females into gaming, it seems necessary to investigate female preferences within games. Furthermore, most research investigates females, who already play games. In order to appeal to a new audience, it is also necessary to investigate females, who do not usually play games. My academic motivation for this thesis is therefore to contribute with suggestions for how game developers can design games with more variety and thereby reach more women.

CHAPTER 2

INTRODUCTION

The video game industry has constantly been evolving since the late 1950's and early 1960's, where the first video games were launched (Heeter, Egidio, Mishra, Winn, & Winn, 2009; Scharkow, Festl, Vogelgesang, & Quandt, 2015). Within the last two decades the game industry has experienced a shift in their demographics (Kiviranta, 2017; Phan, Jardina, & Hoyle, 2012). Before the 1990's many people believed that women and girls were just not interested in video games (Kafai, Richard, & Tynes, 2017). With the launch of Barbie Designer Fashion in 1996, it became evident that there was a whole new audience to target within the game industry.

Since then, there have been many attempts of reaching out to the female audience, which have focused on creating games directed at females and creating spaces for girls and women, where they would feel comfortable playing (Kafai et al., 2017; Ray, 2004). One of the important movements was the 'Girl Games' movement, which began in the 90's and focused on designing games for young girls. This movement, showed the industry that the female audience is just as interested in games as the male audience.

Even though, the number of women game consumers have increased significantly, there is still an ongoing debate on how the industry should target the female audience. The debate has mostly focused on diversification of game characters and production teams, in order to break with the stereotypical representation of female game characters that have little or no resemblance of real women and girls (Kafai et al., 2017; Kiviranta, 2017; Kondrat, 2015). This topic of gender in games has been prominent in the past two decades and is still in the spotlight of today's discussion.

Crawford criticizes how the game industry has tackled the problem with targeting the female audience. He argues that the game industry has set the standard for the debate and that it remains the same as it was two decades ago; when game designers took pac-man and put a bow and red lipstick on the yellow orb, and thereby developed a game for women (Crawford, n.d.). Solely changing the character of the game, will not give anything valuable in the longer run. In order to create games for females, the focus should not only be on the aesthetic aspect of games but first and foremost on game play and narrative.

Reed (2017) and Bogost (2017) also claim that the industry is not focusing enough on creating games with deep stories and characters. This has led to many games revolving around simulating physical objects instead of the more emotional side such as love or romance (Conditt, 2018). Similarly, Gershkovitz (Kafai et al., 2017) and Wong (Conditt, 2018) argue that videogames are exploring male fantasies such as fighting, shooting, doing sports, or saving the princess. Female fantasies such as

romance or drama, remain unexplored in the game industry but have proven preferable for females in other entertainment media.

This could have resulted in the lack of games that target the female audience. As Crawford mentions "In games, you chase things, things chase you; you shoot things, and things shoot at you. You search for things, acquire things, navigate things, move things, destroy things—it's always things, things, things and never any dramatically significant interactions with people in games." (Crawford, 2012). In order to create games, which target women and possibly appeal to a new target audience, it seems necessary to explore female preferences within games more in depth.

The aim of this study will therefore be to shift the focus from the aesthetic aspect, such as the character's appearance, and instead focus on creating games, where the theme and the concept revolve around female preferences such as interpersonal relationships. In order to do this, it is important to look at the efforts made within the area of games for females and to explore which types of game components that females prefer. Therefore, the initial problem statement, which will guide this project, is:

"What can be considered female preferences within video games, and how can the findings be used as design guidelines for developing games directed at females?"

CHAPTER 3

EXPLORATORY RESEARCH APPROACH

This section concerns the overall research approach that will be used throughout the thesis. In order to address the research question, several data collection methods will be used.

Although, games for females have been studied for decades, it still remains an issue today. Several studies investigated female game preferences, but, as far as I know, there exists no theoretical framework that tries to get a holistic overview of how games for females can be designed. In order to gain a deep understanding of why the problem still exists and to get an understanding of the game features that females enjoy, the Exploratory Research Approach will be used (Stebbins, 2001).

Stebbins (2001, p. 6) describes that exploration is a useful approach for researchers "(...)when they have little or no scientific knowledge about the group, process, activity, or situation they want to examine but nevertheless have reason to believe it contains elements worth discovering". In this way, Exploratory research is useful when dealing with a problem that has not been clearly studied and when there is a need to make a more precise investigation of the problem at hand (Bannan, 2009; Sreejesh, Mohapatra, & Anusree, 2014).

The main goals with exploratory research are described by Sreejesh et al. (2014) as analysing the problem, evaluating alternatives, and discovering new ideas. Stebbins (2001, p. 3) further describes the goal with exploratory study as an approach "(...)designed to maximize the discovery of generalizations leading to description and understanding". Exploration is therefore an inductive approach to derive generalizations of the subject being explored, whether it is a group, a process, or an activity (Stebbins, 2001, p. 6).

Even though, exploration is primarily inductive in nature, researches can still use the deductive approach during the development of a theory or framework. The deductive approach can be used to verify and confirm the generalizations that have emerged from the data (Given, 2008; Stebbins, 2001).

The exploratory approach is particular useful in this thesis, as it allows me to make a more precise investigation within the area of game design for females. Furthermore, it can lay the foundation for a theoretical framework as well as give the possibility to explore certain areas more in depth.

Most often, exploratory studies are predominated by qualitative data. Qualitative research differs from exploratory research, as qualitative research is a means to describe the methods of data collection, whereas exploratory research emphasizes the inductive approach of theory building (Stebbins, 2001, p. 5).

Quantitative and qualitative methods for data collection will be used. Both types of methods can produce and describe data and will be used in order to avoid bias. By using both qualitative and quantitative data collection methods it is possible to get a deeper understand of the problem (Bjørner, 2015).

The methods that will be used for data collection are focus groups, interviews, and surveys. This can be seen as the primary data within the thesis. Apart from the primary data, secondary data will also be investigated. Secondary data revolves around existing research and will be used to investigate the initial problem statement by clarifying, and identifying issues within games for females (Sreejesh et al., 2014). Moreover, secondary data can lead to a more clear and specific research question. Thus, the secondary data will be used as an initial exploration of the target audience, related research, and related products.

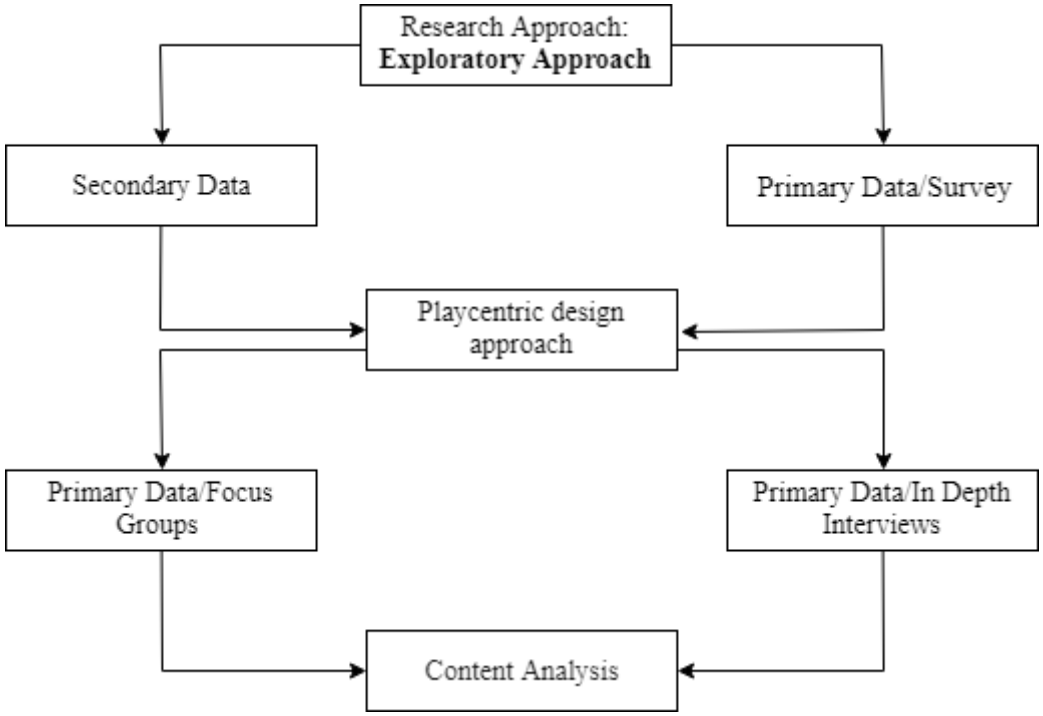

Figure 3.1: Overview of Methods used

Figure 3.1 gives an overview of the different methods that will be used throughout the thesis. The first part of the thesis will investigate secondary research and an initial round of data collection will be conducted to further investigate the findings. The second part of the thesis will revolve around the development of three prototypes in order to explore certain game features that females enjoy. The methods that will be used to investigate the target groups' thoughts and experiences with the prototypes are Focus Groups and In Depth Interview methods. Each data collection method will be described at its appropriate place in the report.

By using these methods, the thesis will empirically explore female preferences within games and investigate how game components can be implemented to appeal to the audience.

CHAPTER 4

BACKGROUND

The goal with the Background chapter is to give an understanding of gender disparity within the games and to narrow down the research problem.

The Background chapter consists of a literature review that describes the efforts made within games for females and analyses gender issues within games. The litterature goes back to 1980, where scholars began investigating gender disparity in video games. The reason why the thesis starts at the beginning, is to get a holistic overview of the problems within games for women.

The background chapter ends with an overview of gender issues within games and a direction for the rest of the thesis.

4.1 Gender Issues Within Video Games

In order to effectively investigate video games and its appeal to women it is important to go through research within the field to draw on others' experiences. Gender differences within games is still an ongoing debate in today's game industry (Kiviranta, 2017). Research within this topic often revolves around female characters in video games, the gender distribution in the game industry, and gender game preferences. However, little research tries to get a holistic perspective on these findings. The following section will therefore review literature that revolves around the efforts made within games for females to identify the main problems and to delimit the problem field.

4.1.1 The Three Waves of Feminism and Games

The larger discussions within feminism and games can be divided into three main waves (Jenkins & Cassell, 2008; Kafai et al., 2017; Richard, 2013; Trépanier-Jobin, 2017). The first wave (roughly, 1980-1999) began with the discussion which went on 'why do girls not play games'. The discussion focused on how games did not target the female audience and how most games featured narrow stereotypes (Richard, 2013). These issues were described in the book *"From Barbie to Mortal Kombat"* (Cassell & Jenkins, 2000), which brought attention to females as game consumers. They argued that the study of designing games, meant designing games for boys. They wanted to change the focus and investigate how to design games for girls.

For a long time, games had been associated with trajectories in science, math, technology, and engineering (Kafai et al., 2017; Richard, 2013), and it was important to get more women into these career paths. The first wave therefore concluded that there was a need for more games directed at

girls and suggested how games could potentially appeal to girls. The games, at that time, included very few female characters, and those who were included were stereotyped as damsel in distress. There were therefore a need for more female characters that were non stereotyped (Richard, 2013). Many studies were conducted that sought to explore and understand what females preferred in games, in order to design new types of games. Amongst findings from this first wave, research showed that females preferred non-violent games, emphasis on drama of human relationships, active female characters, and music (Greenfield, 1996; Richard, 2013). Furthermore, there was a need for more female game developers in order to design games that would appeal to females. Greenfield (1996) also argued that knowledge should be drawn from females' taste in television programs. Another finding showed that females preferred more realistic settings, less negative-feedback than males and more gender-neutral characters (Richard, 2013). In this way, the first wave of game feminism focused on understanding gender differences within games by exploring various aspects of games and gender.

The second wave (roughly, 2000-2008) took starting point in breaking the norms within traditional games (Kafai et al., 2017). Some researchers continued to focus on identifying and understanding the difference between males and females, by exploring game preferences and game-play elements (Richard, 2013). Others shifted their focus from game mechanics and representations, towards understanding games and girls in a wider sociocultural context. During the second wave, the number of female game consumers began increasing. Researchers began investigating females who already played games and was part of the gaming community (Jenson & De Castell, 2010; Richard, 2013). However, even with the increase in female gamers, many problems still existed such as: few female game developers, sexual dimorphism between male and female characters and avatars, and exclusion of female gamers in game communities (Kafai et al., 2017). Furthermore, researchers began to investigate more nuanced areas of gender and games. They realized that most research had concerned young girls and that findings had been extrapolated to apply to women, failing to see females as a nuanced audience. Studies began investigating other contextual factors within gaming, and found that age had a significant influence on game preferences (Yee, 2015).

The third wave (2008-today), and the current discussion within gender and games, focuses on understanding intersectional concepts such as sexuality, race, class, and ethnicity across genders in games (Kafai et al., 2017; Richard, 2013). These concepts are investigated by looking at the nuances of experiences and expressions, and by redefining conceptions of masculinity (Kafai et al., 2017). When studying gender differences in games, most research implicitly focus on females, as males and masculinity has become the norm in game research. Searle and Kafai (2009) explained that boys use games as an alternative space from the 'adult-supervised and structured' spaces at home and in school. Boys use games to express 'boys culture' such as competition, peer recognition, independence, violence, humor, and role-play (Searle & Kafai, 2009). Within these spaces boys can act out their fantasies of hypermasculinity, with no consequences, which often include violent behavior (Richard, 2013). While, this creates a unique place for males, it also tends to create exclusion for others who come with a different culture and different purpose with games (Kafai et al., 2017). Researchers have explained that this might be a reason why, females have been subject for harassment within gaming communities (Kafai et al., 2017; Richard, 2013).

Gender representation of females in games is still an ongoing debate in the third wave of game feminism. Shaw (2017) tries to reframe arguments for diversity in games. She wants to shift the attention from the need of minorities to identify with characters, to the need of all players being able to identify with various characters. She argues that representation of stereotypical characters should focus more on how they are used in text, than how they appear aesthetically. For example, some stereotypes are used to justify hatred towards characters or make characters comical. Instead of focusing on the aesthetic part of game characters, developers need to focus on the characters personality and behavior. Furthermore, Shaw requests the need for game developers to widen their perspective to consider diversity and innovation not only in characters, but also in narrative and

mechanics (Shaw, 2017).

Similarly to Shaw, McDonald (2016) discusses the need for more diverse themes and narratives in games. Specifically, she argues that developers should use romance in games to appeal to a wider target group such as females and the queer community. Her study suggests that the audience is ready for queer romance in games, and that straight gamers are supportive of their queer counterparts. This suggests that the gaming community is changing to becoming more diverse and inclusive. However, the game industry has still not been able to create diverse genres, such as romance games. Romance continues to be a sub-component within other game-genres (McDonald, 2016).

Over the past three decades, gender and games have been discussed and investigated from various angles. Academics have tried to understand the difference in game experiences across genders and have tried to understand games and gender on a sociocultural level. Furthermore, intersectional concepts, such as sexuality, race, class, and ethnicity, have been researched across genders. The research over the past three decades sheds light on many nuances within gender and games. However, the game industry has not changed significantly when considering the many suggestions for diversifying games. Not many games have been developed with the female audience in mind, when considering some of the findings from the past three decades. There is still a need for more diverse and creative content to experiment with new forms of games that can appeal to females.

4.1.2 Today's Female Gamers

Statistics show that females made up 41% of gamers (esa, 2017) in 2016. In their study, gamers across all platforms were considered, which some argue do not give a representative sample of 'real' gamers, such as PC/Console gamers, and that there still exists major gender biases in game design (Yee, 2017). Yee (2017) investigated how the percentage of females varied across genres. Here he found that the two most female dominated genres are Match 3 (e.g. candy crush) and Family/Farm simulators as seen on figure 4.1. These are games that can be categorized into casual games, which are games that have a short play time and are easy to learn (Chess, 2012). The data further implies that there are few percentages of hardcore female gamers. There still remains a big variance between male and female gamers in the various game genres, which is not surprisingly as game preferences vary across gender (Phan et al., 2012). However, most games that are being developed, are still centered around male preferences, such as the action genre (IGDA, 2018).

Furthermore, it still remains an issue with gender disparity in the game industry. Statistics show that in 2015, female game developers accounted for 22% of all professionals in the industry. This number is an increase from 2001 where only 11,5 % of game developers were women (IGDA, 2015). However, in 2017 the number of female game developers had not changed significantly. Women still remain a minority in the game industry with 21% female developers (IGDA, 2018).

Even with the amount of attention there has been on females and games, the industry seems to only have changed their target audience a little. Shaw (2017) also criticizes that the game industry does not always listen to academics, and she questions how much the game industry has actually changed. She mentions that the industry's structure and how the audience is envisioned have changed a little, but it has been a slow development and there is still a lot of work needed to making games more diverse.

4.1.3 Summary

From the above research it is clear that many academics have put effort into describing the problems associated with games for females. Several problems have been identified over the past three decades as summarized in table 4.1.

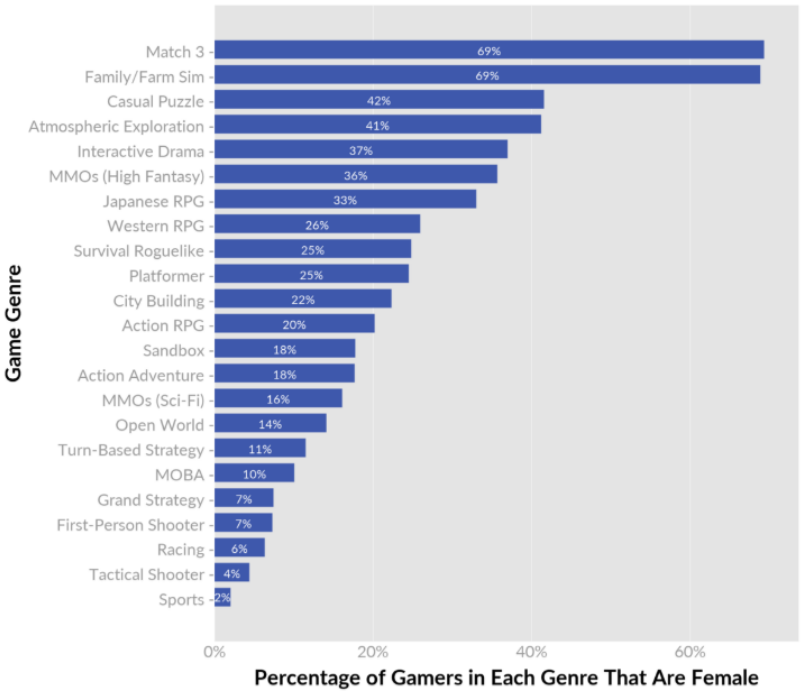

Figure 4.1: Percentage of female gamers as a function of game genres

Table 4.1: Problems associated with games for females

Problems associated with games for females
Representation of female characters • Few female characters in games • Highly stereotyped characters
Failure to see females as a nuanced audience • Most research concerns girls and not women
Exclusion from the gaming community • Females are often not welcomed into the gaming community • Subject for harassment
Gender differences within game preferences • Female prefer different types of gameplay than men

In order to move forward from these problems, Shaw (2017) suggests that “Game developers need to challenge themselves to make games that offer more kinds of narratives, more kinds of characters, and more kinds of mechanics if they want to promote innovation.”.

This thesis will therefore focus on exploring different types of gameplay and mechanics that target the female audience. The focus will be on how to combine, implement, and design these mechanics in order to successfully reach the target group. Of the five main problems presented in table 4.1, only the last category will be explored. The following chapters, will therefore identify mechanics, themes, narratives, and characters that appeal to females and investigate solutions for implementing these.

CHAPTER 5

ANALYSIS

This chapter will focus on understanding the target group, the efforts made within games directed at females, and investigate interactive media experiences to explore the best way to target the female audience.

The Analysis chapter is divided into three parts. The first part of the Analysis begins with the target group, and an initial round of data collection, to explore the target group's thoughts and preferences within video games. From the results and from the literature review, the project is further narrowed down to focus on Interactive Storytelling (IS). The second part is mainly focused on identifying the problems within IS, and discuss how to design IS content to appeal to the target group.

The final part of the analysis consists of State Of The Art (SOTA), where three games are analyzed with respect to the previous literature. The games are each rated in terms of how well they target the female audience, and in terms of their narrative structure.

The findings from the Analysis will be used to guide the design.

5.1 Female Gameplay Preferences

Today, the ratio of male and female video game players is almost equal. However, there still exists many differences in the gaming culture across gender. Studies have identified several differences in gaming motivations, game preferences/behavior, genre preferences, and frequency of play between males and females (Kowert, Breuer, Festl, & Quandt, 2015; Wilhelm, 2018). In order to investigate new ways of designing games to females, I will look at research concerning gender preferences within games with a focus on features that women enjoy. The identified components will be used to develop a set of design guidelines, to guide the development of a prototype that can appeal to women.

5.1.1 Play preferences

Tondello, Wehbe, Orji, Ribeiro, and Nacke (2017) investigated player preferences and the results showed that gender significantly influenced these preferences. Women were likely to prefer games that included casual play, which was defined as short sections of gameplay often played on a mobile device. On the contrary, men were more inclined to prefer multiplayer and competitive communities (Tondello, Wehbe, et al., 2017). Wilhelm (2018) also confirmed that gender stereotypes are reflected in play styles and gender preferences. Males are more competitive and elicit stronger preferences towards action-oriented games than female players. This was further confirmed by Yee

(2015) who investigated motivational factors for playing games across gender. He found that males were driven by competition, challenge (reaching the most difficult level), excitement(fast-paced games with high intensity), and strategy. Female gamers were driven by Design, Fantasy, Story, and Completion. Here Design elements include aesthetics such as different expressions and the possibility for customization. Fantasy elements refer to the idea of being someone else in another world. Story elements are elements of a rich narrative and deep characters. Completion refers to collecting and accomplishing goals (Yee, 2015). This shows, that men and women prefer different aspects of games, which should be taken into consideration when targeting game consumers.

The components that females enjoy in relation to play preference include casual play, story, design, fantasy, and completion. In this way, females are likely to prefer games that have a short amount of play time (casual games), are story driven (story), allow the player to become someone else in another place (Fantasy), and give the player the possibility of completing challenges or activities (completion).

5.1.2 Conflict and competition

Another aspect, where men and women differ, is in regards to competition. Research shows that there is a need for games with less competition and new ways of resolving conflict (Denner, Bean, & Werner, 2005; Hartmann & Klimmt, 2006; Ray, 2004). Males and females differ when they have to resolve a conflict. When men are presented with a conflict, research suggests that in general, males will use a confrontational manner to resolve the conflict (Ray, 2004). This means, that it will often end with a zero-sum outcome; I win, you lose (Denner et al., 2005; Ray, 2004). Females will instead choose negotiation, diplomacy, and compromise over direct confrontation. Ray (2004) further relates this to direct competition vs. indirect competition. Females will enjoy indirect competition, where the players do not act directly at their opponent, such as in various puzzle games (Hartmann & Klimmt, 2006; Ray, 2004). For females it is not important to have a direct goal or a clear way of winning or losing. Instead, there needs to be meaning behind the goals in the game e.g. killing enemies just for fun or for competition, is not a meaningful goal (Denner et al., 2005). Yee (2015) also found that females do not prefer competitive elements, such as duels and matches, in the same degree as males, which can be seen as direct competition. However, females enjoy completion, which he defines as collecting and finishing parts of the game. This is somewhat similarly to what Ray (2004) refers to as indirect competition; females enjoy competitive game elements as long as there is meaning behind the goals and that players do not have to engage in direct confrontation.

From this section it has been identified that females are more likely to enjoy indirect competition, where conflicts and challenges can be solved through communication such as negotiation, diplomacy, and compromise.

5.1.3 Social Interaction/Character Interaction

From the first wave of game feminism, researchers argued that in order to make games more appealing to females, they should put emphasis on the drama of human relationships (Greenfield, 1996; Richard, 2013). Hartmann and Klimmt (2006) draw parallels from video games to females' preferences for social interaction in television. Females value television programs that focus on interpersonal relationships and contain meaningful dialogue, as opposed to action-oriented programs (Hartmann & Klimmt, 2006; Mayer, 2003). In their study, they found that similar components was the case for female preferences within video games. They found that females preferred rich social interactions and that they disliked violent content. They also argued, that games do not revolve around rich-social interactions and developing such games could potentially draw more females into gaming. Similarly, Kiviranta (2017) argues that social interaction such as communication between characters is an important factor when designing games for women. She argues that this can be due to the fact that women in general enjoy social chattering more than males.

When looking at socialization within video games, it is important to note that females enjoy social interaction with video game characters. They do not prefer multiplayer games, and online multiplayer games to the same extent as males. Studies show that males are attracted to social interaction, when they can challenge and compete against other players, such as in multiplayer games (Tondello, Mora, & Nacke, 2017; Tondello, Wehbe, et al., 2017). Women prefer to be more immersed in the narrative. Thus, for women, social interaction is important when it is part of the narrative, but not as important in terms of socializing with other players (Tondello, Mora, & Nacke, 2017).

The research shows that women in general prefer games that revolve around character interaction, where character interaction includes communication between player and character with a focus on meaningful dialogue and relationships.

5.1.4 Theme and Setting

Female preferences within theme and setting have been discussed since the first wave of game feminism, and can be categorized into 'pink' or 'purple' games (Bonefant & Trépanier-Jobin, 2017; Subrahmanyam & Greenfield, 1998). Pink games revolve around reflecting girls' aesthetics and activities, whereas games that focus on girls' real life interests are considered purple games. The game 'Barbie Fashion Designer' could be categorized as a pink game, and was influenced by the study of Kafai (1996) who investigated how nine to ten year old girls would design their own games. The Barbie Fashion Designer allowed girls to design clothes for different dolls, choosing colors, styles and patterns (Subrahmanyam & Greenfield, 1998). Brenda Laurel conducted several sociological and ethnographic research into girls' patterns and interests and developed games that would resemble the everyday life of girls, which resulted in a change from 'pink' games to 'purple' games (Jenkins & Cassell, 2008). She found that games should focus on real life issues and social realities to attract females (Richard, 2013). Furthermore, she argued that developing games around stories and narrative is important to attract females. The focus should be on constructing the story, and not constructing objects, mechanism, or environments (Laurel, 2004). Similarly, Kafai, Heeter, Denner, and Sun (2008); Kiviranta (2017) found that women enjoy storydriven content, interesting stories, and deep characters. Purple games have been expanded to target not only girls, but also women by revolving around real-life issues of women (Kafai et al., 2008). Research suggests that the most popular games within females, are games that take place in a realistic setting, and allow players to explore relationships (Denner et al., 2005; Richard, 2013).

In general, women prefer empathic game elements and themes. This include games that are rooted more in the emotional compared to the physical (McDonald, 2016). Studies show that females are more receptive to emotional stimuli, compared to visual stimuli (Ray, 2004). To get a strong reaction from females it is therefore necessary to include emotional stimuli in games. Males, on the other hand, will have a stronger response to visual stimuli (Ray, 2004). When looking at today's games, it is apparent that there is a preponderance of games with visual stimuli compared to games with emotional stimuli. Similarly, games revolving around emotional themes are also a minority. McDonald (2016) investigates romance in games and argues that it is a genre that have been successfully implemented in movies and literary fiction, but has still not broken out in video games. Furthermore, romance is a genre that is dominated by women consumers both in relation to movies and fiction and can therefore elicit huge potential for the game industry. Romance in games is often shallow and functions as a small game element in today's game. The need for more themes that are rooted in the emotional, such as romance, are still necessary to reach a diverse target audience (McDonald, 2016).

This section suggests that games should focus on story driven content that is designed with deep characters. Furthermore the story should be designed around real life issues and emotional content.

5.1.5 Amount of play time

Many studies also suggest that there exists a difference in the amount of time that game consumers play across gender (Royse, Lee, Undrahbuyan, Hopson, & Consalvo, 2007). Research suggests women feel that they do not have as much free leisure time as their male counterparts (Chess, 2012, 2013; Royse et al., 2007). For example, Royse et al. (2007) identified, that many women feel that they need to engage in house chores whereas men do not feel obliged to do so, to the same extent. They also found that some women did not engage in playing games, as the amount of time required to play was mentioned as 'ridiculous' (Royse et al., 2007). Others have argued that the large number of female casual gamers can be explained by their limited leisure time (Chess, 2013). Causal games can be played for short amount of time, making it easier to align these types of games with existing leisure time for women (Chess, 2012, 2013). Thus, games that target women should take into consideration their general use of leisure time. As Chess (2012) explains: "women and play have been inextricably linked to issues of time: what a woman considers play or leisure is not necessarily defined only by the activities she enjoys, but also by the activities that fit neatly and cheaply into her fragmented schedule". Therefore, women do not only engage in activities based on enjoyment, but also based on the amount of time needed to carry out the activity. This section has identified that the female audience will be more likely to play games that have a short amount of play time.

5.1.6 Summary

The above research indicates that females enjoy different game components than males. Designing games for females should focus on mechanics that revolve around character interaction, completion, customization, and indirect competition. The games should be story driven with a focus on realistic content, emotional stimuli, and deep characters. Moreover, games that have a short amount of play time will appeal more to women.

Researchers have argued that focusing more on designing games around female preferences and themes, can potentially attract a diverse target audience, such as women who do not usually play games.

Table 5.1: Preliminary Design Guidelines

Design Guidelines
Mechanics
• Character interaction
• Completion
• Customization
• Indirect competition
Content
• Relatable and realistic content
• Character interaction
• Storydriven content
• Deep characters
• Being someone else in another place
Player Experience
• Emotional stimuli
Duration
• Short amount of playtime

This chapter has identified a number of game components that females enjoy. In table 5.1 the components have been summarized by categorizing the findings into four main categories; Mechanics, Content, Player Experience, and Duration. These components will be explored more in

depth in the following chapters and will be used as design requirements for the iterations. Throughout the report table 5.1 will be referred to as the Design Guidelines.

5.2 Target Group

The identified components from the previous section (see table 5.1) are mostly based on research concerning female gamers. It is important to mention, that there of course exists many games that females enjoy, and that some females are very satisfied with the games on the market. However, there are also females that still view those games as a male activity, and feel that their time is better spend on other activities (Royse et al., 2007).

The female audience is a nuanced audience, and it is therefore important to narrow down the target group. Most research does not mention the age of the females, and in the papers that do, it mostly concerns the younger female audience who play games, and not women who do not usually play games. One study that includes women, who do not play, is the study made by Royse et al. (2007), where they investigate individual difference of computer game consumption. They conducted in-depth interviews and focus-groups, with women in the age range 18-37 years old, and divided them into three categories: Power Gamers, Moderate Gamers, and Non-Gamers. Power Gamers played from three to ten hours weekly, Moderate Gamers played one to three hours a week, and Non-Gamers did not play any games.

Their study found that women Power Gamers, enjoy many aspects of the gaming experience such as the competitive elements and mastering the game-based skills, and enjoy multiple genres. Moderate Gamers dislike violent games, but enjoy puzzle games and other casual games that focus on indirect competition. Non-Gamers thought that games were a waste of time, and that their time was better spend on things that matter (Royse et al., 2007).

From their study it is evident that Power Gamers already enjoy the games on the market, and will thus be disregarded in this thesis. Moreover, women Power Gamers are a minority within female game consumers. Some mention that women only represent 5% of all Power Gamers, even though statistics say that 41% of all gamers are women (Yee, 2017). Women Moderate Gamers seem to be biggest group of female gamers when looking at female gamers in each genre (Yee, 2017). These are the women that mostly enjoy casual games, and are less likely to enjoy multiple game genres. This is an interesting target group to investigate, as they might feel that games should be directed more towards their preferences. Non-gamers is a target group where little research exists. There can be many reasons why these women do not engage in games. However, as the gathered research suggests, one reason might be because few games actually focus on their preferences.

Therefore, the latter two target groups will be the focus for the study. Furthermore, the age group will concern women in the 20-30, due to their time at hand. Women in this age might have more control over their spare time, compared to women above 30, as children and jobs take up more of their time. The reason why younger girls have been disregarded is due to the existing research within this age group.

In order to explore why women non-gamers do not play games and to explore which game features appeal the most to women Moderate gamers a survey was collected as the initial round of data collection.

5.2.1 Initial Round of Data Collection

In order to explore the target audience's thoughts and preferences more in depth, an initial round of data collection was conducted. The findings was used to validate the design components from table 5.1, and to see if more categories or components were needed.

Survey

The survey method was used for data collection, in order to gain a larger amount of data. A questionnaire was created online, and consisted of both open-ended questions and multiple choice questions. The reason why open-ended questions were used, was to let the participants explain their opinions about video games in general, and to allow them to comment on features they felt were missing in today's games. In this way, it was possible to obtain some personal perspectives and in depth responses. The multiple choice questions concerned demographics such as age, gaming behaviour, and their possession of game-related technology.

The questionnaire was distributed to Non-Gamers and Moderate Gamers through Facebook. A total of 31 women took part in the questionnaire. The data and questionnaire can be found in Appendix (A, 2/a and 2/b).

The qualitative data was examined by using the method of content analysis, which will be described more in detail later, in the data analysis section 7.1.5. A systematic analysis of each response was made, where co-occurrences and frequency of terms were noted down in different categories (Bjørner, 2015).

Findings

The results showed that there was a big difference in women non-Gamers possession of game-related technology compared to women Gamers. Figure 5.1, shows the distribution of the data. It is evident that Non-Gamers, have little possibility to play certain games, as for example only 6.7% of women Non-Gamers knew, the digital distribution platform, 'Steam'. Furthermore, only 13.3% owned a mouse, and 20% owned a console. Compared to Gamers there is a big difference which must be considered when designing games that should target both Non-Gamers and Moderate Gamers.

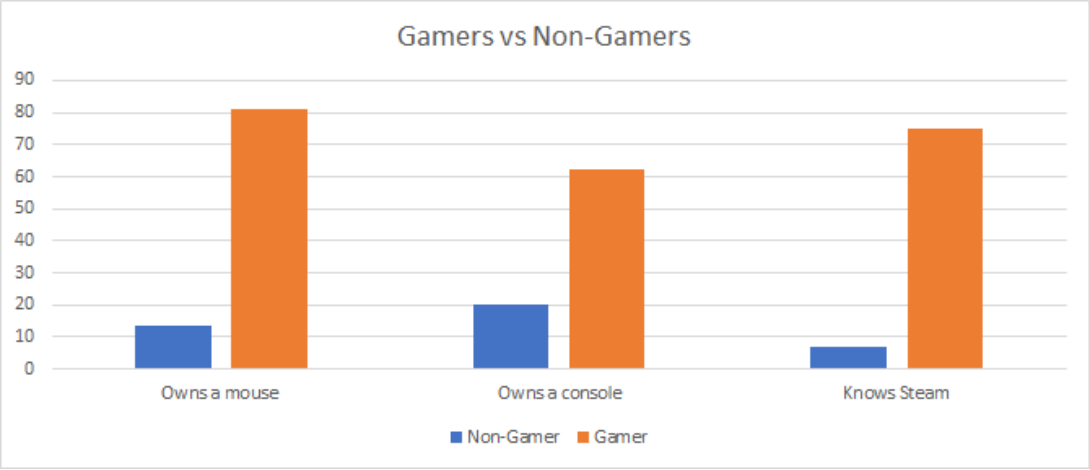

Figure 5.1: Equipment for playing games between female gamers and non-gamers

In regards to the participants' perception towards video games, the questionnaire showed similar findings to Royse et al. (2007). In general, the women Non-Gamers saw games as a male activity with violent content. One participant mentioned "I think that they are mostly for boys. They are all about shooting and killing stuff" (appendix A, 2/b), and another participant wrote "The equipment is too expensive and most games are war based which I have zero desire for" (appendix A, 2/b). Besides the violent content in games, the majority of women Non-Gamers also mentioned that they just did not find them interesting. One participants perceived games as boring "I dont use any time at it. Seems boring, I guess because of the topic: shooting or monster games" (appendix A, 2/b). Similar another

participant, mentioned that the games just did not target her interest “I don’t feel entertained, and often they are not targeted at my interests” (appendix A, 2/b).

The women who do play games, were more divided in their opinions concerning games. Most participants indicated that they enjoyed games. However, many also mentioned that something was missing in today’s games. For example, when asked how they felt about video games, one participant said “Positively, though I think they’re overplayed” (appendix A, 2/b) and another mentioned “They can be fun, but I feel most are men oriented” (appendix A, 2/b).

The results indicated that women Non-Gamers and some women Moderate-Gamers, feel that the games available might be missing features that can appeal to their interests. The second part of the questionnaire concerned which features they would like more of in today’s games, and consisted of an open-ended question where participants could write long answers. The data was therefore qualitative and was, as mentioned, analyzed through content analysis. The results from the gamer group can be seen in figure 5.2, and the results from the non-gamer group can be seen in figure 5.3, where the horizontal axis represents number of occurrences and the vertical axis shows grouping categories.

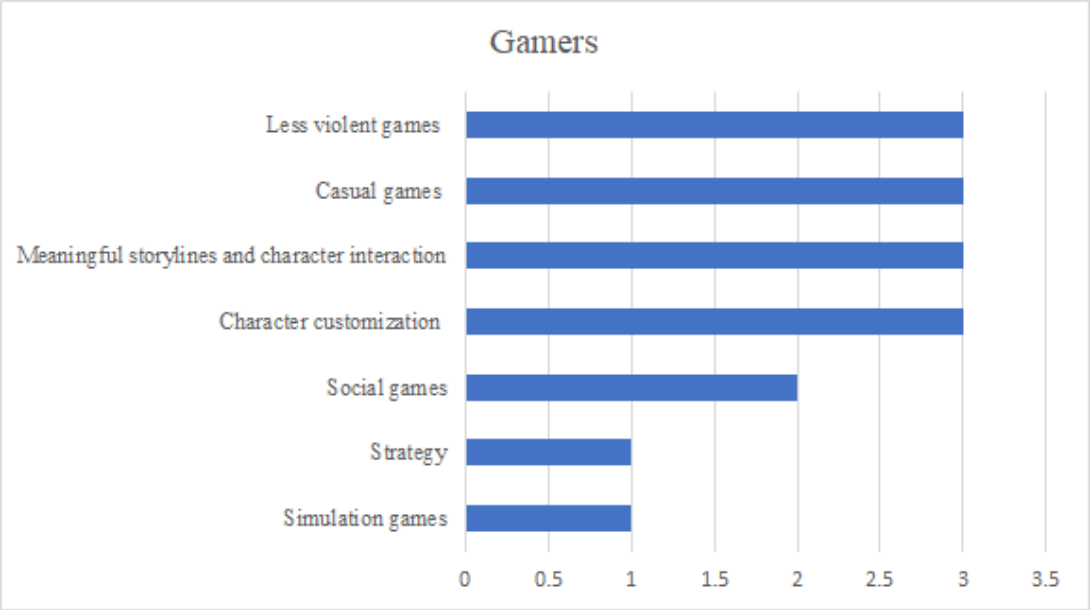

Figure 5.2: Coded results of initial survey amongst the women moderate-gamers.

The results showed that women across the two groups wanted more relatable games, casual games, less violent games, meaningful storylines, and character interaction. Participants from both groups wanted games with less violent content. One participant (Gamer) wrote “Gender neutral characters, strong, not sexualized female characters. Stimulating puzzles, more cute and friendly games, and less pointless violence” (appendix A, 2/b), similar to a response from another participant (Non-Gamer) “Not something violent. Maybe something with some romance or some friendship, something that is easy to relate to and not some boy fantasy about becoming all powerful and killing people” (appendix A, 2/b).

The majority of women Non-Gamers mentioned that they wanted games that they could relate to. One participant wrote (translated from danish) “It needs to relate more to my everyday life” (appendix A, 2/b) and another participant mentioned “to be closer to reality” (appendix A, 2/b), when asked what a game should focus on to catch their attention. The results indicated that one reason why women Non-Gamers do not play games, is that they regard it is as a male activity, that the games available are not relatable, and do not target their interest. Women Moderate Gamers also indicated that they wanted more games targeted at their interests.

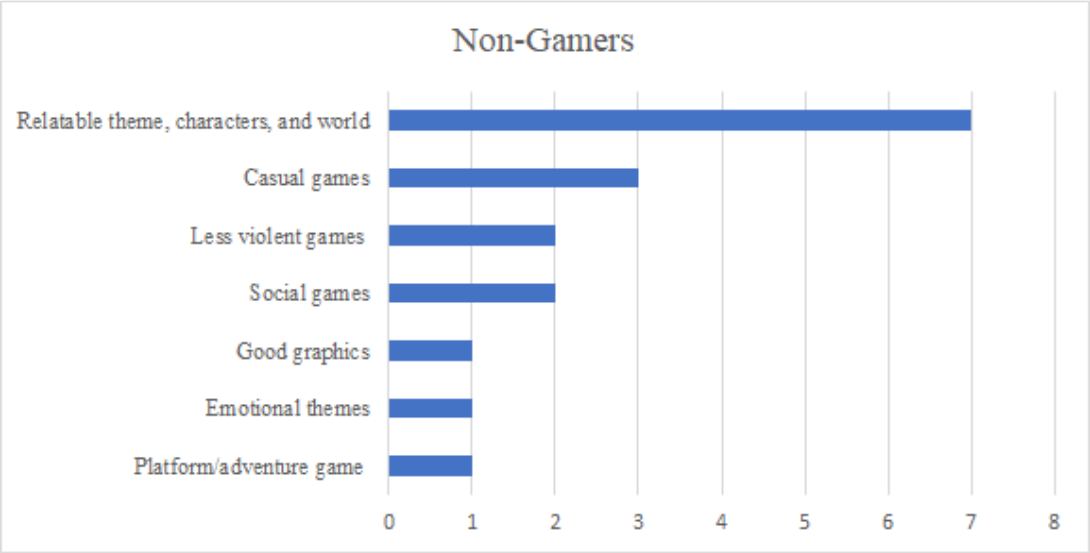

Figure 5.3: Coded results of initial survey amongst the women non-gamers

When looking across the two groups, most of the identified components are in consistency with the Design Guidelines from the previous section (see table 5.1). However, some additional components were found such as social games in form of multiplayer and cooperative games. Two women from each group indicated that they would like more games that focused on this component. The components that only consisted of data from one participant were disregarded. Another component that could be added, was in relation to the platform. In order to reach both Non Gamers and Moderate Gamers, the findings suggested to limit the platform possibilities. The platform should be something that the target group have, such as the mobile/tablet platform or the computer. In addition, it is important that the mechanics are simple enough that they can be carried out through touch or mousepad, as few women Non-Gamers own a mouse.

The following components will be applied to the Design Guidelines table:

Table 5.2: Additional Design Guidelines

Mechanics
• Mechanics that are easy to use
Player Experience
• Coop / multiplayer
Platform
• Mobile / Computer

To sum up, the findings suggested, that women Moderate Gamers, would like more games that focus on female preferences. Moreover, it might be possible to appeal to women who do not usually play games, by designing games around the Design Guidelines.

5.3 Games for the Female Audience

From the initial round of data collection and from the identified Design Guidelines, it is clear that the target group prefer different aspects of games than males. These concepts are not new, as some have been identified three decades ago. However, as mentioned, most games today still focus on male

preferences. There are many different explanations to why this might be. This section will look at some of the reasons why games for women have been given a lower priority by the game industry.

First of all, there is not enough women in the game industry. There still exists a majority of males in the game industry (IGDA, 2018). Furthermore, the women who work in the industry are often not in a position to make important decisions that influences the design (Kafai et al., 2017).

Another reason, is that most approaches to designing games that appeal to all genders have focused on the aesthetic and visual parts. The industry is creating more female main characters, and put more effort into designing them, such that they resemble real women. However, as seen through research into gender and games, the main problem does not lie with the aesthetics or visual part of games but at the action part: Women want social interaction, story-driven content and indirect competition. These are not components of game graphics but revolve around gameplay.

Many researchers have also criticized the industry for not being more creative in terms of gameplay (Crawford, 2014; Galloway, 2006; Reed, 2017). They argue that that the game industry have made big progress in graphics but little progress in terms of game play. It is especially important to investigate gameplay as this is the fundamental component of what constitutes a video game.

Video games differ from other entertainment media because users can interact with the medium. As Galloway (2006) states:

> "If photographs are images, and films are moving images, then video games are actions."

Similarly, Crawford's (2005), first rule of software design is;

> "Ask: What does the user DO?"

Thus, the fundamentals of video games are actions. However, the efforts within games for females have often focused on tweaking the visual components of the game, and not on the action components. Galloway (2006) argues that there exists no true avant-garde within video game action. He suggests that the industry should focus more on developing radical game play instead of radical graphics. Instead of focusing on designing characters and environments, the industry should "reinvent the architectural flow of play and the game's position in the world" (Galloway, 2006).

This thesis will therefore prioritize gameplay over graphics. From section 5.2, it was identified that women enjoy story-driven games, which focus on social interaction and resembles real life issues. Gameplay that revolves around interaction with characters are seen in many games and interactive narratives. However, not many games focus on this mechanic as the main gameplay element and do not dive into the complexities of relationships, such as emotions. This is the case for both video games and interactive storytelling.

One reason why there are not more games that focus on dramatic meaningful interaction between characters can be due to the complexities involved in developing these games. It is very difficult to create models or programs that resemble human emotions and reactions (Wood, 2017). This have caused many games to use pre-scripted dialogue and choices, which have little affect. Thus, many games lack the ability to create empathy, which is necessary for generating emotional immersion in the story. If empathy in the digital world is not reached, it will often result in a poor narrative. Lankoski (2011) argues that when a game includes many goal-related tasks, it can result in cognitive overload and thereby reduce empathic engagement. He explains that there exists two ways to become engaged in a playable character, where one focus on goal-related engagement and the other focus on empathic engagement (see figure 5.4). Goal related engagement deals with goals of the system and how they relate to the playable character, and empathic engagement refers to identification and

emotional attachments with the characters. Lankoski (2011) mentions that "High cognitive load in controlling a character in a high-speed action situation (such as shooting at enemies) can prevent affective mimicry and simulation". Here affective mimicry is part of empathic engagement and deals with the phenomenon of automatically mimicking other people or characters expressed affect. In this way, he argues that high paced action in games can prevent the player's ability to create empathy with the characters.

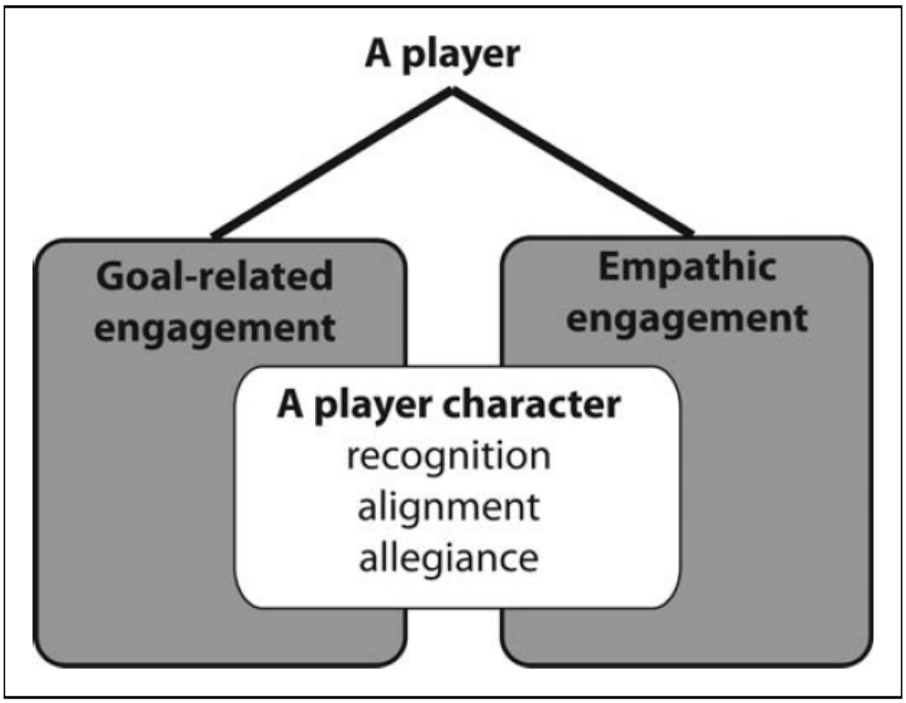

Figure 5.4: Lankoski (2011) model of engagement in a player character

As Wood (2017) argues, game developers have mostly focused on creating goal-related engagement instead of empathic engagement due to the limits of AI. The majority of games therefore focus on physics based structures such as shooters, action, and puzzle games and few games focus on empathic engagement and deep stories.

Bogost (2017) has claimed that video games consists of poor narratives and are failing at telling good stories. Bogost explains that, even though, many games have been praised for their stories, many companies are failing at prioritizing storytelling.

Interactive storytelling has not changed a lot within the last decade and not enough game developers are focusing on further developing it. Crawford (2014) has especially put emphasis on this problem and argues that interactive storytelling is the biggest challenge, which the industry is facing.

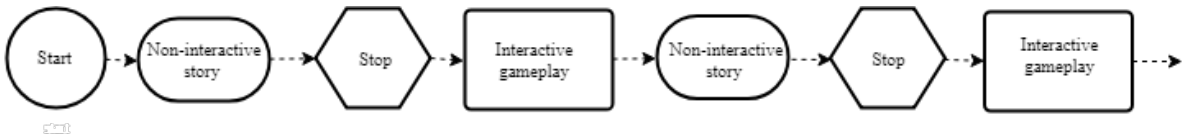

Figure 5.5: Interleaved Story Structure Inspired by Crawford (2005)

The game industry has become really good at creating interleaved stories/games but has not evolved within interactive storytelling (Crawford, 2014). Many games follow the pattern of interleaved games, where you alternate between non-interactive story, and some interactive gameplay, as seen

on figure 5.5. For example, Brothers: a Tale of Two Sons (Starbreeze, 2018) and Never Alone (Games, 2018), are both games that have been said to focus on the narrative but still follow the interleaved game structure. In these games you collect things, shoot things, or move things and the characters' emotions and relations are told through non-interactive cutscenes, texts, or voice over. Here game developers, solve the problem of creating empathy with the characters through cutscenes and texts and create a delusion of an interactive story.

Similarly, Reed (2017) states that stories in games are told through static, predetermined structures. He argues that the focus should be on making stories more playable. The gameplay should not only revolve around the physics-based structures that focus on goal-oriented engagement, but also include the story and emotional content.

Video games are really good at creating game mechanics that simulate physics but less good at mechanics that simulate human emotions. Wong, the lead designer of the game Florence, mentions that:

"When our technology was really primitive, the easiest things to create were simulations of sports and of physical things and battles and sort of black-and-white conditions, [...]Since then we've developed so much technology and discussion, and we're able to create stories and characters with a lot of subtleties, but it feels like gaming as an industry is still hanging onto that past as sort of the true form of gaming." (Conditt, 2018).

Galloway (2006), Wong (Conditt, 2018), Reed (2017), Bogost (2017) and Wood (2017) are only a few examples of game developers and researchers who feel that the structure of current games need to change. Common for all is that they suggest to focus more on the narrative in order to create deep stories and meaningful interaction.

5.3.1 Summary

The above research shows that games often focus on goal-related engagement and physics based structures. This has resulted in games that often have poor narratives and include narratives through interleaved stories. Researchers and game developers have put emphasis on the need to change the 'standard' way of developing games. When looking at the research within games for females it is also apparent that many of the components, criticized in the above research, are also things that women are missing in today's games. For example, the research suggests that games are lacking good narratives and deep characters. In addition, the industry should focus more on creating different types of gameplay instead of improving the graphics. The norm of the physics based structure and the interleaved stories need to change in order to create games that focus on narrative and characters and can result in empathic engagement.

From the above section, the following components in table 5.3 have been identified, which can be used to develop better games for females:

Table 5.3: Additional Design Guidelines

Mechanics
• Mechanics that push the story forward
Player Experience
• Empathic engagement

5.4 Interactive Storytelling

One way to focus on empathic engagement and explore new types of gameplay, can be to focus more on Interactive Storytelling (IS). Crawford (2005) mentions that, in order to create true IS, we need to

focus on dramatically meaningful interaction between characters. As the Design Guidelines 5.1 suggest that women enjoy games that focus on features such as deep characters, interpersonal relationships, and storydriven, IS might be a very suitable type of digital interactive media for the female audience. The following section will look at the components of IS to get a better idea of how IS applications can be designed to target females.

IS a relatively new field, which aims at creating innovative narrative experiences with audience interaction. There is not conformity within the field of IS as some researchers use terms such as Interactive Storytelling, Digital Storytelling, Virtual Storytelling, Interactive Narratives, Interactive Fiction, or Interactive Dramas interchangeably (Cavazza & Young, 2016; Ryan, 2009). This thesis will use IS, in accordance with Crawford's (2005) definition, to describe types of digital interactive media that allows the player to interact with characters/artificial actors in dramatically significant ways.

IS differ from video games, as IS is about people/characters, story, and interactivity. Games have less focus on story and actors, as games are a combination of graphical elements, hand/eye coordination, puzzle solving, challenge/direct competition, and resource management skills where players need to be able to distribute e.g. food, or ammunition in advantageous ways (Crawford, 2005). Basically, stories are about people, whereas games are about things. IS is a type of media, that allow users to interact with people/characters and make dramatically interesting choices. Games are more focused on creating goal-related engagement, whereas IS is focused on empathic engagement.

IS can be seen as a contrast to linear narratives, where the story, regardless of the medium, follow the author's intention (Cavazza & Young, 2016). However, IS limits the author's control of the unfolding of events, which has led to many issues such as, narrative structure, role of characters, emotional response, or level of interactivity (Cavazza & Young, 2016; Ryan, 2009). Many have argued that true IS, also known as the holodeck of IS, is not achievable in the nearest future as it is too complex in its form. The concept of the holodeck has been widely used within the field of IS, and concerns the idea of a virtual world, where players can enter and interact authentically with characters and environment and in that way build the narrative (Ryan, 2006; Wood, 2017). Even though, AI technology has advanced and IS has been investigated for over two decades, the holodeck vision of IS is still just a dream. As Brenda Laurel in 2001 said about interactive fiction: *"an elusive unicorn we can imagine but have yet to capture"* might still hold true today (Ryan, 2006, p. 17).

5.4.1 Interactive Narrative Structures

As the above section shows, the game (and IS) industry is still far from reaching the holodeck vision of Interactive Storytelling. With the limitations of current AI technologies, many developers are taking other approaches to IS (Wood, 2017). These approaches are not true IS, but experiments with simpler ways to add interactivity to narratives. Some of these include hypertext fiction, text-based adventure games, or interactive dramas (Ryan, 2006). These types of interactive narratives, cannot be called IS, but are instead interactive narratives where the player has a limited amount of agency. This section will look at a few Interactive Narrative structures that are being used in today's games to get a general idea of structures that can be used for the design phase.

The structure of a narrative has been defined by Abbott (2007) as consisting of three principle components: *story*, *plot*, and *narration*. The story is all events in chronological order, as stories move in one direction. The plot is the order and the connectivity between the story events, and narration refers to how the story is told. Plot and narration have often been referred to as narrative discourse how the story is communicated, or the how the story is rendered (Abbott, 2007).

Interactive narratives can use textual architectures to structure how plot and story should be connected. Ryan (2006) describes different types of textual architectures that combine plot and story in different ways. Mainly she uses two different types of architectures;

- Interactive architectures that affects discourse (plot)

- Interactive architectures that affects story

Interactive Architectures that Affects Discourse (plot)

The first category of architecture includes interactive narrative structures where the story is fixed (see figure 5.6). Here the player can only change the discourse of the story.

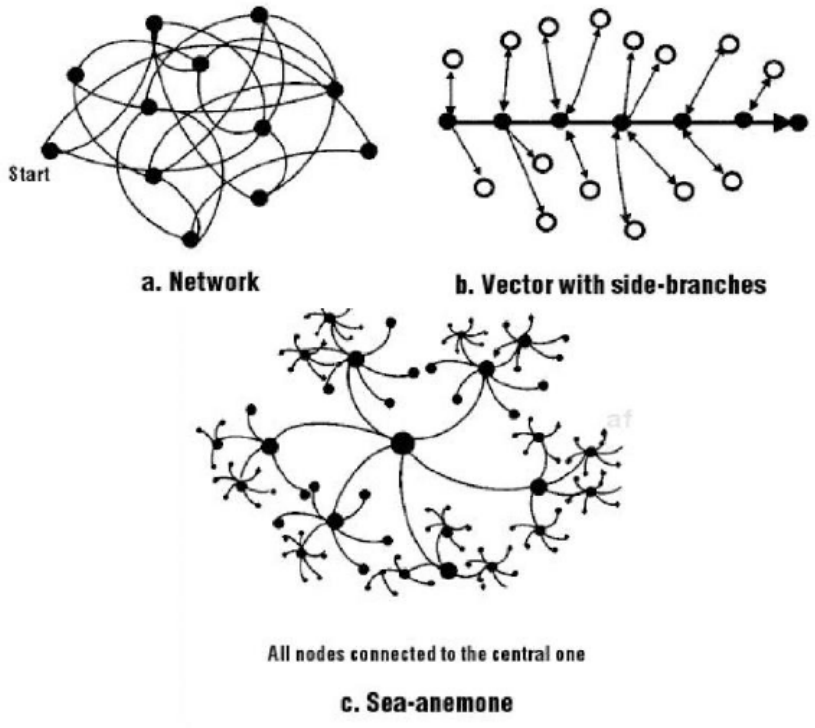

Figure 5.6: Interactive Narrative Structures Affecting Discourse (Ryan, 2006)

Figure 5.6a, shows the *Network structure*, where the player chooses the presentation of events at each decision point. The structure allows the player to jump between events. Figure 5.6b, shows the *Vector with side-branches*. Where the Network structure allowed users to jump between events, the Vector with side-branches presents the events sequentially. However, at every event, the player is allowed to get additional information or activities. The *Sea-Anemone structure*, figure 5.6c, shows how the content can unfold recursively from one starting point, where players are allowed to return to the starting point and then explore new information like e.g. on a webpage.

The different structures are often combined and mixed depending on the goal of the system. These are all examples of Interactive Narrative structures that affect the discourse. Another way to create interactive narratives is to allow the user to change the story.

Interactive Architectures that Affects Story

When wanting the user to be able to affect the story it is necessary to represent the flow of time. The first structure, figure 5.7a, shows the *Tree structure*, where there is a beginning and multiple ends. The tree grows in one direction, and players are not allowed to return to a previous event.

Each branch represents a parallel world with a different story. This type of branching structure can be difficult to use, as the it has an exponential growth of branches, and users will only experience a small part of the storyworld. Figure 5.7b shows the *Flowchart structure*, which is more manageable to develop (Ryan, 2006). Here, the users can experience different parts of the story, but there will be

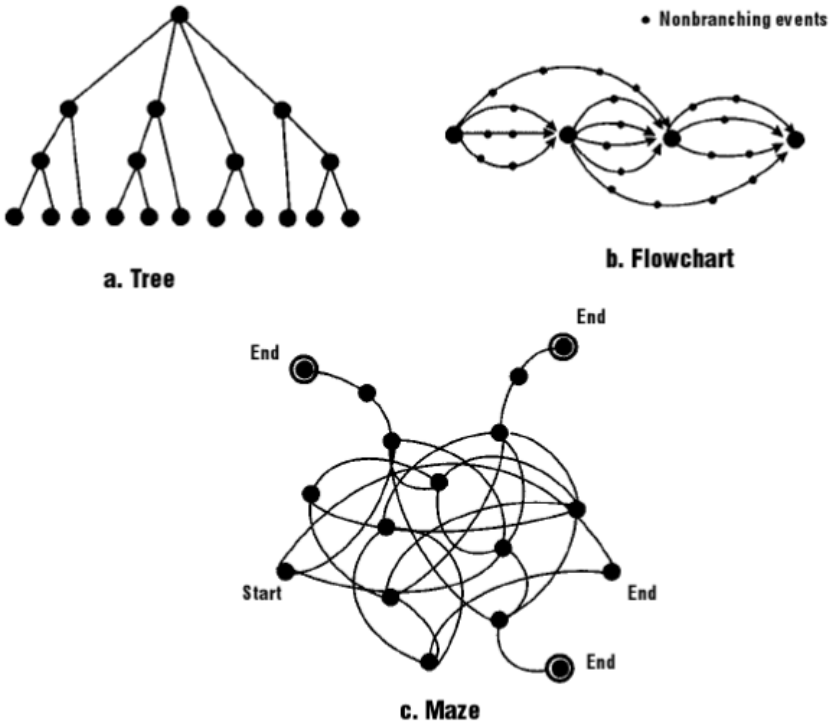

Figure 5.7: Interactive Narrative Structure Affecting Story (Ryan, 2006)

main gathering points, which will limit the possibility of branching. The final structure is the *Maze* 5.7c, that has one starting point and multiple endings. The user will here be able to experiences different combination of events, as well as different storylines depending on the choices the player takes.

There exists many different types of interactive narratives structures. The above two categories only show some of the basic structures. All of these can be combined and tailored to suit a specific game or narrative or level of interactivity. Common for all of the structures are that they allow the user some form of interactivity at certain points, but this interactivity is still limited to a high degree. The following section will therefore investigate the problem with interactivity and narrativity more in depth.

5.4.2 Levels of Interactivity

One of the biggest challenges within the field of IS, is the balance between interactactivity and narrativity. With linear narratives, the author controls how, the audience will experience the story. When adding interactivity to a narrative, some control is given to the audience (Bruni & Baceviciute, 2013). Interactivity concerns two parts, as it is action between two agents. Crawford (2005) defines interactivity as "A cyclic process between two or more active agents in which each agent alternatively listens, thinks, and speaks.". The computer waits for input from the user (listens), this input is then processed (thinks), and displayed on the screen (speaks). Interactivity is not a binary term, but interactivity can be thought of as having many levels.

Ryan (2001, 2006) argues that interactivity can be divided into how much freedom is granted to the user. She suggests four distinctive types of interactivity:

- Reactive Interaction
- Random Selection
- Purposeful Selection
- Productive Interactivity

The first type is called *Reactive Interaction*, which happens when the user does not take deliberate action, but the system still reacts to the audience through e.g. sensors. An example could be an artwork that changes every time a user moves past it (Ryan, 2001). Here the artwork 'listens' to the user's movement, 'thinks' by processing the movement data, and 'speaks' by changing the display of art. The next level of interactivity is what Ryan refers to as *Random Selection* among many alternatives. Here the user interacts deliberately but does not know the consequences of the interaction. Contrary, *Purposeful Selection* is when the user has some idea of what will happen, when choosing a specific action. For example, the user might have to choose between two paths in a game one that leads to the ocean and one that leads to the forest. Here the user selects a path due to a specific purpose. The final, and highest degree of interactivity, is called *Productive Interactivity*. Here the user's involvement changes the world in some way, by for example assembling the story or by changing the environment (Ryan, 2001). This is the highest type of interactivity and is the most difficult to reach.

The idea of the Holodeck vision is an example of Productive Interactivity, where the world and characters adapt according to the player's input. The difficulty with reaching this form of interactivity in IS is, as mentioned, due to the problem between authorial control and interactivity, which is also referred to as the *Narrative Paradox* (Bruni & Baceviciute, 2013). The concept of the Narrative Paradox revolves around the contradiction between the pre-authored narrative and interactivity. On one side the author wants control over the narrative to ensure a satisfying narrative experience, whereas, on the other side the user wants the highest degree of freedom and the possibility to interact without constraints (Louchart & Aylett, 2004). This can also be related to the problem of *Author-Audience Distance* (AAD) which describes the intentionality in narrative communication between the system and the user (Bruni & Baceviciute, 2013). AAD is a function of *Narrative Intelligibility*, which describes if the intention with the narrative is received by the user. On one side, the users will interpret the narrative substance accurately (in terms of the author's intent), whereas on the other side the user will have a total miscomprehension of the substance. In any narrative form of communication there will be an interpretation gap between the author and the user. The author will have a purpose with the narrative, and the AAD can describe to which degree this message is reached by the user.

Bruni and Baceviciute (2013) argue that with linear narratives in non-interactive mediums the user will seek to get the preferred decoding as intended by the author. In this way, the user and the author shares the same expectations for the experience. Contrary, with interactive mediums, the expectations between the user and the author might be different, as the interpretation of the narrative is dependent on the choices/interaction of the user. This means that the author's intended transmission of the narrative's substance becomes more difficult to ensure, which often leads to an increase in AAD (Bruni & Baceviciute, 2013). When a user generates meaning of the narrative substance that is close to what the author intended or expected, it can be referred to as Narrative Intelligibility. In Narrative Intelligibility the AAD is low, meaning that there is some compliance between the author's intent and the audience's comprehension. However, the user might generate meaning from the substance that is different from the author's intent. When a user generates his/her own meaning from the substance, disregarding if this meaning comes close to the author's intent, it can be referred to as *Narrative Closure* (Bruni & Baceviciute, 2013). In this way, Narrative Closure becomes a prerequisite for Narrative Intelligibility, but not the other way around.

In any system or application the narrative will have some specific intention for the user. This intention might be different depending on the goal of the systems. For example, it might not be the goal to reach narrative intelligibility, but instead to have the users create their own meaning from the narrative elements and thereby receive Narrative Closure. Bruni and Baceviciute (2013) argue "if the author and the audience are not sharing the same interpretation (narrative intelligibility), achieving narrative closure– i.e.: that the given elements can be connected into some relevant or coherent scheme – is a minimal requisite". Thus, the minimal requirements for a narrative system is that it at

least gives the user some form of meaning from the narrative.

5.4.3 Goals of the System vs Goals of the Narrative

The intention with the narrative is dependent on the intention of the system. The goal of the system might be different than the goal of the narrative. For example, when looking at serious games, the goal of the system might be to teach a serious topic such as math. The goal of the narrative would not be the primary goal, but instead a means to e.g. increase engagement. The narrative goal can in this way be an accessory for the goal of the system. However, if the narrative is at the center of the experience, and the goal of the system is the same as the goal of the narrative, then the medium is just a means to transmit the narrative (Bruni & Baceviciute, 2013).

This can be compared with Ryan (2009) description of interactivity and narrativity. She argues that interactivity fluctuate between two forms; one is called the *Narrative Game*, where the narrative is subordinated to the players' actions and is therefore an accessory for the goals of the system. Whereas the other, the *Playable Story*, is where the player's actions are subordinated to the narrative of the game and the goal of the narrative thereby coincides with the system. The Narrative Game, such as Half Life and Grand Theft Auto, is a ludus form of activity, where players play to win and beat the game and the narrative is mostly used to engage the player more in the world. However, in a Playable story there might not be a win/lose condition. Users play to experience and observe the change in the storyworld. The player is not focused on winning and reaching various goals, but instead the focus lies on obtaining a good story from the system (Ryan, 2009). Playable stories are e.g. interactive stories, tabletop role-playing games, and simulation games.

5.4.4 Summary

When looking at the identified Design Guidelines that can appeal to the target group in table 5.1, and the initial round of data collection in table 5.2, it is clear that the target group wants games that are relatable, realistic, focus on human relationships, and concerns women's interests. The combination of interactivity and narrativity, where the interactions support/result in the narrative, should be the combination that is most favourable when designing games for the target group.

Moreover, the goal with IS is not to ensure Narrative Intelligibility, where the user generates the same meaning as the author. Instead the focus should be on allowing the user to generate his or her own meaning, and thus ensure Narrative Closure.

The most suitable form of interactivity for a prototype that focus on these components, will be a high level of interactivity, such as Productive Interactivity, as the target group wants the game to be close to reality, and include meaningful interactions. In reality, we can choose to interact with who we want and choose what to say; we have the highest level of agency. It can therefore be hypothesized that the more freedom the player has in his/her interactions with other characters, the more realistic the game will feel. In this case, it is not necessarily important that the player reaches narrative intelligibility. The purpose will instead be to experiment with ways of interacting with characters and to experience the emotional consequences. The player then creates her own story and interpretation of events. In this way, the narrative is at the center of the experience, and the medium transmits the narrative. The goal of the system is therefore the goal of the narrative.

From this section several components have been identified that can be used to guide the structure of the prototype:

By using these components for the developing the prototypes it becomes possible to include many of the identified Design Requirements that appeal to females.

Table 5.4: Additional Design Guidelines

Narrative Structure
• Narrative Closure
• High level of interactivity
• Interactions that push the story forward

5.5 Productive Interactivity and Narrativity

In order to reach productive interactivity, we have to overcome the conflict between interactivity and narrativity. Interactivity is, as mentioned, the process between two (or more) agents. The level of interactivity (or agency) depends on the choices available to the user (Crawford, 2005). In the highest level of interactivity, the user is offered all the choices, which the user can imagine. In this way, the number of choices is not the crucial factor for high interactivity, but instead the user's satisfaction of the available choices.

Narrativity has also been referred to as *storiness* (p. 49 Crawford, 2005; Ryan, 2006, p. 7), or as *plot*. Whereas, the story is all the events in chronological order, the plot concerns the sequence and the connection of events. The author will often have an idea of the outcome of the story and thereby the plot, but to reach a high level of interactivity, the user needs to be able to influence the plot. In this way, the conflict between interactivity and narrativity arises.

Crawford (2005) offers a solution to this problem. He argues that we need to seek to higher levels of abstraction when dealing with IS. A plot is a fixed sequence of events, that connects the story together. However, in IS the user needs the possibility to choose their own way, which makes plot and IS incompatible. Instead of having a fixed plan for the sequence of events, the author can create a more abstracted form of plot. For example 'a girl starts in college, where she needs to make friends and overcome challenges, in order to find herself'. Here the author has no idea of the sequence of events, and the plot is instead replaced with a web of possibilities that still communicate the same message (Crawford, 2005). The audience will here be able to choose their own way through the story, and the program should in some way calculate the most appropriate combination of events for that specific user.

The program that decides what will happen, has often been referred to as the drama manager (Crawford, 2005), and is the system's storyteller. The drama manager *listens*, *thinks*, and *speaks* by processing the player's input and deciding what will happen. The drama manager needs to be able to control events and connectivity between them. The most basic task of a drama manager is to figure out what should happen after an event has taken place, which is also known as sequencing (Crawford, 2005). In addition, it should also update characters' emotions and perception towards the player or other characters.

Besides a drama manager, IS needs an author that can write the events, choices, and give the characters personality. Basically all the fictional content which is needed for IS.

5.5.1 Writing the Story

When designing content for IS, there are mainly two approaches which the author can take. The first is the *plot-centered approach*, where authors have a well-defined idea of what the plot for the story should be. The characters are designed after the plot is decided. Contrary, in the *character-driven approach* the characters are designed first. The characters have each their personality, and the plot is created as a result of encounters between the characters (Crawford, 2005). When looking at IS applications, most follow the plot-centered approach. This might be one reason for the low level of interactivity in today's IS applications and games. The audience is limited to choosing a specific direction. However, the character-centered approach gives more freedom to the user, as he/she can

choose how the plot will be assembled. This approach, can also be regarded as storytelling. It is a process, where the story is assembled through interactions. The plot-centered approach is fixed and can be regarded more as data. As Crawford states:

"A story is a data structure, and you cannot interact with data; you can only interact with a process." (Crawford, 2005).

In order to understand IS from an author's perspective, an interview was conducted with Laura J. Mixon (A, 1/a). Laura J. Mixon, is an American Science Fiction writer as well as a chemical engineer. She has experimented with IS together with Crawford, and they have together founded the program Storytron (Mixon, 2018). In the interview, Mixon explains her passion towards IS, and covers some of the problems with IS from an author's perspective. She also describes how many have failed in designing IS, and how she hopes for more people to focus on the concepts of IS.

In order to design content for IS, authors need to look at story, plot, and character differently than when writing linear fiction. She mentions that it is important to keep the player's choices open, such that you do not force them into choosing a specific path. The player needs to have the possibility to manifest themselves in the character and decide who they want to be in the game (A, 1/A, 13:20). Furthermore, the player should not be able to anticipate what the author is trying to accomplish. When developing the content for IS, Mixon suggests to start with defining the characters and the theme. In this way, the author should create personalities that differ from each other in terms of the given theme. By imagining the encounters between characters the plot will quickly reveal it self (A, 1/A, 14:47, 17:00). In this way, Mixon proposes, similarly to Crawford, to initially use the character-driven approach. She however mentions that "(..)the character is only really revealed through plot" (A, 1/A) and plot and character are therefore inseparable. The encounters between characters and the player's choices will create the plot.

She mentions that the conflict between interactivity and narrativity is the main problem with IS, and that people have been pushing it away, as they have felt that the problem is irresolvable. Those who did not push it away, have instead made compromises, that have ruined the concept of IS. She puts emphasis on the difficulty associated with reaching true IS and mentions "It is a very challenging hill that we are trying to climb." (A, 1/A, 07:35). Until we reach the dream of the holodeck, she believes that the focus should lie on developing characters that understand the basics of human emotions (A, 1/A, 09:45).

5.5.2 Personality Model

In order to create characters that can actually understand the basics of human emotion and that can respond well to the player, a personality model is needed. In IS a personality model is a data structure that holds all information about a character's personality (Crawford, 2005). The attributes in a personality model needs to have information on how the character feels, and how they will respond or react to other characters (Crawford, 1993-1994).

There are many different types of personality models, especially when looking at psychology. The personality models from psychology, such as the Big Five are not suited for IS. These personality models try to model human personalities, whereas IS focuses on characters. Characters, in books, movies, tv-series, and games often have specific highlighted personality traits, whereas real people are more nuanced and can be said to be less interesting (Crawford, 2005).

Crawford (1993-1994) offers a set of rules when designing personality models. A personality model contains a number of traits, for the character's personality. A designer might define honesty as a personality trait, and indicate to which degree this character is either honest or dishonest. Each character will have a set of personality traits that define who they are.

Another thing to take into consideration when designing a personality model is the number of attributes that the program should contain. Crawford (1993-1994) describes three types of attributes, one-dimensional, two-dimensional, and three-dimensional. The first concerns the traits, mentioned above, that describe the character. The second, two-dimensional concerns how one character perceives another character. One character might be good, but another character have only seen his bad side, and therefore perceive him as a bad person. The three-dimensional attribute is how the character's perceive the relationship between other characters. For example, two characters might be fighting, but another character has only seen them happy together, which means the character will perceive the relationship as something else than it really is.

When designing characters it is important to consider the personality model's number of traits and attributes. The more traits and attributes the more complicated the system will be.

5.5.3 Summary

This chapter have identified features of IS, and have investigated the problems between narrativity and interactivity. There exists many ways and opinions for designing IS, and this chapter have only looked at a few approaches. One solution for making an interactive digital experience that focuses on the identified Design Guidelines is to use IS. As it is not yet possible to reach true IS, the development of the prototypes should focus on creating characters that can react to the player's input in a realistic way. This can be done by focusing on the character-driven approach, using personality models when designing the characters, include events where the player gets a suitable number of choices, keep the players choices open, and have a system that controls the sequencing of events.

The identified components from this section are therefore:

Table 5.5: Additional Design Guidelines

Narrative Structure
• Character-driven approach
• Meaningful choices that are open
• System that controls the flow of events

Besides these components, it will be important to focus on designing the story around a relatable content. The theme should be able to appeal to the target group's interests, and they should be able to relate to the characters reactions. In order to see how other digital media is currently focusing on the identified Design Requirements, the following chapter will look at current games and IS.

5.6 State Of The Art

The following chapter will look at three video games and analyse these games with respect to their narrative structure and their appeal to females. The identified Design Guidelines, will be used as guidelines for the game's analysis. The components will be presented in a table to get an overview of how these games differ from each other and to discuss which components make them successful for targeting females. In each table, a score is given within the categories to indicate how well the game targets females. This score is based on the analysis and will be used to compare the games amongst each other. The three games that will be used are:

- Façade from 2005 due to its narrative structure
- Oxenfree from 2016 due to its story mechanics
- Florence from 2018 due to its theme and platform

5.6.1 Façade

Façade is a game from 2005 developed by Michael Mateas and Andrew Stern (Mateas & Stern, 2018). Even though, this game is over 10 years old, it is still State Of The Art (SOTA) within IS as the player has a large degree of agency compared to other IS applications today. In addition, it uses a different, more complicated, form of interactive narrative structure that gives more control to the player than we are seeing in games today.

Figure 5.8: In game footage from Façade

The game is a one-interactive drama, that experiments with natural language processing and artificial intelligence. It is therefore not a game that is meant to be a masterpiece, but more a game that is meant to experiment with new ways of developing interactive dramas. Thus, the graphics are of low quality and the total duration of the game is around 20 minutes.

The game focuses on emotionally dramatic action, where the player takes the role of a long time friend of the married couple Trip and Grace. The player is invited to an evening gathering at the couples apartment. During the evening, the player finds himself/herself positioned in the middle of a high conflict dissolution of Trip and Grace's marriage (Mateas & Stern, 2003). The player can interact with the characters by typing in what they would like to say. The characters will asks questions and ask the player to take sides in the conflict. The player can say whatever he/she wants to at any time during the experience and the characters can respond to variety of open-ended dialogue. In addition, the player can move around continuously and use objects in the apartment. In this way, the player can affect the characters' affinity towards the player, the level of tension, and information revealed about the marriage. These changes will modulate the behaviour of Grace and Trip and will thereby guide

the story and ending. There is no clear goal with the game and it is not possible to win. The purpose is to experience the dramatic tension between the characters and see how different input/dialogue can affect the relationship.

Narrative Structure and Mechanics

The narrative structure of the game, is somewhat similar to Crawford (2005) proposition of IS. The narrative is build around small units of dramatic action, which the developers refer to as story beats. They describe them as: "story beats, each a collection of behaviors tailored to a particular situation or context but still offering a non-trivial simulation space" (Mateas & Stern, 2003). Each beat has some preconditions and contains information about the beat's effect on the story state. The program relies on this information when deciding, which beat would make the most sense to use for the next event in the story. The plot is thereby assembled by the player's interaction, which determines the sequencing of beats. In this way, Façade uses a complex narrative graph that is defined through beats and sequencing rules (Mateas & Stern, 2003). This is similar to what Crawford (2005) describes as story events and sequencing scheme. As the plot is dynamically created based on the character's interaction, the game can be said to be character-driven (as I describe in section 5.5.1).

Content

Storydriven and retable content:
The theme revolves around real life issues, interpersonal relationships, and deep characters. The game takes place in an apartment and focuses on a evening gathering. It is an everyday life situation that most people can relate to.

Conflict/Competition:
The game does not have any direct competition; win/lose states. The game focuses on indirect competition, where the player needs to overcome conflicts by being proactive, and controlling the situation. The gameplay revolves around social interaction and the only goal is to experience the story (see table 5.6).

Appeal to females

Façade is not a game that was developed specific for female gamers. However, it is game that challenges interactive storytelling and concerns features that females enjoy. The game is about people and not things.

As Facade is game that was created to experiment with character interaction, there are some features that can be useful for developing the prototypes for this thesis. The mechanics in the game only support character interaction. Even though, you can move around in the room, the characters will still react and respond to what you do in the game. The narrative structure is really interesting as it is build up through story beats that can be connected in different ways. The player therefore experience a high degree of interactivity in the game. This is also due to the natural language processing that the system utilizes. These features are the two main things that can be used when designing the prototypes for this report.

5.6.2 Oxenfree

Oxenfree is a graphic adventure video game from 2016 published by Night School Studio (NightschoolStudio, 2018). It is a single player game that revolves around a supernatural 'coming of age' story. The gameplay is causal, using simple mechanics such as dialogue, exploration, and puzzle solving. The story takes place on a military island, where a group of teens have gathered to hangout, drink, and relax. Playing as a girl called Alex, the game focuses on creating bonds with friends, and accepting who you are. Besides the emotional themes, the game includes supernatural elements.

Table 5.6: Scores on how well Façade appeals to females

Categories	**Façade**	**Score (1-5)**
Mechanics	Character Interaction Mechanics that push the story forward	5
Content: Conflict/competition	Indirect competition	4
Content: Character Interaction	Social reasoning Dramatic emotional conflicts	4
Content: Storydriven content, Relatable content	Character-driven game, Deep characters, Real life issues	3
Content: Setting	Everyday life setting	4
Narrative Structure	Branching	5
Duration	Around 20 minutes	4
Platform	Steam	2

During the game, the player accidentally opens a rift from the island's past, that lets ghosts and terrifying creatures out on the island. The indie game has been praised for its narrative and its dialogue system, which makes it interesting to analyse in regards to this project. Furthermore, the main character is an average teen girl, with problems that other teenagers easily can relate to.

Figure 5.9: In game footage from Oxenfree (NightschoolStudio, 2018)

Narrative Structure and Mechanics

One of the interesting SOTA features of this game is the way the narrative unfolds together with the game mechanics. Sean Krankel, one of the two founders of Night School Studios, explains how they especially focused on merging storytelling and mechanics as closely as possible when developing Oxenfree (Krankel, 2017). As mentioned in section 5.3, Crawford uses the term, interleaved story

game, to describe games that alternate between non-interactive story parts and interactive gameplay. Krankel and his team uses *Story Beat* and *Easy Mechanics Driven Encounter* to describe the same relationship. As seen on figure 5.10, Krankel's representation of the concept is in conformity with Crawford's representation (see figure 5.5).

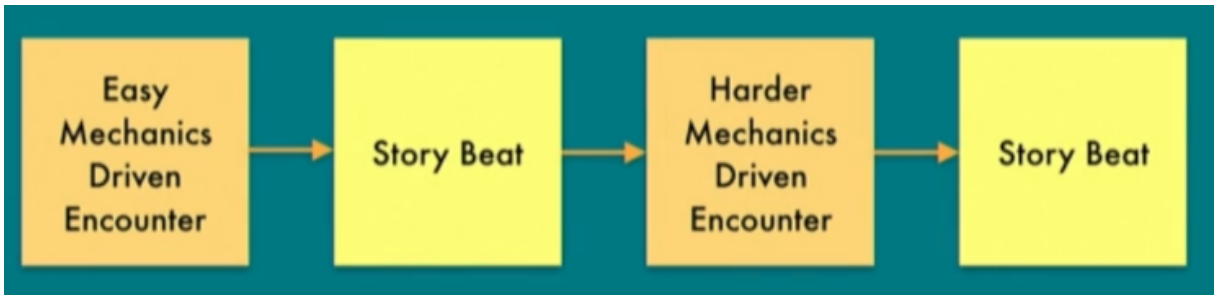

Figure 5.10: Story Beat and Easy Mechanics Driven Encounter (Krankel, 2017)

The developers wanted to change this way of separating storytelling and mechanics and combine it into what they call *story mechanic* (Krankel, 2017). Here the mechanics should only function as a way to push the story forward.

Even though, the mechanics are used to push the story forward, the player does not have as much agency as e.g. Façade. The player can move continuously around and explore the game world. This is similar to Façade. However, the player is limited to choosing between three options in the dialogue, that will affect how Alex's story ends. The plot is more or less determined from the start, but the player can affect the relationship between characters through the dialogue. The interactive narrative structure of the game, can be said to be a mixture between Tree and Flowchart (see section 5.4.1). There is one main plot, but at certain points in the game, the player can choose in which order the following events should happen. Furthermore, there are various endings in the game, which leans closer to the Tree structure. In Krankel's GDC talk, he explains how they designed the story first, and afterwards decided on mechanics (Krankel, 2017). The game is therefore more of a plot-driven game than a character-driven game. The game therefore has one main story with alternative endings, and the player can alter the relationships between the other characters. As Krankel (2017) says "Story inspired our mechanics, and mechanics empower players to tell their own story".

Content

Relatable and realistic content:
Oxenfree is also special because the theme revolves around 'coming of age' and friendship. These themes are the main driving force for the story and not only sub-themes or sub-components of other genres. Friendship and 'coming of age' elements are themes that are both relatable and realistic. Even though, the story includes supernatural elements such as ghosts and possessed teenagers, it is not the main theme in the game. Krankel (2017) explains how they also use communication as the main mechanic when interacting with ghosts. The story is therefore centered around communication.

Character Interaction:
The key in the game is communication, and the dialogue functions as a way to influence the relationship between characters. The dialogue conversations are filled with drama and emotional topics, which gives the player some emotional stimuli in the game. For example, one of the Non Playable Characters (NPC) is Alex's stepbrother, Jonas. Their parents just decided to wed, and the two know nothing about each other. Their relationship can develop in different directions depending on how Alex treats Jonas. In this way, Oxenfree revolves around the drama of human relationships, which can give emotional stimuli to the player.

Conflict/Competition:
Similarly to Façade, Oxenfree does not include any direct competition. The conflicts, which the player encounters, are solved through dialogue. The player can choose one of three responses or choose to be quiet. In this way, the player does not necessarily have to solve the conflicts but can just experience the story and the dramatic tension between the other NPCs.

Appeal to females

As the analysis shows, Oxenfree seems to be able to appeal to females on various levels such as (see table 5.7):

- Casual play style of the game
- Conflicts are solved through indirect competition
- Emotional themes
- Narrative structure

However, there might be some areas where females would be less interested. For example, the fact that it is a ghost story, with creepy and ominous creatures, might not appeal to the general target group in this thesis. In addition, the game cannot be played on tablet or phone, which are the prefered devices within the target group.

Table 5.7: Scores on how well Oxenfree appeals to females

Categories	**Oxenfree**	**Score (1-5)**
Mechanics	Casual play, Puzzle, Exploration	4
Content: Conflict/competition	Indirect competition	4
Content: Character Interaction	Dramatic emotional conflicts	4
Content: Deep characters, Relatable content	Plot-driven game„ Deep characters, Real life issues	3
Content: Setting	Fictional setting, Cursed Island	3
Narrative Structure	Flowchart	4
Duration	Around 5 hours	3
Platform	Steam Playstation Xbox	3

From Oxenfree there is also several interesting features that can be used for the design and implementation phase. Oxenfree uses story mechanics to push the story forward, as everything the character does results in story. The narrative structure Flowchart gives the user less interactivity compared to Façade. However, it can still give an idea of freedom to the user, while being less difficult to implement.

5.6.3 Florence

Florence is a game that was released during the writing of this thesis on February the 14th, 2018. It is developed by Mountains studio and published by Annapurna interactive. Florence is an interactive story about love and life. Following Florence, a young girl at 25, the player experiences small moments of her life. The game is divided into chapters, where the player first experiences Florence as stuck in

an endless routine of work, sleep, and eat. Afterwards, the player follows Florence fall in emotional episodes revolving around; falling in love, heartache, and following her dream.

Figure 5.11: Promotional photo of the game Florence (Webster, 2017)

The game is interesting to analyse as it is one of the first games that revolves around falling in love. As mentioned in section 4.1, few games revolve around romance, and romance is something that especially appeal to the female audience. Ken Wong, the lead designer of Florence, explains that the game industry still seems to be developing games focusing on physical things, such as sport, battles, and in general direct competition (Conditt, 2018). His goal with Florence was to turn away from this standard, and develop a game about love, focusing on the human side and not the physical side.

Narrative structure and Mechanics

Florence is not an interactive storytelling application, as the game does not allow the user to alter the story nor the discourse. The developers call Florence an interactive story, even though, the game follow a linear story with a fixed discourse. The interactive part of Florence consists of small touch-based minigames that supports the story. Some of the small minigames can be seen below on figure 5.11, where the player uses different forms of touch input to finish the mini games such as; drag and drop, slide, tap, or touch in different patterns. These mechanics are used to support the story, and indicate how the main character, Florence, is feeling. In this way, the narrative structure is closer to linear storytelling than interactive storytelling.

Content

There are no real conflicts or competition in the game, as the player is never being prompted to make a decision. Similarly, there is no direct goal, other than seeing how the story ends. The minigames does not contain any challenges as there are no consequences for the way the player

Figure 5.12: In game photos from Florence (Florencegame, 2018)

interacts. However, the minigames might be emotionally challenging as they revolve around emotional themes such as; first love, break-up, and in general finding yourself in the twenties. These are themes that everyone can relate to. The game does a good job in portraying these problems, without using words or speech. For example, at one part in the game, the couple moves in together, and there is only limited space on the shelf. The player needs to sort out in Florence's stuff, to make room for her boyfriend's stuff. When they break up, the player needs to pack it back into boxes. The interactions does not affect the story, but the interactions might affect the player emotionally.

Appeal to females

Florence was designed to target an audience, who do not normally play games (Webster, 2017). Therefore, the game is available on mobile platforms, and requires no gaming experience at all. The only thing the player needs to do is use the touch function on the phone. Florence is especially appealing to females, as the story takes place in an everyday life setting, the main themes are relatable and emotional, the main character is female, and the mechanics are simple and intuitive.

Table 5.8: Scores on how well Florence appeals to females

Categories	**Florence**	**Score (1-5)**
Mechanics	Casual play, Puzzle,	3
Content: Character Interaction	Mechanics that supports the character's emotions	5
Content: Relatable content	Real life issues	5
Content: Setting	Everyday life setting	5
Narrative Structure	Linear	2
Duration	Around 30 minutes	4
Platform	Mobile (App Store, Google Play)	5

The features that are most interesting with Florence is in regards to the content. Florence focus on relatable issues. Almost everyone has been in love once before, and this is something that especially females want more of in games. Furthermore, the realistic settings revolving around everyday life is also something that Florence does well. These are components that will be taken into consideration when designing the prototypes.

5.6.4 Comparison

The three games are very different in terms of genre, narrative structure, and platform. They all elicit their own strengths in regards to features that appeal to women. First of all, Façade has the most intelligent narrative structure of the three games, but also the most complicated. In addition, Façade is the game that leans most towards interactive storytelling. The player has a large degree of agency as the game uses AI and natural language processing. The player therefore has the ability to control the flow of events. While, this type of interaction is too advanced, to be implemented in this thesis project, it might be interesting to use their concept of story beats and sequencing rules to develop a more simple form of narrative system. Oxenfree uses a less complicated narrative form where the player experiences the same story with different endings. A combination between the narrative structures of Façade and Oxenfree might also be interesting to investigate when designing the prototypes for this thesis.

Central to all of the games is that the themes are about human relationships and includes emotional conflicts. This is one of the components that females enjoy and prefer in games. Therefore it is important to look at how the games create emotional involvement. Florence is a very emotional game, as the mechanics emphasize the state of the character. In the game, the player does, what Florence does. For example, in order for Florence to brush teeth, the player must touch the screen in a pattern similarly to brushing teeth. In this way, the player mimics the character, which makes the player more likely to feel empathy with the character. The goal in Florence, is to experience the story and the emotions Florence goes through.

Oxenfree and Façade also use mechanics that support the story, though Oxenfree is also about uncovering the mysteries of the Island by exploration and communicating with ghosts. The relationships and the emotions between characters are only one side of the game. In Façade the relationship between the married couple is the center of the game. You take on the role as the friend who is caught between the two, and, the player is, therefore, not the main character but is more of a spectator watching/interacting from the side. In this way, the player might not become as emotional invested as with the other games.

When designing games for women it is important that the mechanics support the story and that the player takes on the role of the main character. It could be interesting to use mechanics that make the player mimic the emotional state of the character, as this might elicit empathic engagement.

The three games use different types of gameplay. Central to Oxenfree and Façade is the use of communication as the main mechanic. The story is told through dialogue and the player influences the story by choosing what to say. In Florence there is almost no dialogue and the story is told through the small minigames. Dialogue allows Façade and Oxenfree to describe each character more in detail and thereby have deeper characters. It opens up for the possibility to have dramatic discussions and conversations about specific situations. In Florence the minigames, which revolve around conversation, are more abstract. They only show if the dialogue is long, short, fast or slow, which indicates arguing, deep conversation (long conversations), or slow conversations (not much to talk about). Florence does therefore not have any rich social interaction between characters, which is one of the components identified in the previous analysis.

One of the advantages with Florence, when looking at female preferences, is that Florence is a mobile game. Women, who do not usually play games, will be more likely to play a mobile game compared to a console or computer game. Furthermore, Florence only takes around 30 minutes to play through.

The game is divided into 20 small chapters each revolving around a particular moment in Florence's life. This makes the game very manageable to play through. It becomes a game that you can play 'on the run' and makes it possible to pause or replay chapters whenever the player wants. The two other games, requires more from the player. Either a computer or a console is needed to play Oxenfree, and it takes around 5 hours to play through. This might not be long for a regular gamer, but for women who do not play games, it might seem as a long time. Dividing the game into chapters could be a way to make such a game more manageable.

Table 5.9: Comparison of the three SOTA games

Categories	**Façade**	**Oxenfree**	**Florence**
Mechanics	Character Interaction/ Communication	Character Interaction/ Communication	
Content: Conflict/Competition	Indirect competition	Indirect competition	
Content: Character Interaction		Mechanics that supports the social interaction	Mechanics that supports the character's emotions
Content: Relatable and realistic content	Emotional themes	Emotional themes	Emotional themes
Content: Setting	Everyday life setting	Everyday life setting	Everyday life setting
Narrative Structure	Character-driven Story beats	Story mechanics	
Duration			Short amount of play time, divided into chapters
Platform			Mobile platform

Table 5.9 shows a comparison of the three games. The highest ranked features from the three games are shown in the table. These are the features, which can potentially appeal to the target group, and will be considered for the design and implementation phase.

5.7 Summary of Analysis

From the analysis it is apparent that there exists a problem in the way games are designed for the female audience. The analyzed research and the first round of data collection indicated that the female audience have different game preferences than seen in many of today's games. Furthermore, the initial round of data collection suggested that a reason why some women do not play games is because they feel that games are not directed at their interests and preferences. Academics and game developers have argued that the game industry is mostly focusing on developing the same type of games. These games are often centered around physics based structures that allow players to generate goal related engagement. Less games are focused on deep stories, empathic engagement, and human emotions, which are components that have shown to appeal to the female audience.

In this way, the analysis suggests that games should be designed differently in order to appeal to the target group. In order, to obtain a holistic overview of components that can be used for such a design, various elements were identified throughout the chapter. Existing research within the area identified several components that could appeal to the target group. The initial round of data collection investigated women, who do not play games, and women, who mostly play casual games

(moderate gamers). Most of the findings were in consistency with the secondary research and thus confirmed the components found through the existing research. Additional components, from the initial data collection and from other areas of the analysis, were also identified.

All components found through the analysis have been summarized in table XX to get a holistic overview of game design elements that appeal to the target group. The components from the different analysis section have been divided into six overall categories: Mechanics, Story Components, Player Experience, Platform, Duration, and Structure for development of IS. These categories were created based on the subcomponents similarities and were clustered together under similar topics. The components have been found from different sections, which is indicated in the parenthesis after each component. For example, 'Character Interaction' is a feature that females prefer, which has been indicated by different researchers (see section 5.1.3) and also through the initial round of data collection (see section 5.2.1). The component has, therefore, been further validated as the findings from the test supported the feature. In this way, the table gives an overview of different design components and their respective source.

Table 5.10: Design Guidelines that appeal to females

Category	Components	Sections
Mechanics	• Character Interaction	5.1 and 5.2
	• Completion	5.1 and 5.2
	• Customization	5.1 and 5.2
	• Easy to learn	5.2
	• Mechanics that push the story forward	5.3
Content	• Relatable and realistic content	5.1 and 5.2
	• Character interaction	5.1 and 5.2
	• Storydriven content	5.1 and 5.2
	• Indirect competition	5.1
	• Deep characters	5.1 and 5.2
	• Simulate human emotions	5.1
Player Experience	• Relatable	5.1 and 5.2
	• Emotional stimuli	5.1 and 5.2
	• Social/Coop	5.2
	• Empathic Engagement	5.3
	• Being someone else in another place	5.1
Narrative Structure	• Interactions that push the story forward	5.4
	• Narrative Closure	5.4
	• Meaningful choices that are open	5.4
	• High Level of interactivity	5.4
	• Character driven approach	5.4
	• System that controls the flow of events	5.4
Duration	• Short amount of playtime	5.1 and 5.2
Platform	• Mobile/Computer	5.2

The category Mechanics include components that describe the methods or the rules used for interacting with the game. The components that are described here all contribute to the overall gameplay. The subcomponents that female enjoy are mechanics that allow them to interact with characters, to have meaningful choices, to complete puzzles or activities, to customize their world or characters, and mechanics that are story based and thus focus on pushing the story forward. In addition, the mechanics should be easy to learn so that players do not need prior game experience.

The Content category is concerned with the elements that the game is build around. Content is different from Mechanics as mechanics revolve around player interaction, whereas content is about

the theme, story or other content that the game is build around. Here the sub components include content that females can relate to, realistic and everyday life situations, and characters that have personalities and can show emotions. The content should focus on indirect competition, such as conflicts that do not require direct confrontation but can be solved through negotiating or communicating to resolve conflicts, in order to reach the target group.

The Player Experience category revolves around the affect the game has on the player. Females want games that can evoke emotional responses and games where they can relate and identify with situations or characters and become emphatically engaged. In addition, the components show that social or cooperation games will be appealing for the target group as well as the possibility to become someone else in the virtual world.

The category Duration concerns the length of the prototype, and indicates that females enjoy short amount of playtime. The Platform category suggests that in order to reach women, who do not usually play games, the best suitable platform is either mobile or computer.

The final category is the Narrative Structure. This category is different from the others, as the sub-components are identified with the goal of finding a suitable structure for implementing the other categories. This means, that the sub-components from this category are not based on literature or data collection that investigate female preferences. However, the sub-components are solutions to implement some of the components that female enjoy. The story can be designed through a character-driven approach where characters are defined through a personality model. The game should aim at giving the player a high level of interactivity, and focus on interactions that push the story forward. The players should be able to make their own meaning from the content (Narrative Closure) and should be able to choose meaningful options that are open. Finally, there should be some system that controls the flow of events.

Together these categories suggest a way to design games for the target group. However, to investigate if this can be a solution for reaching the target group the categories needs to be explored and validated.

5.8 Final problem statement

The analysis showed that there exists a problem in the way games are designed for the female audience. Some women do not play games as they do not feel that games are targeted at their interests. Women, who play casual games and represents the biggest group of female gamers, feel that games mostly are male oriented. Furthermore, researchers and game developers have pointed out that games are more concerned with simulating physical objects, than creating games around narrative, emotions, and deep characters. The research indicates that games can be be designed to appeal more to women by focusing on the identified Design Guidelines.

In order to explore ways that game design components can be combined to a structure that appeals to a new female audience, it is necessary to explore the Design Guidelines more in depth. The research question that will guide the rest of this thesis is therefore:

"How can the Design Guidelines be used to develop prototypes that appeal to women, who do not usually play games, and how can the components be validated and explored further"

The next part of the thesis will focus on three different prototypes that are designed based on the analysis. The goal is to iterate and explore components from the Design Guidelines and investigate how the target group feels about them.

CHAPTER 6

EVALUATION METHODS

The initial exploration of secondary research identified several components for how games can appeal to females, as well as identifying reasons for why the issues still exists. In addition, the analysis (see section 5.2) showed that little research revolves around women non-gamers and their opinions towards gaming.

In order to explore the Design Guidelines and the target group more in depth three design iteration will be conducted. This chapter will explain the iterative design process and the methods use for evaluation.

6.1 Playcentric Approach

In order to explore the identified components more in depth and to answer the research question a formative evaluation process will be used (Bjørner, 2015). It was shown in the analysis that most games are insufficient in appealing to the target audience and therefore there is a need to improve the way these games are designed. A way to explore how such a game can be designed, can be through a *formative evaluation process*. Evaluation processes are about improving as opposed to proving theories, and therefore often considered a qualitative research approach (Bjørner, 2015). Formative evaluation is a type of evaluation that is iterative and focuses on evaluating a product during development. In this way, the process allows developers to make improvements at early stages and help to form the design of the product (Bjørner, 2015). Formative evaluations are exploratory of nature, as it focuses on exploring users perceptions and feelings towards the product. A way to apply formative evaluation in game design, can be through the *playcentric design approach*.

A playcentric approach is an iterative approach that *"relies on inviting feedback from players early on and is the key to designing games that delight and engage the audience because the game mechanics are developed from the ground up with the player experience at the center of the process."* (Fullerton, 2014, p. 3). In this way, playtesting is used throughout the design process to gain insight and information into the player experience of the game. The iterative design process, focuses on designing, testing and evaluating the prototype over and over again, as seen in figure 6.1. In each iteration, different features or gameplay will be improved/changed, until the player experience is satisfying. The playcentric design approach can therefore be seen as a formative evaluation approach in game design.

Throughout the design phase I used different groups of playtesters. Playtesters are people that fit within the target group and are used to play through the game and deliver feedback on the experience.

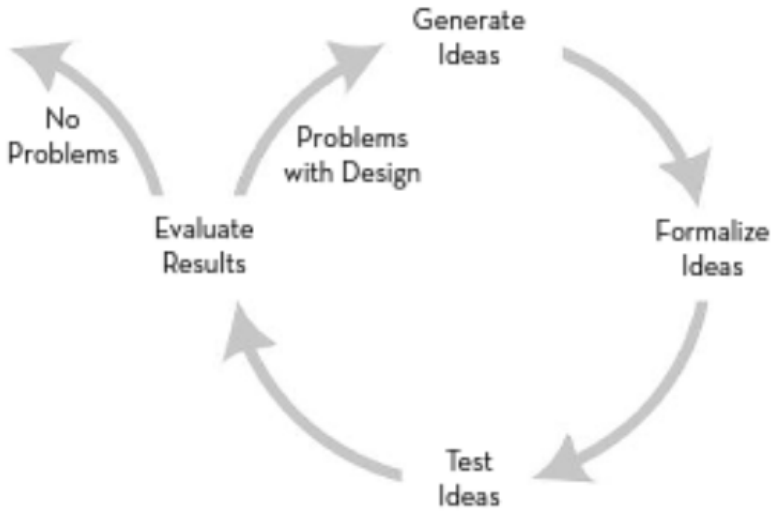

Figure 6.1: Iterative Design Process (Fullerton, 2014)

Fullerton (2014) mentions the importance of bringing playtesters in as early in the design process as possible. If one brings playtesters in late in the process, it becomes more difficult to change the product. As the target group is women, who do not usually play games and Moderate Gamers, it is even more important to use an iterative process, where the target group takes part of the design decisions.

Three iterations of playtesting was done with the focus of experimenting with different game mechanics that appeal to women. For the iterations various prototypes was used to test the game mechanics and find out how these mechanics could sustain the interest of playtesters. Different types of data collection methods was used for the tests. Figure 6.2, gives an overview of the different rounds of data collection that have been used for this thesis.

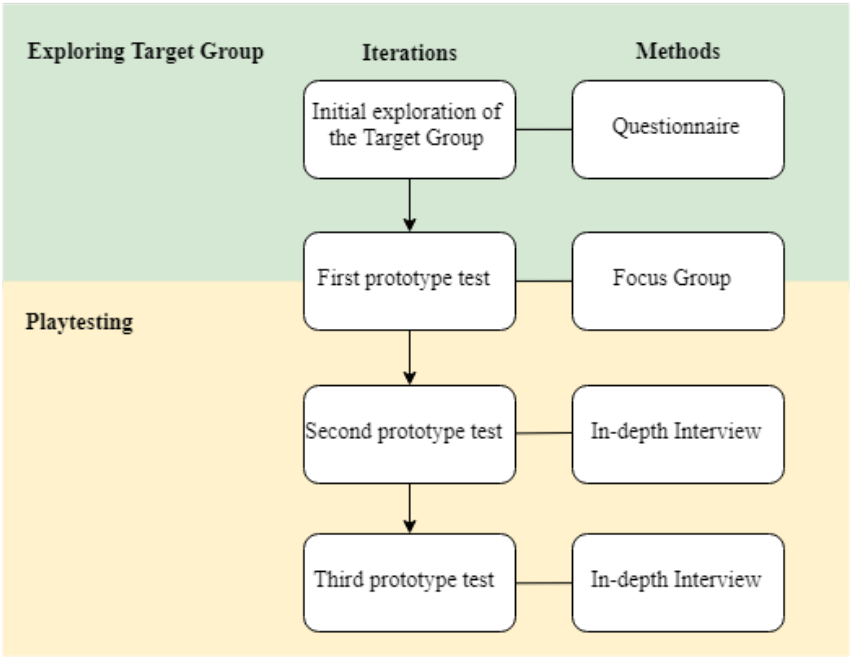

Figure 6.2: Overview of methods used

In general, exploratory studies most often rely on qualitative methods for data collection (Given, 2008, p. 328–329), as exploratory research focuses on understanding a subject area more thoroughly before trying to statistically quantify data. When wanting to understand the research area more in depth, focus groups and interviews are important tools (Lazar, Feng, & Hochheiser, 2010).

CHAPTER 7

ITERATIONS

The following chapter will go through three iterations of the prototype. Each iteration will be divided into Design, Implementation, Data Collection, Data analysis, and Findings. The section of Data Collection will include the chosen method for data collection, test-setup, and findings. A summary of findings will be presented after the iterations chapter.

The aim with the iterations is to explore different components from the Design Guidelines. The participants that will be included in the iterations, consists of women who do not usually play games.

This is done, in order to confirm and validate the Design Guidelines with respect to this target audience. In this way, the focus is to explore if the Design Guidelines might be used to appeal to a new target audience in form of women non gamers and thereby find a possible solution to the problem statement.

7.1 First Iteration

7.1.1 Goal

The purpose with the first iteration was to find out how the target group felt about interactive storytelling in the form of an interactive narrative experience. In addition, the goal was to explore how the target group felt about a game taking place in an everyday life setting, revolving around real life issues, and dramatic character relationship. The length of the prototype was also investigated. In this way, the test focused on exploring participants' opinions and reactions to the gameplay and the three components:

- Relatable and Realistic Content
- Character Interaction
- Duration

7.1.2 Design

A short interactive narrative was created using the software Twine (Twine, n.d.). The first prototype served as a low-fidelity prototype, that could quickly identify core concepts of the game. The game was developed to have a starting point for a discussion in the focus group. The design of the prototype, therefore, focused on the three components, Relatable and Realistic Content, Character Interaction,

and Duration and tried to incorporate these with respect to the analysis. Graphical elements were disregarded, as the three components mainly concern gameplay. The prototype was therefore only text-based, as seen on figure 7.1.

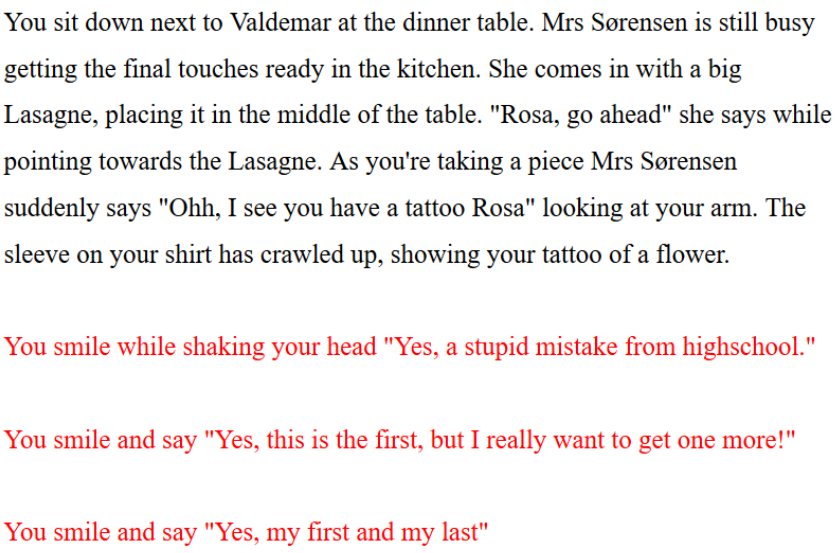

Figure 7.1: In game footage of the prototype from first iteration

Relatable and Realistic Content

The interactive narrative revolves around a story with the theme 'Meeting the Boyfriend's Parents for the first time'. It is set in a realistic world and an everyday life setting. The surroundings are not explained in the game, as the focus is on character interaction. The main playable character, is a girl named Rosa. She and her boyfriend Valdemar, are going to visit his family for the first time. The story starts with Rosa and Valdemar standing outside the parents' house, waiting to go in. The story events consists of various conversations with Valdemar, his mother, his father, and his sister. The game can end in five different ways depending on which options the player chooses throughout the game

This theme and story was chosen as it is something that most women can relate to. It is a situation that can be difficult, as you want to give a good first time impression. In this way, the theme revolves around a couple's relationships and the difficult situations that can occur.

Character Interaction

The prototype is a text-based interactive narrative, so the setting, character's thoughts, and reactions are all described through text (see Figure 7.1). The player gets the possibility to choose how Rosa reacts in different conversations. The player is normally offered two to three options, depending on the event. The conversations with the mother and the father focuses on subjects where people can have strong opinions. For example, the conversation with the mother focuses on tattoos. Rosa has a tattoo on her arm, and the mother has strong reactions when she sees it. Depending on how you react and answer to the mother's opinions, the player can affect their relationship. Similar, the conversations with the father revolves around education and jobs. Rosa is just about to graduate, and does not know what she wants to do. The father has strong opinions on this subject, and the player gets the chance to engage in a discussion where she can either agree, talk against him, or choose a middle way. In this way, the characters' interactions are based on the drama of characters with different personalities. The player's interaction only focus on social conversations.

7.1.3 Implementation

The prototype was developed in Twine and published through the website, and is available on `http://philome.la/kathrineMstone/dinner-party/play`. The idea with having the prototype on a website, instead of desktop app, was to be able to test the prototype on the mobile platform. The analysis and the first round of data collection suggested that the mobile platform would be the most suitable platform and the first test therefore also seeked to test that.

Twine

Twine is an open-source tool for interactive non-linear stories (Twine, n.d.). The program was chosen for the first initial prototype, as it allows for fast creation of interactive narratives. The setup is simple, as it requires no programming at all to create an interactive narrative. However, if you want to have a more extended and advanced prototype, Twine allows users to use variables, conditional logic, images, CSS, and JavaScript. For this prototype, CSS was used to specify the layout, font attributes, and colors for the prototype (Twine, n.d.).

The interactive narratives (or stories as they are called in Twine) can be built in the Twine editor (see figure 7.3), where events, consisting of chunks of text, can be created and linked to each other. To play through the story, Twine gives the user possibility to publish the story to an HTML file. Twine has different *story formats* that control the basic appearance and behavior of the story during play. A story format is the Javascript backend that is used to specify how Twine should handle programming, media, or UI elements. For this prototype, the story format, SugarCube 2.21.0 was used to handle the programming (SugarCube, n.d.). To make the player's options influence the story, *story variables* was used to store values throughout a play session. In SugarCube, story variables are part of the story, and exists only throughout one playthrough session. Furthermore, conditional statements was used to display certain information based on the story variables. Figure 7.2 shows how the sister can react in different ways depending on the story variable, $AffinitySister. The story variables are set throughout the game based on the choices that the player make. The last line in Figure 7.2, shows how the story variables increase in the game.

```
<<if $AffinitySister gt 0.5 >>
She smiles and says "Thanks, Rosa! I will come by soon enough"
[[Continue|ShowRoom]]
<<else>>
She looks at you and says "Well it's techincally Valdemar's apartment,
but thanks. I will come visit him soon"
[[Continue|momConversation]]
<</if>>
<<set $AffinitySister = $AffinitySister + 0.1>>
```

Figure 7.2: Code snippet from the Twine editor

Narrative Structure

The narrative structure of the prototype, uses the textual architecture of a Flowchart (see section 5.4.1), similar to the game Oxenfree (see section 5.6.2), as the player can choose different paths throughout the experience, but will have some main events, which the player always will experience. Figure 7.3 shows a fraction of the Twine editor, and how the character's options would lead to different events. This type of narrative structure was chosen, as I wanted the player to experience different variants of the story, that was more manageable to implement compared to e.g. the Tree

structure. The events and options, which the player is presented with, should be a result of the chosen personality, the player decides to play as.

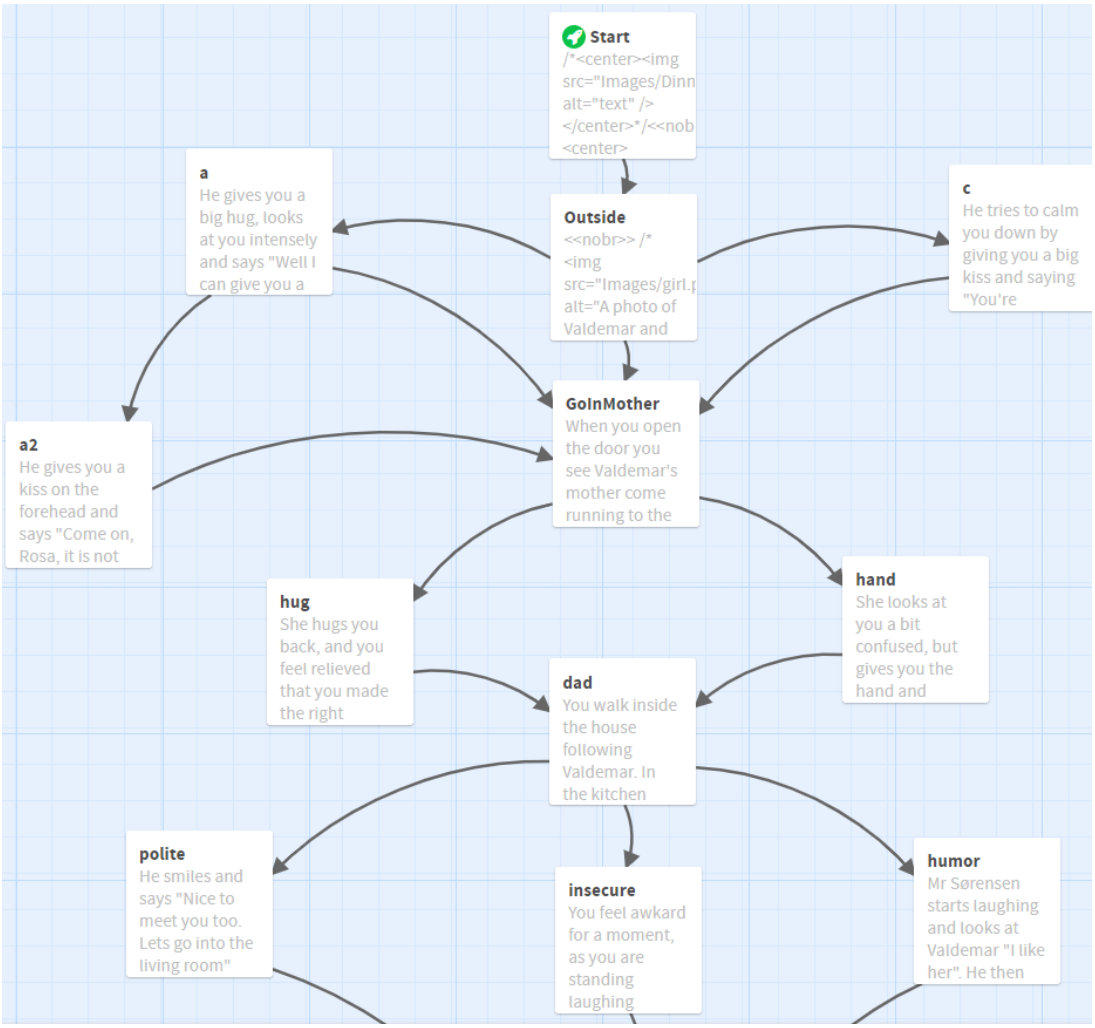

Figure 7.3: A view of part of the Twine editor

Furthermore, each character have a one dimensional attribute, consisting of one character trait, Percieved_affinity, towards the player (see section 5.5.2). This character trait was chosen based on the theme of the prototype. When visiting the boyfriend's parents for the first time, it is often important to give a good impression. In this way, it made sense to choose perceived affinity towards the girlfriend as the one attribute to keep score of.

The character trait will change depending on the player's choices throughout the story. Furthermore, the story will be affected based on the value of the character trait. In this way, the system kept score of how much the family liked the player.

7.1.4 Data Collection and Methods

The following section will describe the methods used for collecting data for the first iteration, as well as the sampling technique used within the test.

Sampling technique

For the test, the method of convenience sampling was used, where subjects are selected due to their convenient availability. This method was used in all three iterations. Convenience sampling allows

for a fast assembling of participants. As multiple iterations was needed, it was necessary that less time was spent on sampling participants. When using this method, it is important to be aware that the data might only represent that specific sample, and it is therefore important not to over-generalize the data (Bjørner, 2015).

Recruitment of participants was made over Facebook, and included friends, or friends of friends. Before inviting participants to take part part in the focus group they were asked about their gaming habits, and age, to ensure that they fit within the target group.

Focus Group

For the first iteration a focus group was conducted. A focus group is a discussion within a group where participants discuss and comment on a specific topic and draw on personal experiences (Bjørner, 2015). This type of data collection method can be used to understand a group's perceptions, and feelings about a product, and can be conducted on various stages of production. In addition, they can be helpful for researchers, if they want to understand their target group better, or to shed light on specific issues within a product, or to evaluate different products (Bjørner, 2015).

The focus group was conducted at an early stage to figure out, which way to go with the prototype. The goal was to get an understanding of the target group's thoughts and feelings about interactive narratives as well as evaluating an early prototype. The main components that were investigated included (1) Relatable and realistic content (2) Character Interaction, and (3) Duration.

To ensure that the focus group session progresses smoothly, the *dual moderator focus group* was used. This focus group method relies on two test conductors, where one moderator ensures that the session progress smoothly and the second ensures that wanted topics are covered (Bjørner, 2015). Moreover, it is important that the test conductors create an in informal conversational context, such that participants are comfortable and feel that they can talk freely.

Focus Group Test Procedure

The initial test was carried out the 9th of April 2018, where three women, who fell under the target group participated in a focus group and was chosen based on convenience sampling. Initially, four women were invited to participate, but one participant cancelled on the day. Instead, she participated in an interview a few days later. The data from the four participants was analyzed together.

The setting was chosen to be at my apartment, in the living room, in order to create an informal conversation context. When participants arrived they were offered coffee and snacks. The focus group was held in Danish in order to make it the most comfortable for the participants, and ensure that there were no language barrier.

The session started with a welcome speech, where the participants were introduced to the test. They were asked to launch the prototype through a website on their smartphones. Afterwards, they got told to take all the time they needed to play through the prototype while relaxing, drinking and eating. In this way, the test-setup should feel as informal as possible.

When all participants were finished playing the game, they were asked to write down a positive and a negative word or sentence about the prototype. Then, the discussion started, first with questions concerning the setting and the theme of the game, then about the text-based interaction and available options, and finally a general discussion of these types of a games (see Appendix A, 3/a/ii, for Focus Group Guide).

7.1.5 Data Analysis Methods

Content Analysis

In order to interpret the qualitative data, the method of content analysis was used (Bjørner, 2015), where the meaning of the data is coded into different categories. Content analysis can provide an overview of the data through a systematic description of the data. The method offers a way to systematically note down co-occurrence, patterns of use, and frequency of terms to get an overview (Bjørner, 2015). Content analysis uses coding to sort and organize the data. Coding is the process of summarizing what is happening in the data through words or short phrases. The data is then organized in categories based on similar topics (Bjørner, 2015).

There are different approaches in which content analysis can be made. Hsieh and Shannon (2005) explain three approaches to content analysis: *conventional*, *directed*, or *summative*. Common for all three is that they interpret meaning from some text data and divide them into categories (Hsieh & Shannon, 2005). In conventional content analysis, the categories are derived directly from the text. Directed content analysis starts with some theory or pre-defined categories, and the text is then subsequently coded into these categories/themes/theories. Summative content analysis starts with counting words or comparisons, and then explore the usage of these words and interpret the context based on this (Hsieh & Shannon, 2005).

The thesis identified several categories or themes through the initial research, which have been used to guide the design and tests. These categories are therefore the ones that have been explored in all three iterations. The most appropriate approach for content analysis is therefore the directed content analysis approach. The data, from the three tests, was coded into the different categories. If the data could not be coded into the categories, it was evaluated if it represented a new category or if an existing category could be made broader.

The data from the three tests have therefore all been analysed through directed content analysis, and will be presented in the different pre-defined categories.

7.1.6 Findings

The test of the first iteration focused both on general perspective on interactive narrative experiences, and on participants' thoughts and feelings towards the prototype. This section will present the findings from both. As the Focus Group was held in Danish all quotes have been translated to English.

General Perspectives of Interactive Narrative Experiences

An overview of the opinons are seen in table 7.1, and will be further explained in this section.

Table 7.1: General Feedback on Interactive Narrative Experiences

Problems within games for females
• Taboo that women play games
• A male activity
Different situations
• Episodic gameplay/Fun to have many small situations instead of one long
• Useful for understanding how you react in situations (especially awkward situations)
Target Group
• Useful for younger girls who needs to know that others are experiencing the same thing as them
• Real life situations (where you can test yourself) will target women in the 20-30
Platform
• Mobile is the best platform

The data indicated that the participants were positive towards interactive narrative experiences that concern everyday life situations. However, they also pointed out the issues concerning females and games in general.

One participant mentioned the problem with few females playing games: "(...) it has sort of become a taboo that girls play, there are not many that do it, at least not within my group of friends." (Appendix A, 3/a/i/A). Another participant agreed and mentioned that "the boys I know they sit for many hours and nights [and play], I just do not think that there is the same perseverance, girls want to do so much else, but this is why this is an example of how girls should be able to relate to games" (Appendix A, 3/a/i/A). In general the participants perceived games as more of a male activity, but suggested that such interactive narrative experiences as the prototype could be a possible solution.

The participants further mentioned that in order to make games that would appeal to them it should be on the mobile phone, and not be too long. One participant mentioned "I think people would play more [if the game was on the phone]. Especially girls, because it is the fewest girls who would sit down, open her computer and start a game. Instead one would just play it on the way" (Appendix A, 3/a/i/B). Another participant mentioned that the game should allow players to quickly open and close the game, and therefore the mobile phone would be the best platform. In general all participants felt that if they were to play a game it should be on the phone.

All participants agreed that the theme and story should be relatable. They saw many benefits of using awkward or difficult situations as basis for the experience. For example, two participants mentioned how it could be useful for experimenting with different ways of reacting in difficult situations. Furthermore, they mentioned how both younger girls and women find such themes interesting. One participant indicated that it could help younger girls "I think that it could help younger girls in difficult situations, (...) putting a situation up that you know others have been in before" (Appendix A, 3/a/i/A) but also mentioned that it would be fun for older females as the topic is something you can relate to.

Finally, the participants wanted different small situations instead of one long story. One participant mentioned that it would be nice to follow the main character in many different situations, and further indicated that it would maintain the gaming pleasure. Similarly, another participant said "I think it would be more fun (...) if it was different situations. You have one situation and you get an indication of how well they like you, and that is the starting point in the next situation" (Appendix A, 3/a/i/B). All participants agreed that for a final game it would be fun to combine many different situations, where one of them could be the prototype they just played.

In this way, the participants' general perspectives towards games and interactive narratives are in consistency with the gathered research from the analysis.

Prototype Feedback

The data concerning the prototype was coded into predetermined categories and followed the method of directed content analysis (See section 7.1.5). All positive responses were coded into one column and all negative or 'need for improvement' responses were coded in another column.

Table 7.2 gives an indication of the participants overall opinions and perspectives on the prototype. For a more detailed overview of who said what, see Appendix (A, 3/a/iii).

Relatable and Realistic Content

The participants indicated that they enjoyed the theme and story. They mentioned that it was a very relatable situation and that they could put themselves in the main character's place. Two of the participants also mentioned that the topics reached them on a personal level. In general they mentioned that situations that are difficult or awkward and focus on a real life situation could appeal to females.

Table 7.2: Feedback on first iteration prototype

Group topics	**Positive feedback**	**Negative feedback**
Content: Relatable and Realistic	• Relatable situations for females • Relatable characters	• Lacking visuals to support the story
Mechanics: Character Interaction	• Meaningful choices • Number of options • Hidden affinity level • Length of each conversation	• Few dialogue options • Reactions from multiple NPCs • Different gameplay
Duration	• Wanted more • Should not be too long	• Too short

Three participants mentioned that they were missing some visual feedback in relation to the characters. They all mentioned that it would be nice to have some visuals of the characters, and especially to see the characters faces and thereby reactions "That you can see, if people like you or not, and in this way you can see where you are in the game, (..) see that something happens due to your choice" (Appendix A, 3/a/i/B).

Character Interaction

In general the participants enjoyed that they could interact with many different characters. They all felt that their choices had an impact on the story. They also liked that they needed to find out/guess how the characters reacted to their responses, instead of constantly knowing if a choice, made an NPC like you or not. One participants mentioned "I think that if you are constantly told what they think about you, then one's choices will be too influence by that" (Appendix A, 3/a/i/B).

In regards to the number of options available they had different opinions. They all agreed that the number of options should not be too long. If there were too many options it would be confusing. However, one participant mentioned that she felt that at certain point, the option she would have chosen was not there. Two of the participants mentioned that sometimes there could have been up to 5 options, but not more. They all thought that the length of each conversation was fitting.

Two participants also mentioned that it would have been nice to get more feedback from the boyfriend. One participant mentioned "(...)if the boyfriend had been active some more, so that you get some more feedback from him during the experience, in such a situation then it is him that is the closests to you" (Appendix A, 3/a/i/A), and another mentioned that it would be nice if multiple characters could react to the choices the player made.

In general they were all positive towards the gameplay. However, one mentioned that it would be nice to have some other gameplay too. She mentioned; "There should maybe have been, something like another game, maybe not in the same way, but a break, such that you're not sitting and reading and answering all the time, but another element" (Appendix A, 3/a/i/B) indicating that it would be too tedious if the game only had text and options.

Duration

All the participants agreed that the prototype could benefit of a longer playtime. It took around 5 minutes to play the game, and they mentioned that they wanted more when they finished. However, they also mentioned that the game should be able to be played for a short amount of time. They did not want to allocate many hours to play a game, but instead it should be something that could be played for short durations.

7.1.7 Summary of Finding

During the focus group various topics were covered concerning games for females. The general feelings about games were in consistency with the research. All participants felt that games were mostly targeted at the male audience and perceived games as a mae activity. However, they were positive towards the prototype and interactive narratives. They indicated that in order to make them interested in games, games should be relatable and focus on situations were the player could identify themselves with the character. They also suggested that the game should be episodic to make it more manageable to play.

In regards to the prototype, they enjoyed many of the same features as identified in the Design Guidelines. These elements included the relatable situations and characters, and the meaningful choices. They all mentioned that they would like to have played more of the game in the end. The game only took around 5-7 minutes to play through, which they felt were too short. Some of the features which they felt were missing from the game was varying gameplay, visuals that supported the story, and more options in some situations. When looking at the Design Guidelines, varying gameplay and visuals/graphics are not included. The components will therefore be explored more in depth in the following prototype.

7.2 Second Iteration

7.2.1 Goal

From the first iteration several issues was identified:

- Content
  - Lacking visuals to support the story
- Mechanics/Character Interaction
  - Different gameplay
  - Reactions from multiple NPCs
  - Could be more options in certain situations
- Duration
  - Too short

The focus for the second iteration was to improve some of these features and to investigate different types of gameplay. Therefore, the following section is divided into Content, Mechanics/Character interaction, and Duration, to explain how the second iteration focused on improving some of these features. The main goal with the test, was to figure out how the participants felt about the different types of mechanics as well as the length of the game.

7.2.2 Design

The second prototype was developed together with Crawford, and is a more high-fidelity prototype. It incorporates a personality model, and a system that changes the characters perceived personality traits. The technology behind is developed by Crawford. During the development of the prototype, several meetings was held with him. In general, we had a short meeting every day, discussing the technical issues, design choices, and the characters for the prototype. I designed the stories and the characters, while Crawford provided the foundation for the prototype.

Content: Relatable and Realistic Content

The findings from the first iteration showed that the theme and story should revolve around relatable topics and issues that females have. Therefore, the theme for the second prototype is about the difficulties with starting in a new school. The setting is at a Gymnasium in Denmark, where you

play as the main character Rosa, who just started her first year. The story was designed by using the character-driven approach (see section 5.5.1), where the characters and their personalities are defined from the start and encounters are created as a result of the characters personalities. Six characters and their respective personalities were created. Each encounter should have a story event, where the main character/player meets one of the other NPCs. The player should then be able to choose between several options in order to communicate with the NPC. Finally, the NPC should be able to react in different ways depending on their relationship. The encounters took inspiration from typical Gymnasium experiences, such as parties at the gymnasium, gatherings at the park, and in general social life on the school. The theme and story was chosen as it is something that most females can relate to.

One of the things that needed to be improved from the first prototype, was in relation to the visual feedback. Therefore facial expressions were implemented in a part of the game. Here characters will show a facial expression that represents their current feelings and in this way support the story as seen in Figure 7.4.

Figure 7.4: Range of facial expressions of one of the characters

Mechanics/Character Interaction

The prototype consists of two types of gameplay. One is a text based interactive narrative, where the player is presented with some event and then have the possibility to choose between several options, which the NPC reacts to (see Figure 7.5).

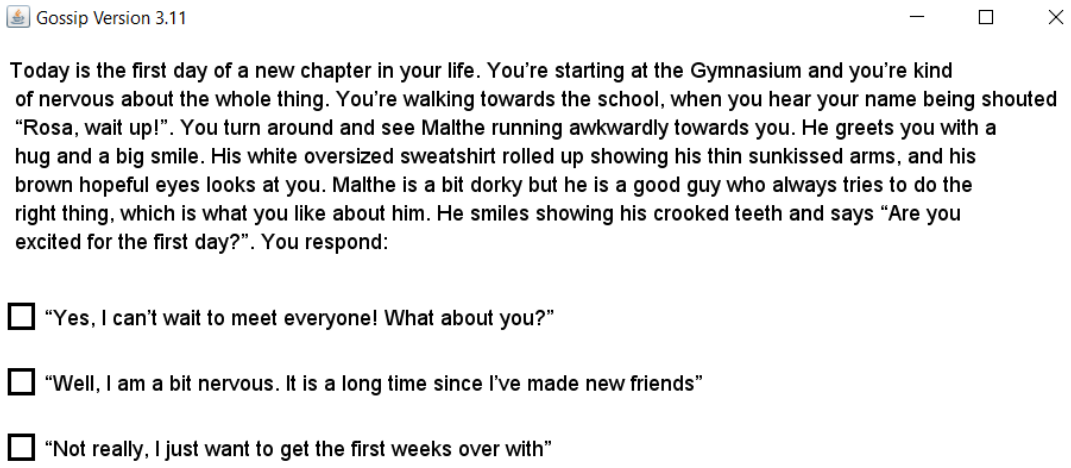

Figure 7.5: In game footage of the second prototype's event gameplay

The second type consists of gameplay sessions around the game Gossip (see figure 7.6). Gossip is a game that was first developed by Crawford in 1980, and focuses on social interaction between characters. The goal is to become the most popular in a group, by choosing what to say with respect to who you are talking with, and who you are talking about.

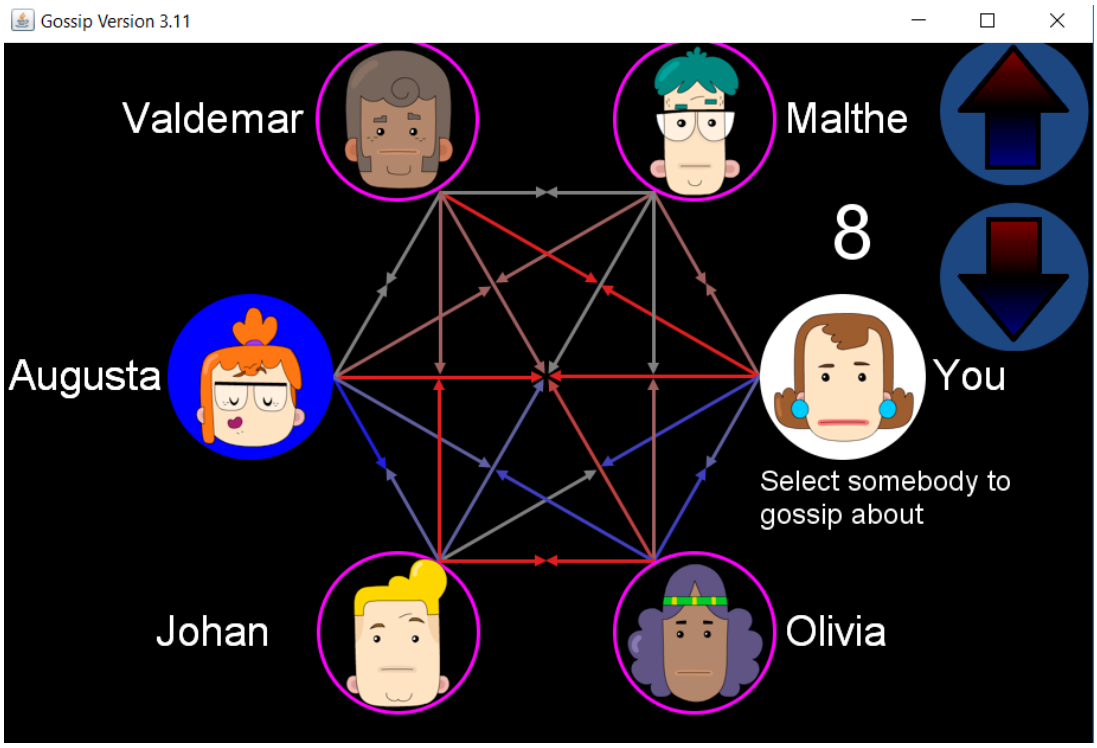

Figure 7.6: In game footage of Gossip gameplay

The idea with Gossip was to add a new type of gameplay to the narrative text based game. As the Gossip gameplay revolves around social reasoning and being part of a group of friends it made sense to use in combination with the chosen story and theme. Gossip also includes facial expressions showing the characters feelings, which were one of the things missing in the first iteration.

Throughout the prototype, the player will be presented with some event, which explains a particular situation at the Gymnasium. The player will then choose between multiple options and the NPC in that event will react accordingly. Afterwards, the player will enter a round og Gossip, where the player can call other NPCs including the character from the event. You can then 'gossip' about other characters, by deciding who to call and who to gossip about. The other NPCs can also call you to gossip about someone else. After one round of Gossip, the player is presented with a new event. This cycle of first an event and then Gossip gameplay keeps repeating (see Figure 7.7).

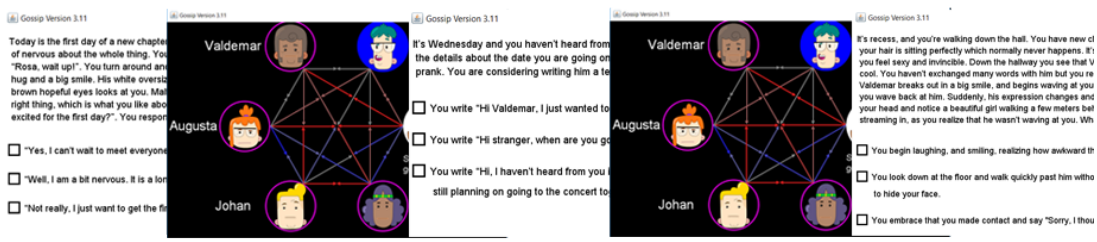

Figure 7.7: Gameplay process of the second prototype changing between text events and Gossip gameplay

Duration

After 9 rounds of Gossip and Events the game ends with an evaluation of who became the most popular of the six characters. The number of rounds were chosen as the prototype needed to be

longer than the first prototype. Where the first prototype had an approximate duration of 5 minutes, the second prototype took around 15 minutes to play through. The second prototype also included more characters that needed to be introduced, which meant that the players needed time enough to get to know each of them. After experimenting with the number of rounds as well as the number of events needed to introduce the characters, Crawford and I decided on 9 rounds, and thus around 15 minutes of play time.

7.2.3 Implementation

The implementation of the prototype was made by Crawford. He has worked with interactive storytelling for many years, and have experimented with different IS programs that focus on dramatic interaction with characters, who can react emotionally to events. One of these programs is the Encounter Editor (Crawford, 2017a). This program was used for a different IS world called Siboot (Siboot, n.d.), but was reprogrammed to work as a prototype for this thesis. The Encounter Editor was used as foundation for the prototype. To include another type of gameplay, Gossip, was incorporated into the prototype.

The Encounter Editor

An encounter is concerned with the dramatic interaction between a player and a character. The player will first be presented with some text, describing a meeting with a character. Then, the player will be able to choose between a number of options, which the character will react to. The Encounter Editor consists of multiple windows that allows the storyteller to specify how each encounter should be. The storyteller is here referred to the person, who is designing the encounters.

After having described the encounter in text, the storyteller can specify Prerequisites, Disqualifiers, Protagonist/Antagonist, Earliest turn/Latest turn, Options, Reactions, and Blending change (see figure 7.8).

Prerequisites are used to specify which encounters the player should have experienced before they can experience a new encounter. *Disqualifiers* can be used if the storyteller wants certain encounters to disqualify another encounter. The program can also exclude characters from being either the *protagonist* or *antagonist*. For the purpose of this prototype, only one protagonist and one antagonist was chosen for each encounter. However, one might want several characters to be able to take on the role of the protagonist or antagonist. The *Earliest/Latest turn* allows specification of when an encounter should happen with respect to the number of game turns. The next window is the *Options* window, where the player's choices are written down. A total of five options are allowed. For each option, several *Reactions* can be specified. A reaction is the character's response to the player's choice. For each option, there is a maximum of five reactions for the character, which is chosen by the program based on the character's personality traits.

Within each option there also is a *Blending change*, which specifies how the character's personality traits will be affected based on the player's choice. For example, if the player chooses the nice option, then the character will probably like the player a bit more.

The way the Encounter Editor decides how character's should react and how relationships between characters change are based on the personality model.

The personality model consists of three factors: Bad_Good (Goodness), False_Honest(Honesty), and Timid_Dominant(Dominance). Bad_Good refers to the tendency to do nice things to others. False_Honest is a character's tendency to tell the truth, and the Timid_Dominant is how powerful or how dominant a character is. Each of the personality traits have a negative and a positive side. These are not binary personality traits, but instead a character can, for example, have some degree of goodness in him/her. The traits use floating points and range within -1.0 to 1.0, where an average

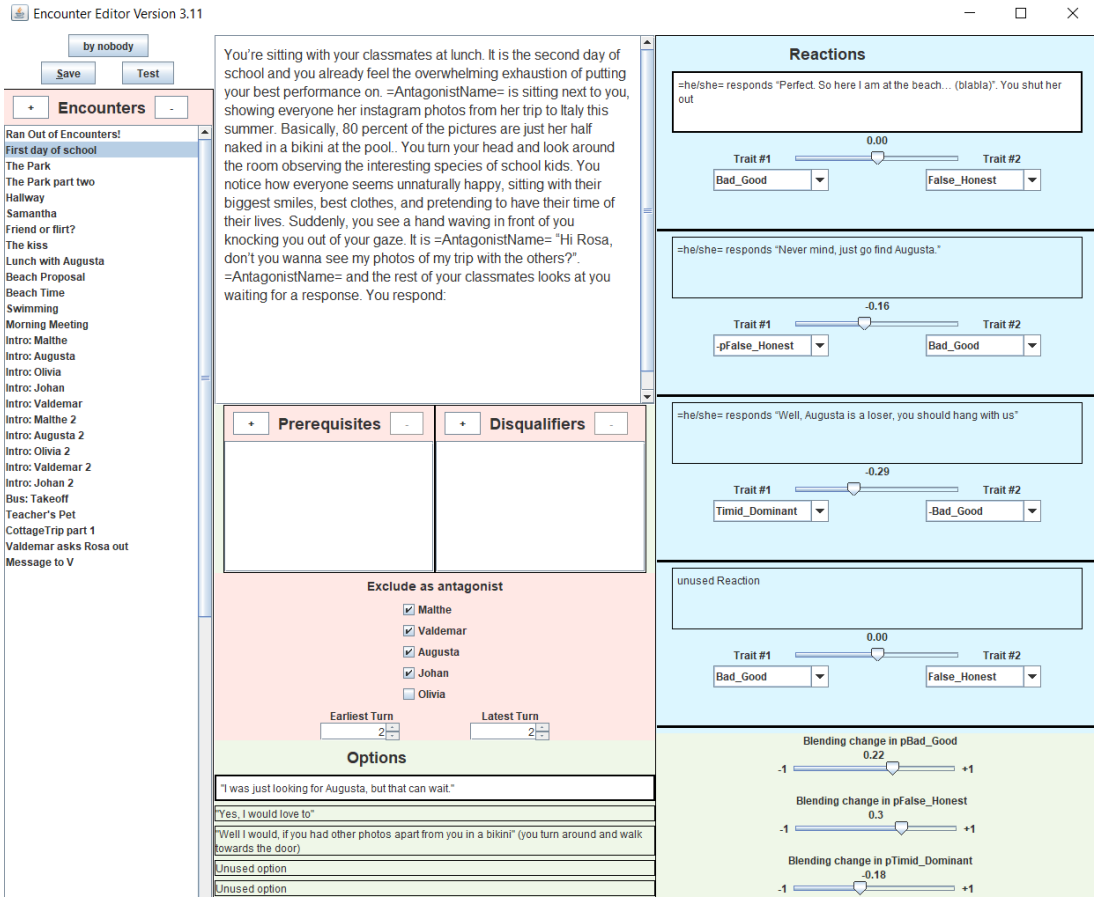

Figure 7.8: The layout of the encounter editor used to create the events gameplay

person will have a value of 0.0, and a really good/honest/dominant person a value of 0.9, whereas a very bad/false/timid person will have a value of -0.9.

Beside each character's personality traits, the personality model also includes values for how the characters perceive each other. For example, a character might have a Timid_Dominant value of -0.4 but another character might perceive that character as dominant, and the perceived personality trait, PTimid_Dominant value is therefore different than the personality trait value.

These factors are used to describe each character and the relationship amongst characters. When a character needs to choose between multiple reactions in a given situation, the perceived personality trait and the personality trait will play a role. Combining the two numbers will result in an *inclination value*. The reaction that has the highest inclination value will be chosen. In this way, the characters can make different decisions based on the personality model.

Crawford (2017b) uses a system called *Bounded Numbers* to control how the system handles the change of personality traits. As mentioned, the traits are defined as floating points on a scale from -1.0 to 1.0. To ensure that the traits do not exceed these values bounded numbers are necessary. This could for example happen if the player does something really nice to a character, but the character already perceives the player as very good with a PGood_Bad trait of 1.0. In such a case, bounded numbers prevent that the value exceeds the -1.0 to 1.0 range.

The Encounter Editor has its own mathematical system that controls this problem by using a *blend factor*. The basic idea is that you decide on two traits that should determine that reaction for the character. In figure 7.9, the two traits that influence, if this decision is chosen is Timid_Dominant and pBad_Good. In addition, you also specify which personality trait should have the most

influence. This is the -0.29 value seen on the figure, which is called the weighting factor. In this case the Timid_Dominant trait has the highest weight.

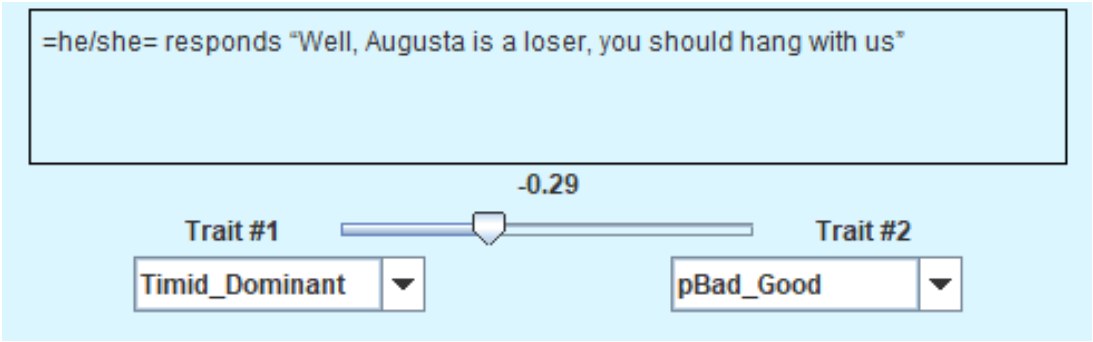

Figure 7.9: Deciding a characters reaction by setting the blend factor in the encounter editor

The inclination value is calculated based on the values for each of the personality traits as well as the weighting factor. If the weighting factor is zero, the inclination value will be in the middle of the two traits.´If the weighting factor is 0.5, the inclination value will change $\frac{1}{4}$ of the ratio between the personality traits as seen on figure 7.10.

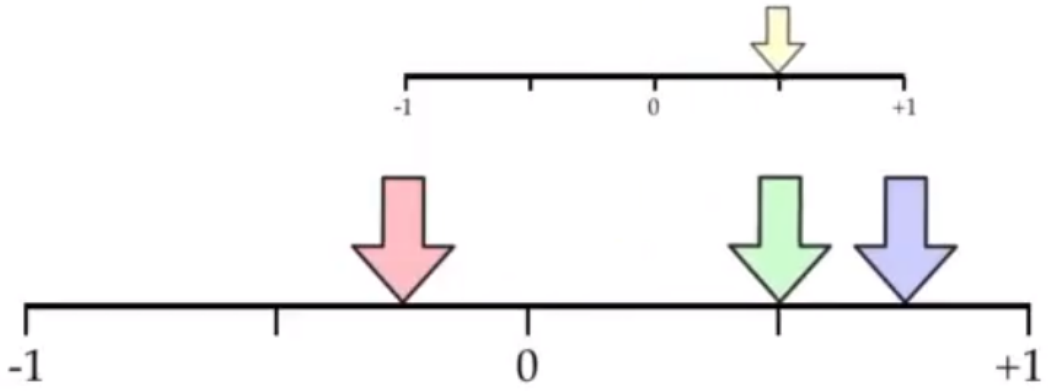

Figure 7.10: Representation of how the inclination value is calculated (Crawford, 2017b)

In this way, values will never exceed 1 in the mathematical system. By using such a system, it becomes possible to have characters that react emotionally to the player's choices.

The Encounter Editor was used to create the encounters between characters. After one encounter the player would be presented with a round of Gossip. The programming language used to implement the prototype was Java, and the prototype was therefore a Java application. Crawford developed the prototype as a desktop application. The previous findings suggest that the mobile platform is the best suitable platform to target women. It would require time and effort to rewrite the prototype to function on a mobile device, and as the test focused on dramatic meaningful interaction as well as different gameplay, the platform was disregarded. However, the type of interaction that would be required from the participants was only mouse clicks and thus a simple form of interaction, which can be compared to touch interaction on a mobile device.

7.2.4 Data Collection and Methods

The following section will describe the methods used for collecting data for the second iteration. The same sampling technique as the one used for the first iteration, convenience sampling (see section 7.1.4) was used to gather participants.

In Depth Interview

The in depth interview method was used for data collection in the second iteration test. Where, the first iteration also looked at the participants' general opinion about interactive narratives and games, the second iteration only focused on evaluating the prototype. The in depth interview method is a suitable method for collecting data about users perspectives or opinions on a product (Brinkmann, 2013). Furthermore, the method allows the researcher to be very flexible, such as for example explaining or clarifying questions or topics (Bjørner, 2015). When dealing with women, who do not usually play games, it can be difficult to talk about game-related mechanics and features, and there might appear situations where the topics need to be clarified. The in-depth interview was therefore the chosen approach for collecting data in the second and third iteration.

The interviews followed the semi-structured interview guide, where a set of questions are made from the start, but can be reordered during the interview (Bjørner, 2015). A guideline was made for the interviewer to follow, where the questions were organized into themes such as Gameplay and Character interaction (for interview guide see appendix A, 3/b/iv). If a participant brought up a topic before the interviewer mentioned it, the semi-structured guide allowed the interviewer to jump to that topic (Bjørner, 2015).

Each interview consisted of one interviewer and one participant and were recorded in order to analyze the data subsequently.

Continuation Desire

To figure out how the players felt with the increased playtime, the method of *continuation desire* was used (Schoenau-Fog, 2011). This method was chosen as it is a simple assessment technique to measure engagement. Player engagement in digital experiences is a multifaceted concept, and can be related to concepts such as immersion (Brown & Cairns, 2004), flow (Moneta & Csikszentmihalyi, 1996), and presence (Lombard, Weinstein, & Ditton, 2011). Engagement has been understood in different ways, such as a prerequisite for immersion (Brown & Cairns, 2004) or as an area of presence (Lombard et al., 2011). Schoenau-Fog (2011) describes continuation desire as the desire to continue an experience, which is the driving force for an engaging experience. Continuation desire can in its simplest form be measured on a Likert Scale that indicates how much the player wants to continue.

This way of measuring the likelihood to continue playing, was used throughout the play-test. After two rounds, the participants were stopped and asked how much they wanted to continue playing the game. They were also asked to specify why that number was chosen. A scale from 1-10 was used to measure the degree of continuation desire.

Interview Test Procedure

Four rounds of interviews were conducted between the 12th of April and the 22th of April 2018. The participants were invited to my apartment, one at a time, depending on their availability.

The playtest session followed the structure proposed by (Fullerton, 2014), where the sessions can be divided into: *Introduction*, *Warm-Up Discussion*, *Play Session*, *Discussion of Game Experience*, and *Wrap Up*. The discussion followed a semi-structured in depth interview, where some guiding questions had been made, which were open enough to allow the interviewer to explore specific themes or responses more in depth.

The *Introduction* (2-3 minutes) focused on welcoming participants, introducing test-conductor, playtesting process, and recording/signing the consent (that the material will be used for the report). The *Warm-Up* discussion (5 minutes) focused on their previous gaming experiences and their gaming habits.
In the *Play Session* (15-20 minutes) the participant tried the game. Here a short introduction to the game was given, where the basic mechanics were explained. In addition, the participants were notified that they were testing a game in its development phase (not a finished product) and that Crawford had provided the software. By mentioning this, the participants was hopefully more likely to provide honest answers, as they were not giving feedback on a finished product nor on the test-conductor's own software and thereby decrease the chance of courtesy bias, where they answer as they think the interviewee would want. During the Play Session the participants were stopped after two rounds of play, and asked To what degree do you want to continue?" on a scale from 1-10, and why they chose the number they did (appendix A, 3/b/i/A). In this way, it was possible to determine at what point the participants lost the desire to continue play, or when they gained desire to play, and thereby provide a quantitative measurement of engagement.
After the Play Session, the *Discussion of Game Experience* (10-20 minutes) was held, where questions concerning the participant's experience was covered. The questions revolved around the positive and negative features of the game, if the participants felt that their choices influenced the game significantly, the theme, the varying gameplay (encounters and gossip), the length of each, the relation between them, and a reflection on which features of the game could be improved. Finally, the participants were thanked in the *Wrap-Up* session (Appendix A, 3/b/iv).

All interviews were recorded, and the data was analysed, similar to the data from the first iteration, through the method of content analysis as seen in section 7.1.5.

7.2.5 Findings

As the two main goals for the prototype was to investigate the two types of gameplay and if engagement could be sustained for a longer play session, the findings are presented in each their table below (see Table 8.1, and Figure 7.11). The quotes have been translated from Danish to English.

Mechanics/Character Interaction

In regards to gameplay, the data indicated that the participants found the combination of different types of gameplay enjoyable. One participant mentioned: "I think that it is good to have a combination, maybe there could have been a third part too" (Appendix A, 3/b/ii/C), indicating that the varying gameplay made it fun and that there could have been more. Furthermore, the participants liked that the Gossip gameplay had less text, and more interaction from their side. One participant mentioned that it increased motivation with breaks from the story "I definitely think that there should be some variety, if it's only text than you lose a little. It is also good to get a break from the story, because then you have more motivation for returning, instead of it coming all the time" (Appendix A, 3/b/ii/C). However, the participant felt that the encounters were essential for the prototype, and without these encounters, there would not be real story.

Even though, the participants indicated that the combination of both types of gameplay was a good idea, they had some issues with the gameplay concerning Gossip. They found that the phone conversations were difficult to relate to, as the options the player had were too basic and monotonous. One participant said that "It was like the answers (...) were not something that you would say yourself. It was the same all the time, and there were only the same options for each person. It was not like you could talk in a different way with Augusta compared to Olivia" (Appendix A, 3/b/ii/C). It made it difficult for participants to relate to the situations, as they did not feel that it was something they would do themselves in real life. Most participants also mentioned that it felt weird to call a person, who you just had a fight with, or who you were not friends with. In addition,

Table 7.3: Feedback on second iteration prototype

Mechanics: Character Interaction

Gameplay	Positive Feedback	Negative Feedback
Gossip	• Choices that affected the relationship • Fun gameplay • Less text	• Gameplay becomes repetitive • Options did not reflect the story • Choices did not affect the relationships in a logical way • Calling people who you are not friends with
Encounter	• Relatable, motivating, and essential gameplay • Sufficient amount of options	• Not strong enough consequences of choices • More varying options • Too long text
Combination	• Varying gameplay • Ratio between Gossip and encounters	• Becomes boring after some time • Would have liked more encounters and less Gossip • Need to better connected

Content: Relatable and Realistic

Gameplay	Positive Feedback	Negative Feedback
Gossip	• Liked that it was a phone conversation	
Story	• Fun and nostalgic • Relatable	• Childish/Teenage
Graphics		• Missing graphics to support the story

the participants felt that the Gossip part was missing some connection to the previous encounter. For example, one participants mentioned "(...)you've just been in a situation in the text part before, and it [Gossip] should therefore be more situation based" (Appendix A, 3/b/ii/A). These concerns amplified that the phone conversations did not feel natural and that Gossip did not fit in with the encounters.

One thing that most participants mentioned was the length of the encounters' text: "It is fun with the options you have, but then you have to read [a lot], and it takes away my concentration" (Appendix A, 3/b/ii/D, 02:05 min). They found that it became a bit long to read, and one participant mentioned that she lost concentration due to the long texts.

Content: Relatable and realistic content

In regards to the theme and the story, all participants thought that it was relatable. However, as gymnasium is for students between 15 to 19 years old, most participants thought that it was a bit childish. One participant mentioned that she liked it because it was a nostalgic feeling "It was mostly because there was some nostalgic over Gymnasium" (Appendix A, 3/b/ii/B) and suggested that the game would probably appeal more to a younger audience.

Two participants mentioned that it would have been nice to have some graphics during the encounters. One said that it could shorten the text descriptions as less space would be used on describing the surroundings. Another argued that it would catch her attention more if there were graphics in the encounters.

Overall, the participants thought it was a good story, but that that the theme about Gymnasium

problems and gossiping would be more appealing to a younger generation than women between 20 to 30. As one participant said "(...) the more you can see yourself in it, the more you can relate to the situations" (Appendix A, 3/b/ii/A) when asked if such a game could catch her attention.

Duration and Desire to Continue

The results from the Continuation Desire during the game can be seen on figure 7.11. The graph indicates that the participants engagement was not sustained throughout the play session and their likelihood to continue playing decreased from the start till the end. The graph shows almost a linear relationship between number of rounds (time) and Continuation Desire.

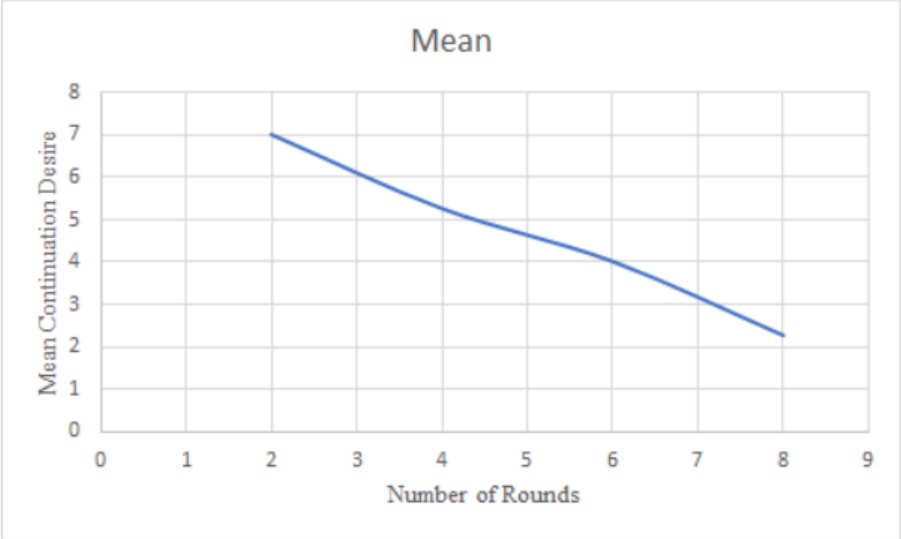

Figure 7.11: Continuation Desire graph

The reason why the participants desire to continue playing decreased was due to the repetitive gameplay and because they did not enjoy the Gossip part. The reason why the participants wanted to continue was mostly due to the story. One participant mentioned, already after two rounds: "I only want to continue, as I want to find out more about the persons. I am not interested in playing the Gossip part" (Appendix A, 3/b/i/B). All participants indicated that they enjoyed the story and that it was the reason why they wanted to continue. Another participant mentioned after four rounds of gameplay: "The story is really nice, but I do not think that the phone conversations make that much sense. I can see what the idea is with it, but I do not know some of the characters and I do not have a relationships with them. So why should I say something to them?" (Appendix A, 3/b/i/B).

The reason why all the participants did not want to continue was due to the repetitive gameplay. They thought that it became dull in the end. One of the participants gave a score of one in the eighth round and said "It is too boring! The Gossip part should be more situations based, such that it would fit in with the rest of the story" (Appendix A, 3/b/i/B).

Summary of Findings

The findings from the evaluation of the prototype as well as the continuation desire results, indicated that the participants did not find the repetitive gameplay interesting enough to keep their attention. The main problem with the prototype was the gameplay revolving around Gossip. The participants did not find the interaction natural, as they were limited in their options. The only thing that they could talk about was how much they liked other characters, which they found too mundane. The Gossip gameplay was, therefore, too repetitive and did not connect well enough with the encounters.

Some of the positive categories from the findings showed that the participants enjoyed the storydriven content. However, the findings indicated that the story and theme should maybe be more mature in order to appeal to the target group. Another positive feature with the prototype was the idea with the varying gameplay. Even though, they did not find the Gossip part appealing they liked that it was not only the text-based narrative encounters. The participants wanted to have gameplay that changed throughout the game and was connected with the specific encounters. Furthermore, they also felt that graphical feedback was needed that supported the story, besides the face expressions.

The third iteration will therefore focus on improving the following features:

- Varying gameplay
  - Connection between gameplay types
  - Gameplay becomes repetitive
  - Unnatural gameplay
- Graphics
  - Graphics that support the story

7.3 Third Iteration

7.3.1 Goal

The goal with the third iteration was to improve some of the issues that the participants had with the second iteration. The findings suggested that a game that can appeal to the target group should focus on varying gameplay that follows a character driven story. Besides the player's choices, the game should include some other form of interaction to have variation when playing. Graphics should in addition be implemented to support the story. The goal with the third iteration was therefore to further explore:

- Mechanics and Gameplay
- Graphics

A third prototype was developed to assess these features.

7.3.2 Design

The third prototype was developed in Unity and was designed to work on a mobile phone. The art for the game was therefore drawn to fit on a phone screen. The start menu of the prototype is showed in figure 7.12.

Content

The theme and story from the first prototype was used as a foundation for the third prototype. This was chosen, as the participants indicated that the story was relatable and players were able to identify themselves with the main character, whereas the story from the second iteration was perceived at too childish/teenage-like.

Thus, the story for the third iteration revolved around the main character Rosa and the evening at her boyfriend's parents' house. The player is presented with different questions and topics from the boyfriend's family during the evening. The player can respond and react to the conversation by choosing one of three response options. Based on the player's choices the family members affinity towards the player will change.

Figure 7.12: Start screen of prototype three

Mechanics/Minigames

Throughout the iterations, the main type of gameplay that the prototypes have focused on is meaningful player interaction, by allowing the player a number of choices when communicating with characters. The second iteration indicated that the participants wanted different gameplay that was connected with the situation the player was in. To do this, inspiration was taken from the game Florence (see section 5.6.3) that does a good job at using mechanics that supports the story. In Florence the mechanics are created based on the topics of the different events in the story. For example, when Florence (the main character) is at work, the player needs to find matching numbers, in order to continue. In this way, the mechanics supports the story of her being an accountant.

As the story, for the third prototype revolves around communication, the mechanics that was chosen should support the topic, which is being communicated. In this way, the different types of gameplay and mechanics should hopefully seem connected. Furthermore, the interaction should still be meaningful and push the story forward. In Florence the interaction does not influence any factors. On the other hand, Oxenfree (see section 5.6.2) uses story mechanics to push the story forward and give meaning to the player's interaction, which can allow for a higher degree of interactivity.

Two minigames that included different forms of mechanics that supports the communication topics were created. The first was 'Setting the table' which can be seen in figure 7.13. In the story, Valdemar's mother asks Rosa to set the table, and instead of the event being described only through text, a small mini-game was created. The player can affect the the mother's affinity, depending on how well the minigame is performed.

Figure 7.13: Setting the table minigame

Figure 7.14: Picking the country minigame

Similarly, a second mini-game was created around the player's conversation with the father. They talk about travelling around in Europe, and in order to add a different form of gameplay, a small mini game was created around this topic. The player can impress the father by positioning different countries in Europe in the correct places as seen in figure 7.14. The father's affinity towards the player will be affected depending on the player's performance.

Graphics

As the second iteration indicated that the participants wanted graphics that supported the story, close-ups and backgrounds were drawn. Photoshop CS6 was used to draw the characters and backgrounds. A 2D art style was chosen in order to increase performance, as the prototype were implemented to a mobile phone.

First, the five characters were created. As can be seen in figure 7.15 Each of the five characters have their own main color, and distincts looks, in order to quickly identify them. The main character Rosa was designed to look someplace in the 20's in order for player's to be able to identify with her. The Mother and Father were designed to look as typical parents, with a similar purpose of making them more relatable.

Figure 7.15: All the characters from prototype three

The backgrounds were designed to support the story. Whenever, the player goes to a new place in the house the background will change. In addition, when talking to another character, the background will similarly change to include that character. When designing the backgrounds, emphasis was put on adding depth to the images. Figure 7.16 shows some of the backgrounds used in the game. On background b, d, and e, the one-point perspective rule, with one vanishing point, was used to add depth. Furthermore, the vanishing point is positioned in the rule of thirds to give more depth to the image.

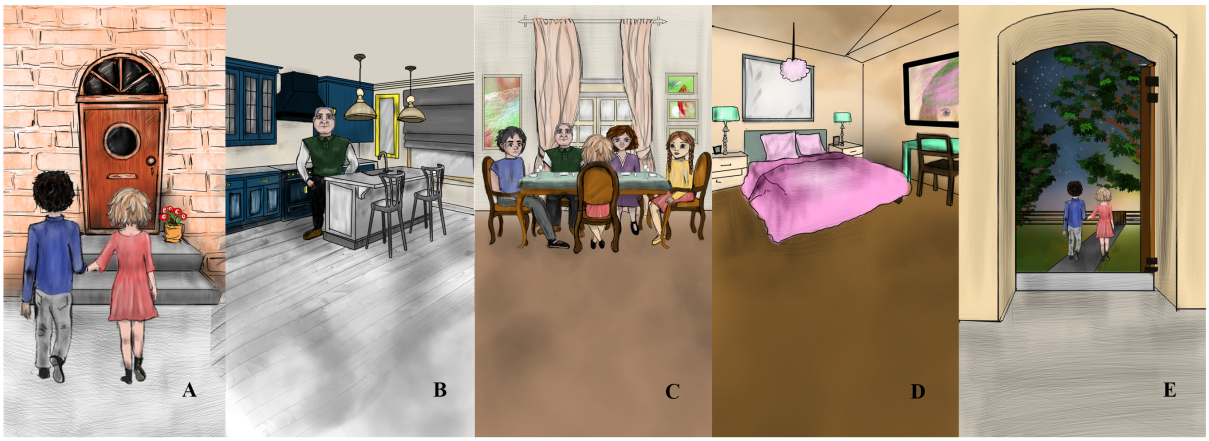

Figure 7.16: Some of the different backgrounds in prototype three

On background a and c, Rosa is in the center, to emphasize that she is in the center of attention. At these encounters the story explains how Rosa feels, and putting her in the middle of the screen supports the story. In addition, the player only sees her back, in order to see the situation from her

perspective. For example, in background c, Rosa, sits on one side of the table alone, with the rest of the family looking at her. In this way, the player can hopefully imagine the pressured situations that Rosa is in. To allow for character interaction, the backgrounds were designed with enough space in the bottom half of the image to include a textbox. As seen in figure 7.17, the text is displayed together with a closeup of the character speaking. Whenever the player needs to make a choice, Rosa's image, appears. In this way, the story is told through text and supported by background visuals.

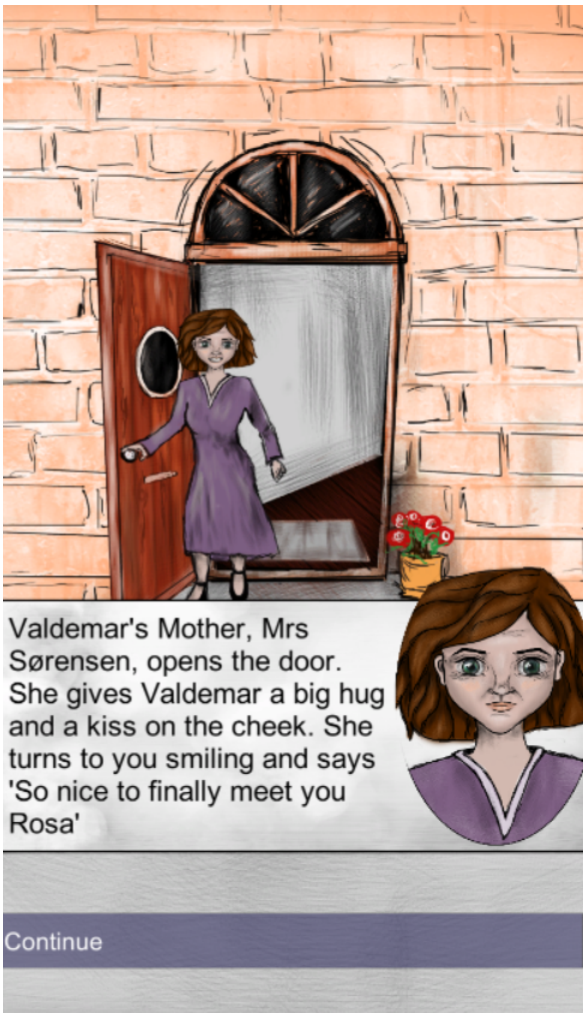

Figure 7.17: UI placement for the different dialogue options

7.3.3 Implementation

The prototype for the third iteration was developed in the game engine Unity 2017.1.0. Unity was chosen, as the game engine, amongst other, supports 2D graphics, scripting, and drag and drop functionalities. As the prototype should include both character interaction as well as mini games, Unity was a suitable platform for development of this prototype. Compared to Twine, Unity can be said to be a multipurpose game engine, whereas Twine mainly focuses on interactive narratives. Furthermore, games can be developed and build as an app directly to any mobile platform through Unity.

In order to implement the story and the minigames in Unity, different classes were programmed. C# was used as the scripting language. To implement character interaction, a dialogue system was developed. The player is presented with an encounter with one character, where the player gets a number of options to choose between. The character then reacts to the encounter and a new

encounter is presented. At two points in the story, the player is presented with a minigame, which uses the drag and drop functionality.

To get an overview of the structure used in the system, a class diagram was created as shown in figure 7.18. The classes *ButtonDetails*, *PanelDetails*, *ModalPanel*, and *Dialogue* represent the structure of the dialogue system whereas the last three *Slot*, *DragHandler*, and *MiniGame* show the minigame structure. Within each class, the attributes, methods, and relationship amongst classes are shown.

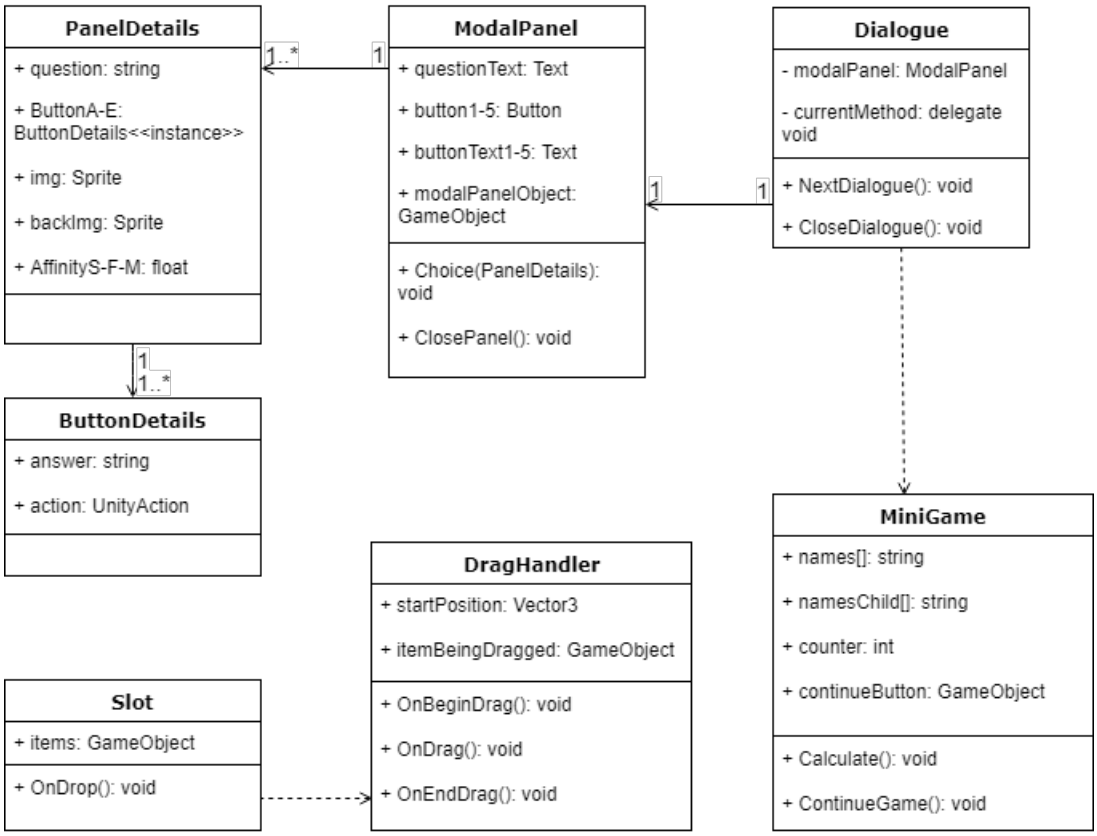

Figure 7.18: Class diagram of prototype three

ModalPanel, PanelDetails, and ButtonDetails are connected through an association relationship. PanelDetails uses an instance of ButtonDetails, ModalPanel uses an instance of PanelDetails, and the Dialogue class uses an instance of ModalPanel. These relationships are all one-way relationships. The solid lines means that there is an association from one class to the other. For example, PanelDetails contains instances of the ButtonDetails class. In addition they have a one to many relationship, meaning that for example PanelDetails can have one to many instances of Buttondetails. The dashed lines symbolizes a weaker relationship. For example, the Dialogue class uses a few attributes from the MiniGame class, but does not have an instance from that class. The class diagram can be used to get an overview of the system. The following section will go in detail with the dialogue system and the mini game classes to explain how they function (for full code: Appendix A, 4/c/ii).

Dialogue system

The prototype was developed through Unity's UI system. The dialogue system functions as multimodal, in order to have different types of dialogue structure. This enabled easy alteration of questions, text descriptions, background images, icon images, and amount of options.

As mentioned, the dialogue system uses five main classes. The class ButtonDetails contains information about the buttons in the prototype. Within the ButtonDetails class a string variable and a UnityAction event exists. The string is used to specify the text for the options the player is presented with, and the UnityAction event controls what happens when a button is clicked.

The PanelDetails class describes what is needed for each encounter. The class uses five instances of the ButtonDetails class, so a maximum of five buttons can be displayed. Two sprites are used to specify the icon image and the background image for the encounter. In addition the PanelDetails uses a string variable that is used for the question or the description of the event and three floating types to control the affinity level for the Mother, Father, and Sister.

The ModalPanel class is where UI elements are assigned to different variables. The four attributes questionText, button1-5, buttonText1-5, and modalPanelObject reference the corresponding UI elements. In the Awake() function the UI elements are assigned to the variables. The Choice(PanelDetails details) method takes an instance of the PanelDetails as input. The different variables are assigned to their respective variable from the PanelDetail instance. In addition the method structures how buttons can be initialized. Only the buttons which contain information will be displayed in the UI, which gives the possibility to easily adjust the number of options.

The Dialogue Class is where all the dialogue is written. It is here the structure of the conversation take place. The class contains an instance of the class ModalPanel as well as a method Delegate. A delegate is used to keep track of the current dialogue method, by associating the current method with the delegate. A method is made for each encounter, where the first method is assigned to the delegate. Within these methods, the text, images, and options are initialized. In this way, the dialogue class contains all the dialogue within the prototype.

Minigames

The two minigames that were implemented in the third prototype were also made through Unity's UI system. The idea with the minigames was to drag and drop different items onto their appropriate places. To implement this, three classes were used as seen on figure 7.18.

The DragHandler class uses the EventSystem Library in order to use the interfaces IBeginDragHandler, IDragHandler, and IEndDragHandler. IBeginDragHandler contains the method OnBeginDrag() that is called right when an item has started being dragged. The method contains information about the items start position and its start parent object. IDragHandler uses the method OnDrag(), which is called every time the cursor is moved during a drag, in order to update the items position. The IEndDragHandler contains the method OnEndDrag() that is called when a drag is finished and updates the items position to the end position.
The Slot class uses interface IDropHandler and controls how to handle the items being dropped. The interface has the method OnDrop(), which is called when an item is being dropped on a target that can accept drops. The MiniGame class evaluates how well the player performed in the minigame. The class consists of a method Calculate() that calculates the number of correctly placed items. The method does this by comparing the name of the item with the name of the slot it is dropped in, in order to see if it is a match. Everytime the items are placed correctly the counter increases. The ContinueGame() method disables the minigame canvas and enables the world canvas where the conversations continue.

The amount of correct placements are evaluated in the Dialogue class where the level of Affinity from the mother and the father are changed respectively.

7.3.4 Data Collection and Methods

Convenience Sampling (see section 7.1.4) was used to gather participants and the in depth interview method (see section 7.2.4) was used to collect data.

In Depth Interview and Test Procedure

Four participants were invited to participate in the tests. The test sessions were conducted between the 05.02.2018 and 05.21.2018 at my apartment.

The test procedure followed the same structure as for the second iteration seen in section 7.2.4. The goal with the third prototype was to investigate the participants' feelings about the components Mechanics and Gameplay, and Graphics. The interview guidelines therefore consisted of different questions within the two themes. Similar, to the second iteration the in depth interview followed the semi-structured guide.

The participants were asked to play the game and take as much time as they needed. The prototype took around 5 to 10 minutes to play through depending on the choices the player made. Contrary to the second iteration, the third iteration did not include any continuation desire questions. This was due to the structure of the game. There were no natural rounds of the game, the experience was short, and therefore it did not make sense to conduct their degree of wanting to continue. The discussion of game experience took around 10-17 minutes, where questions concerning mechanics and graphics were the main focus. However, if participants mentioned other areas, these were also discussed.

In the wrap-up session participants were asked if they could imagine themselves playing such a game in the future, to discuss their general satisfaction and their perspectives of the prototype (for full interview guide see appendix A, 3/c/iii).

7.3.5 Findings

The purpose of the final test was to investigate the two components Varying Gameplay and Graphics. The findings therefore primarily concern the gameplay and the visual feedback. However, several other areas were touched during the interview, which is why the two component Relatable and Realistic content as well as Sounds were added in the overview seen in table 7.4. Similarly, to the other iterations, the quotes in the following section have been translated from Danish to English.

Table 7.4: Feedback on third iteration prototype

Topics	**Positive Feedback**	**Negative Feedback**
Content: Relatable and Realistic	• Identification with the main character • Relatable situation	
Mechanics: Varying Gameplay	• Well connected with the story • Intuitive to play • Different types of interaction • Consequences of minigame	• Could be more minigames
Mechanics: Character Interaction		• Sometimes missing the right choice
Graphics	• Supported the story • Easier to imagine the situation	• No face Expressions • No background Animations
Sound Feedback		• No music • No background sounds

In general the participants were very positive towards the experience. As one participant said about the prototype: "Easy to use, and easy to imagine oneself in it, some good scenarios that you can relate to" (Appendix A, 3/c/i/C, 01:55 min). Similar to the first iteration, all enjoyed the relatable theme, situations and characters. The participants indicated the importance of having a situation where you could imagine yourself in "I think that it is especially important when it is for girls, that you really

build up a story and build up a character who you can identify yourself with and where you can make a choice yourself“ (Appendix A, 3/c/i/B, 12:30 min). This again emphasized the importance of having a story and a relatable character when designing games for females.

Mechanics/Varying Gameplay

In regards to the varying gameplay the participants enjoyed the combination of minigames and story. They thought that the minigames made sense in relation to the story and they enjoyed that the interaction varied in the game. One participant mentioned that the minigames “were implemented in an elegant way” (Appendix A, 3/c/i/C, 03:42 min) and another mentioned that “they were really fun” (Appendix A, 3/c/i/A, 02:35 min). The participants also enjoyed that the minigames tested general knowledge such as geography or how to set a table, and that the gameplay had consequences and affected the story. All participants also mentioned that there could have been more minigames during the experience. Although, they emphasised the importance with having the text based social encounters: “I think that there could be more minigames, but there should still be focus on the story and situation” (Appendix A, 3/c/i/D, 08:15 min), which was the general opinion amongst the participants. Most of the participants mentioned that the ratio between text based encounter and minigames could be half-half, or with a bit of overweight of encounters. A few usability problems were also mentioned during the test. Three participants did not immediately understand that ‘Set the table’ minigame was only meant for one seat and not a whole table. However, during the play session, no one asked for helped, or indicated any problems. One participant also mentioned that the options did not always match with what she would have chosen herself. She suggested to have between three and four options within each encounter. However, another participant only wanted two or three options as there would be too much text to read otherwise.

Graphics

The graphics were also a feature that was well received by the participants. They thought that the graphics made it more fun to play. Most participants mentioned that it was easier to imagine themselves in the environment and easier to relate to characters when they could see the characters up close. However, many of the participants indicated that there could be more visuals such as face expressions, animations, or more background images to support the story. In relation to feedback, some participants also mentioned that it could be nice with sounds in the game, such as music or background noises. Although, one participant said that she did not miss any sound.

Duration

When asked about the duration of the game all participants were consistent with wanting the game to be longer. They mentioned that adding more minigames would be nice in a longer game. In addition, they all suggested that there could be more games such as the prototype, that could be combined into one big game. For example, one participant mentioned that the overall game “(...)could have some small games, of different episode, (...) where the other small games would change depending on how it went” (Appendix A, 3/c/i/A, 10:42 min). Similarly another participant mentioned that it could be like television series where the viewer is left with a cliff hanger, and just has to watch another episode. In general all participants could imagine themselves playing a game like the prototype if it was further developed into a final product with more situations and more minigames.

Summary of Findings

Compared to the second iteration, the third iteration was more successful in implementing varying gameplay. The participants felt that this type of gameplay made sense with respect to encounters in the game. Furthermore, they enjoyed the different types of interaction and that they got the possibility to affect the characters in another way. The graphics were also important for the

participants, as it increased immersion and made it easier for them to imagine themselves in the situation.

The two components Graphics and Varying Gameplay have therefore proven to be important factors when designing games for the target group. The third prototype gives an example of how the components can be successfully implemented in a prototype. In order to implement minigames, which appeal to the target group, they should be created to fit within the story, push the story forward in some way, and have meaningful consequences. The graphics should support the story by for example, changing the characters facial expression as reaction to the player's choices.

Similarly, the prototype also gives an example of how the Content component can be created to appeal to the target group. Allowing the players to experience situations, which they can relate to from their own life was regarded as one of the most enjoyable factors.

Finally, the third iteration identified a new component, sound feedback, which the participants mentioned as a potentially feature that could increase engagement. This component have not been implemented and explored, but will be regarded in the Design Guidelines.

7.4 Summary of Iterations

Through the three iterations I set out to investigate how games for females could be designed in order to appeal to women, who does not usually play games. The playcentric design approach allowed me to iterate the design of a prototype with focus on Design Guidelines that was discovered during the initial exploration of the target group and the secondary research. The findings from each iteration was used to guide the next design phase, as well as confirming components of the Design Guidelines.

During the iterations, the data confirmed many of the components within the categories of the Design Guidelines, while also suggesting new components and categories to be included. The following section will conclude on the three iterations and summarize the findings.

7.4.1 Explored Components

The three prototypes were created by following the identified Design Guidelines. During the iterations all categories from the Design Guidelines were explored to some extent. The categories Content, Mechanics, Platform, and Narrative Structure were investigated.

Content

From the Content category most of the components were explored in the prototypes. These revolve around creating a story, with situations and characters that are relatable, and having conflicts that are solved indirectly. These components were confirmed as important and essential for the participants.

As discovered in the Analysis chapter females enjoy story-driven content with a focus on relationships and character interaction. For the participants it was important that the conversations were relatable and that the options for the player were options they would have chosen themselves. This was achieved to some extent through the prototypes, but at times the participants mentioned that they were missing the right option.

From the content category it can be concluded that moving away from the physics based structure and into content revolving around the human side, can potentially appeal more to the female audience.

Mechanics

In order to implement the content in to a game, the components from the Mechanics category was explored. The components that were explored was Character Interaction, Mechanics that are easy to learn, Mechanics that push the story forward, and Completion.

A recurrent mechanic that was implemented in all iterations was dialogue. In order to have Character Interaction and meaningful choices, language is an important factor. The dialogue was created around the communication topics where the player had a number of choices. This type of character interaction was well received, and the participants mentioned that it allowed them to play as themselves, and that they felt that they could influence the story through the dialogue. In this way, the dialogue also pushed the story forward, which was an important factor.

The iterations also showed that participants needed something else than the dialogue mechanic in order to have some variation in gameplay. From the analysis the component Completion was identified as another mechanic that females enjoyed. This feature was explored by implementing minigames around puzzle mechanics where they needed to find a solution to a task they were presented with. This type of interaction activated participants and was regarded as an enjoyable feature.

As the participants had little prior experience with games, the mechanics were designed to be as intuitive as possible. The participants had no problem with the touch mechanic or the drag and drop mechanic, which showed that such a type of interactions can be used for the target group.

Player Experience

The Player Experience components were kept in mind throughout all the design phases. Mainly the components Relatable, and Empathic Engagement were the focus. The iterations showed that the players could identify themselves within the situations and characters. However, in the second prototype they thought the situations were more nostalgic than relatable, as the story focused on teenage life compared to the adult life. They wanted situations that leaned more towards their everyday life. Throughout the iterations it was confirmed that the component Relatable and ability to create Empathic Engagement with the character, was important for the target group.

Within the Player Experience category there are many components which have not yet been explored such as Social/Coop, different kinds of Emotional Stimuli, and Being someone else in another world. These player experiences are something that needs to be further explored and tested.

Duration

Duration was investigated to some extent, by trying different lengths of the prototypes. The first prototype was the shortest with a length of about 5 minutes, whereas the second prototype took 15 minutes to play through. Where the first test indicated that the prototype should be longer, the second iteration showed that participants lost engagement as a result of how long they played. The third prototype was therefore shorter than the second and longer than the first, with a duration of 5-10 minutes. The participants indicated that the final prototype could have been longer.

The duration component therefore needs further exploration in order to investigate a suitable length for a final product.

Platform

The first and third prototype was implemented on a mobile phone, and the second on a computer. The iterations showed that participants leaned more towards mobile phone as they suggested that it would appeal to more females who did not play games as well as being more manageable.

This again confirmed the research found in the analysis, and the mobile platform therefore seems to be the best suitable platform for women who do not usually play games.

Narrative Structure

The category Narrative Structure includes components that potentially can be used to implement the above features. All components from this category were explored to some extent, but were not directly subject for the test as the Narrative Structure category mostly revolves around the technical issues concerning IS and games.

The iterations used three different systems for transporting the content of the game. The dialogue system used in the first and the third iteration was hard-coded. This meant that all paths, which the user could take were fixed. Both prototypes used the structure of a flowchart, whereas the second prototype used the system developed by Crawford. Here different events are created and combined as a result of the user's interactions. In this way, it is less expensive with regards to assembling the plot. However, the system also relies on personality traits, which need to be updated for each event. The second prototype included a more detailed personality model with three character traits and three perceived character traits for each character. The first and third prototypes only had one perceived affinity trait from the family towards the player. In this way, the second iteration system is more complicated with respect to the personality traits and the narrative structure, whereas the others follow a traditional structure. Thereby, the players could influence the characters more in the second iteration, but the events could not be as well connected as with the other two. This resulted in some of the participants feeling that their choices did not affect the story enough.

Choosing an appropriate narrative system is difficult. When looking at the different prototypes, the first and the third system might be a better fit for a short experience. It gives the author more control of the flow of events, and the player will have a lower AAD. On the other hand, this allows the player less freedom compared to the system made by Crawford. For a longer experience it might make more sense to use Crawford's program, such that the user has the time to get familiar with the characters and their personality traits and can feel the impact of their consequences through the change of the personality traits.

Throughout all iterations it was identified that the participants in certain encounters were missing the right option. This is something that is difficult to overcome, as having too many choices can make it more confusing for the user. The number of choices needs to be experimented more with in order to find the right solution.

7.4.2 New Components Proposal

Four new components were identified through the iterations, which consisted of Varying Gameplay, Graphics, Sound feedback, and Episodic structure.

Varying Gameplay

The varying gameplay component was first identified in the first iteration, where participants found the text based narrative gameplay to be too repetitive. In collaboration with Crawford the second prototype tried to incorporate the game Gossip into the narrative structure. The findings showed that Gossip did not appeal to the target group, but still confirmed that they liked the idea of having a text-based narrative game supported with other types of gameplay. The main problem they reported was that Gossip did not reflect the previous conversations in the game, and the two types of gameplay did therefore not support each other enough. The final iteration focused on developing two small mini games centered around conversation topics. Additionally, the minigames were designed to affect the relationship with the character as a result of the player's performance. The final test suggested that this way of implementing varying gameplay could be a possible solution.

The third prototype therefore suggests a way to implement varying gameplay. As also identified in the Design Guidelines, the importance of using mechanics that push the story forward and have meaningful consequences was further emphasized during the exploration of the component.

Graphics

Another feature that was identified as important for the participants was the Graphics category. The first prototype did not include any graphics, and participants suggested that this would make the prototype more engaging. In the second prototype, the Gossip game included facial expressions for the characters, which was well received. However, they indicated that images or animation that supported the story would be favourable. The final prototype included both close ups of the characters as well as background images that changed as the player progressed through the story.

The category Graphics was therefore added to the Design Guidelines, as a new main category. Within this category it was identified that the graphics should reflect the character's reactions and story.

Episodic Structure

Another finding that was confirmed through the iterations was that the games should be manageable to play. This involves being able to easily start and end the game without having to allocate much time to play. During the iterations, it was suggested that the game could take inspiration from tv-series, and have different episodes. Each episode could require a short amount of time to complete, such as between 5 to 10 minutes. It was also discussed that each episode could focus on different situations such as difficult, challenging, or awkward moments in a character's life. This way of structuring a game could potentially also fit with the preferred platform, the mobile phone.

A component was therefore added to the Duration category called Episodic structure. This component was however not explored in the various prototypes, except for discussions with participants about future iterations. In order to confirm the component more exploration is needed.

Sound Feedback

In the final iteration, sound feedback was also mentioned as a component that could increase engagement. This was however not implemented in the iterations, but is something that could be interesting to explore in future iterations.

CHAPTER 8

FINDINGS

The following section will present the findings from the prototype iterations as well as the findings concerning the overall Design Guidelines. Two tables have been created to summarise and present the findings.

8.1 Prototype Findings

The iterations chapter covered the findings from the three iterations and explained how the different categories and components were implemented into the prototypes. In order to give an overview of the findings from the iterations, a score, from 1-5, has been given within each category. A score of 1 is given if the participants indicated that they did not like the component or if the component was missing in the prototype. A score of 5 is given if the participants multiple times throughout the iteration liked the component. This allows the reader to quickly get an idea of how the iterations differed from each other. Table 8.1 shows how well the first iteration, second iteration, and third iteration incorporated the categories. Furthermore, a small summary under each score indicates why the chosen score has been given.

Table 8.1: Summary of Iterations

	First Iteration		**Second Iteration**		**Third Iteration**	
Categories	**Findings**	**Score**	**Findings**	**Score**	**Findings**	**Score**
Mechanics	Too repetitive gameplay	2	Missing connection between gameplay	2	Liked the varying gameplay	3
Content	Relatable situation	4	Nostalgic but should be more relevant	3	Relatable situation	4
Player experiences	Identification with character	4	Frustration over Gossip	2	Identification with character	4
Platform	Mobile	5	Computer	3	Mobile	5
Graphics	None	1	Facial expressions	3	Close ups and Background images	4

As seen on the table 8.1, the most successful iteration was the final iteration. The participants were in general more positive towards the various implemented components. The Narrative Structure and the Mechanics categories are, however, still categories, which need further exploration. Nevertheless, the third prototype can potentially lay the foundation for a game targeting women, who do not play games.

8.2 Exploration of Design Guidelines

The Design Guidelines were used as pre-determined categories when coding the data from the various tests. Besides exploring how to implement these successfully into a game, the data was also used to confirm certain categories or reject them. Not all components were explored, and therefore it is not possible to conclude if these are important for the target group.

Table 8.2: The final list of design guidelines

Category	Components	Unexplored	Explored	Confirmed
Mechanics	• Character Interaction			X
	• Completion		X	
	• Customization	X		
	• Easy to learn			X
	• Mechanics that push the story forward			X
	• **Varying Gameplay**			X
Content	• Relatable and realistic content			X
	• Character interaction			X
	• Storydriven content			X
	• Indirect competition			X
	• Deep characters		X	
	• Simulate human emotions		X	
Player Experience	• Relatable			X
	• Emotional stimuli	X		
	• Social/Coop	X		
	• Empathic Engagement		X	
	• Being someone else in another place	X		
Narrative Structure	• Narrative Closure		X	
	• Open meaningful choices			X
	• High Level of interactivity		X	
	• Character driven approach		X	
	• System that controls the flow of events		X	
Duration	• Short amount of playtime		X	
	• **Episodic**	X		
Platform	• Mobile			X
	• Computer		X	
Graphics	• **Supports the story and characters' reactions**			X
Sound feedback		X		

Table 8.2 summarizes, which components have been confirmed throughout the three iterations and which need to be further explored. The column Not Explored summarizes the components, which have yet to be explored. The Explored column shows which components have been implemented, but still needs to be further explored in order to confirm its appeal to the target group. The final column, Explored and Confirmed, indicates which components have been explored and where the

data have suggested that this feature is important to appeal to the target group. The new components that were identified through the iterations are highlighted with bold font.

As seen on the table, the majority of the Content and Mechanics categories have shown to be important for the participants, and can therefore support the findings from the Analysis chapter. The components Mobile platform, Open and meaningful choices, Graphics that support the story and reactions, and the ability to relate with the situations and character have further proved to be components which the participants value.

There are still many components that needs to be further investigated as well as new categories to look into. This also means that the data is not yet saturated and further tests need to be carried out to reach theoretical saturation.

CHAPTER 9

DISCUSSION

This chapter will discuss the project and give suggestions for future works. The methodological approaches will be reflected to clarify potential biases and give suggestions for alternative approaches. The findings will be compared to other research areas to identify similarities. The technical limitations of the study will be presented, and finally suggestions for future works will be proposed.

9.1 Methodological Reflections

This section will reflect upon the overall research approach and the data collection methods. The sampling method and the potential biases will also be discussed. The purpose with this section is to clarify some of the choices made in this study and discuss other methodological possibilities.

9.1.1 Exploratory Research Approach

The exploratory research approach was used throughout this thesis. The approach allowed me to gain a deeper understanding within game design for females, as well as investigating women who do not play games. The exploratory approach, as Stebbins (2001) describes, aims at establishing a theory or a framework to describe the phenomenon. It can be argued that the Design Requirements can function as a design framework, that can inspire development of innovative interactive experiences for females. Contrary, the Design Guidelines have emerged both from empirical research as well as secondary research, which means that the Design Guidelines are not only grounded in empirical data. Therefore, some might argue that it cannot be called a framework or theory.

Stebbins (2001), for example, suggests that grounded theory can be used for development of a theory or framework. Grounded Theory is a research approach that focus on empirically collecting data and developing a theory that describes the data. The development of theory follows a structured approach where coding is used to categorize data and thereby develop a theory (Bjørner, 2015). In my study, the components and categories have been identified both through existing research as well as data collection. The categories are therefore not only grounded in data but also through secondary data. As female preferences within games, is an area that have been researched in many years, I chose to rely on both secondary research and primary research.

The thesis ended up with having two perspectives where the first was to identify design components that could target the female audience, and the second was to implement these components to

investigate how women, who do not usually play games felt about them. It might, however, have been more suitable to investigate this target group more in depth from the beginning. For example, it could have been valuable to have collected more qualitative data from the beginning to dive deeper into why some women do not play games. By using a Grounded Theory approach a theory could have emerged that described the reason why women do not play games. Afterwards, research into design components that could appeal to this target group could have been explored. In this thesis, the target group was first investigated after the design components were identified in order to confirm that women were missing these design components. The reason why I chose this approach, was because it might be difficult for women with little prior gaming experience to talk about how games should be designed. Instead, I tried to incorporate the design components into prototypes to allow for a more tangible starting point for the discussions.

Another thing worth mentioning, is that the target group consisted of both women non gamers and women moderate gamers. The latter group was however not used in the evaluation of the prototypes, but was included in the target group as the initial round of data collection suggested that they were missing many of the same features in games, as women non gamers. As women non-gamers indicated many negative perspectives towards games and had many stereotyped viewpoints on how games were designed, this was the most difficult target audience to appeal to. I therefore chose this group, with the hypothesis that if they enjoyed the games so would women moderate gamers. This is something that could be interesting to investigate through an experimental test, to see if there exists a differences in gaming preferences between these two groups.

9.1.2 Qualitative Data Collection Methods

The primary data in this thesis has mostly been collected through qualitative methods. The only use of quantitative methods was in the initial round of data collection and in the second play test session in form of continuation desire. The questionnaire used for the initial exploration of the target group was however concerned with open-ended questions, which resulted in qualitative data.

The majority of qualitative methods in the thesis, gives implications when trying to generalize the data. The sample sizes within each iteration are not representative of the population, and the findings therefore lack reliability and validity. Only four participants were used within each iteration. Furthermore, two participants took part in all iterations, which meant that their data was influenced by their experiences with the other prototypes. The reason why they participated in all iterations were the lack of available participants. It is difficult to get women who do not play games to participate in a play test session and in a focus group about games. Contrary, more effort could have been put in to reaching out to a broader network to get more participants. This is something that can have biased the results and should be taken into consideration for future research. Another thing that could have biased the results was the Convenience sampling method. This method allowed me to easier gather participants as they were chosen based on availability. However, this resulted in most of the participants used were friends. A possible bias when testing on friends can be courtesy bias, where participants answer as they think the test conductor wants them to. On the other side, it could have actually prevented courtesy bias, as they might not be afraid to tell their true opinions. This being said, the sample size is not an ideal representation of the population and the findings from the iterations can therefore not be generalized to apply to the target group, but might still be used for inspiration when designing games for women.

In order to validate the Design Guidelines, it could have been argued that methods of quantitative data collections should have been used. This would have allowed me to quicker conduct a large amount of data as well as being able to statistically confirm the categories. However, as the target group does not usually play games, their opinions towards games might be complex. Here quantitative methods would be insufficient, as the participants might not know beforehand how

they actually feel about games. It can therefore be argued that the qualitative methods were more suitable, as it gives a technique to get inside the participants heads and gives the test conductor flexibility when asking questions.

Quantitative methods would be useful for future tests, where the purpose is to validate the Design Guidelines and figure out if they can be applied to the general female audience.

In addition, new categories and components emerged from the final iteration, which indicated that the data is not saturated. Therefore quantitative and qualitative tests should also be conducted to ensure theoretical saturation.

9.2 Findings in Relation to Other Research Areas

As far as my knowledge goes, there does not exist other literature that tries to get a complete overview of preferred game design components for the female audience. Therefore the findings from this study can be difficult to relate with other research within games. However, the research found in this study can potentially be related to research within other areas.

One of the issues that have been analysed in this report is the differences between male and female game preferences. As mentioned in the Analysis chapter, females are more drawn to the emotional intangible sides of games, whereas males prefer tangible or physical game features. This was one of the motivational factors for starting this project in the first place, and can be seen as the problems origin. To look at this difference in relation to other fields, parallels can be drawn from other types of entertainment media as well as research into cognitive psychology.

9.2.1 Cognitive Gender Differences

When looking at gender differences within cognitive tasks, existing literature suggests that men and women differ. For example, males perform better in tasks concerning visuo-spatial ability and mathematical reasoning (Downing, 2009; Halpern, Straight, & Stephenson, 2011) whereas females tend to perform better in memory and language use (Downing, 2009). In relation to game design many games focus on the visuo-spatial abilities such as navigating, moving, shooting, or turning. Crawford (2005)) mentions: “Spatial reasoning is out of place in the universe of drama because drama is about people not things”. Women perform better in tasks concerning memory and language use, which for example is used when interacting with characters.

Similarly, a study made by Su, Rounds, and Armstrong (2009) investigated gender differences within vocational interests and found that women prefer working with people and men prefer working with things. Generally women prefer social and artistic activities and men prefer scientific, mechanical, and technical activities (Su et al., 2009). The research suggests that women in general are more interested in social activities, which is similar to the game component, identified in this thesis, that suggests that women want interaction with characters in game.

9.2.2 Movie Genre Preferences Across Gender

Studies into gender differences within movie and television preferences suggest similar results as the findings. Redfern (2012) investigated genre preferences in relation to movies and found that gender is the most important factor for determining genre preference. Females were more likely to watch movies concerning the genres; romance, family films, and romantic comedies. Genres that males prefer were mostly driven by action and technological content. This included the genres such as science fiction and action/adventure films (Redfern, 2012). Correspondingly, the study made by Wühr, Lange, and Schwarz (2017) indicated that males prefer science-fiction, war, and action movie genres whereas females prefer romance and drama genres. The genres, preferred by males, contain content such as action, competition, and violence, which are content that are more appealing to

males than females (Oliver, 2000). Such content is dominated in games today (IGDA, 2018), which is one area where the game industry could do better. This research again confirms that males and females differ in their genre preferences whether it is within movies or games, and that women prefer emotional content that revolves around relationships.

The findings from other research areas suggests that there exists a gender difference in interests, activities, movie preferences, and cognitive tasks. The findings from this thesis have found similar components that females enjoy in relation to games. In order to explore the components more in depth it could be interesting to use other types of entertainment media and learn from them. Investigating how movies or television series target love or friendship could potentially be applied to game design as well. In addition, looking at research into cognitive differences between men and women could be useful for understanding human behavior and potentially allow game designers to reach a wider target audience.

9.3 Limitations of Study

This section will discuss the technical limitations, which will revolve around the narrative structure of the game. When looking at how to implement the Design Guidelines to attract females, the biggest challenge is to find a suitable narrative structure.

Throughout the iterations, it was identified that some participants felt that they in certain situations were missing the option, which they would have chosen themselves. This is a problem that is difficult to overcome, as the right option differ from person to person and is thereby an individual factor. Too many options will confuse the user and too few options will decrease the freedom for the user. In the prototypes for this thesis I tried to create two to three distinct options to appeal to as many players as possible, while still making the number of choices manageable.

Another approach could have been to use natural language processing, similar to Façade (see section 5.6.1), and allow the user to type in their answer. This would have given a much higher degree of freedom and thus interactivity, but would increase the technical implementation to a great extent. This approach would be interesting to investigate for future iterations.

Another issue related to this problem concerns the characters' reactions. In the prototypes, the player's choices changed the characters' perceived personality traits towards the player. This allowed the characters to react in different ways depending on the choices. In the final prototype the participants felt that their choices influenced the characters' affinity towards them, and mentioned that it seemed natural. However, the reactions from the characters were, as mentioned, fixed, which makes it difficult to create a longer game using this narrative structure, as the narrative structure would become very complex. This is one of the biggest problems in IS, and the ideal way of overcoming this problem is to use Artificial Intelligence. The current limits of AI prevent games to create characters that react in a way that resonates with human to human interaction. This is a problem that has yet to be overcome in the industry, but when it is further developed, it can give great possibilities within IS and the field of games for women.

CHAPTER 10

CONCLUSION

This thesis set out to explore issues within games for the female audience and investigate how games could be designed in order to appeal to women, who do not usually play games. The Exploratory Research Approach was chosen as the main research approach, to investigate the area more in depth and potential derive generalizations that could build a framework for game design to women.

The initial literature review indicated that games are mostly focused on male preferences and that female preference are often neglected. Several design components, which appeal to females, were identified through the analysis. Most of the research concerned females who already played games, why an initial round of data collection was conducted. The results indicated that the participants did not play games, as they found that games were not targeted at their interests, which were in consistency with the gathered research. Both the analysis and the initial round of data collection suggested that women are more interested in games that revolve around interpersonal relationships compared to the more common physical side of games.

Furthermore, other researchers and game developers have indicated that the game industry is not evolving within the standard structure and mechanics of games. They argue that focus and effort should be put in developing games that are story driven with deep characters and meaningful interaction. A suitable structure for implementing the identified design components is by using Interactive Storytelling.

The identified design components that females enjoy were added to an overall Design Guidelines list, and arranged in different categories that had similar topics. These categories were used to guide the design and implementation of various prototypes. The playcentric approach was used to iterate the prototype, where a Focus Group, and two In Depth Interviews were conducted.

The findings confirmed many of the design categories, and identified four new components to be included in the Design Guidelines. The data is therefore not theoretical saturated and needs further exploration. It also remains, to statistically validate the findings, in order for others to use the Design Guidelines.

The final list of Design Guidelines included the categories Mechanics, Content, Player Experience, Narrative Structure, Duration, Platform, Graphics, and Sound Feedback. Each category contains components that have been identified as appealing to females.

Even though, further exploration on the area is needed, this thesis can hopefully lay the groundwork for future game developers, who want to design innovative games that can appeal to the female audience.

CHAPTER 11

DIRECTIONS FOR FUTURE WORK

There are many potentials for future exploration of both the Design Guidelines and the topic of reaching a wider target audience.

Future works should focus on validating the Design Guidelines by conducting quantitative studies that can explore the importance of each feature. Furthermore, the Design Guidelines also need to be explored with respect to women moderate gamers. It could be interesting to investigate if there exists a difference in gaming preferences between these two groups.

Other tests that might support this thesis, could investigate game design components across gender. This could potentially further validate that men and women differ when it comes to game preferences. It could also be interesting to investigate why some males do not play games, and if they similarly, feel that few games are targeted at their interests. Investigating the Design Guidelines in relation to other entertainment media could also prove useful, as experience could be drawn from other entertainment media. These future studies could potentially open up for the development of more innovative and different games that would appeal to a new target audience.

On a different note, this thesis can hopefully shed light on some of the problems that exists within the game industry. This is both in relation to few games that target the female audience, but also in respect to the current structure of games. Developing games that incorporates gameplay and story into one, is something that the industry should focus more on. As mentioned, the developers of Oxenfree has tried to do this by using what they call story mechanics (see section 5.6.2). This is something that could create more compelling game experiences that does not rely on non-interactive cutscenes to tell the story and show emotions. Another thing, that should be focused more on, is creating games around emotional topics such as love or friendship. The developers from Florence (see section 5.6.3) used love as the main theme in the game, which have already proven to attract a different target audience than usual gamers. Finally, the problem with developing games or IS that have meaningful character interaction, is an area that needs prioritization. It is a difficult problem, but also an areas that elicit huge potential.

REFERENCES

Abbott, H. P. (2007). Story, plot, and narration. *The Cambridge companion to narrative*, 39–51.

Bannan, B. (2009). The integrative learning design framework: An illustrated example from the domain of instructional technology. *An introduction to educational design research*, 53–73.

Bjørner, T. (2015). *Qualitative methods for consumer research : the value of the qualitative approach in theory and practice*. Hans Reitzel.

Bogost, I. (2017). *Video games are better without stories*. Retrieved from https://www.theatlantic.com/technology/archive/2017/04/video-games-stories/524148/ (Last visited on 28/05/2018)

Bonefant, M., & Trépanier-Jobin, G. (2017). Bridging game studies and feminist theories. *Gender in Video Games*, 24-53.

Brinkmann, S. (2013). *Qualitative interviewing*. Oxford university press.

Brown, E., & Cairns, P. (2004). A grounded investigation of game immersion. In *Chi'04 extended abstracts on human factors in computing systems* (pp. 1297–1300).

Bruni, L. E., & Baceviciute, S. (2013). Narrative intelligibility and closure in interactive systems. In *International conference on interactive digital storytelling* (pp. 13–24).

Cassell, J., & Jenkins, H. (2000). *From barbie to mortal kombat: gender and computer games*. MIT press.

Cavazza, M., & Young, R. M. (2016). Introduction to interactive storytelling. In *Handbook of digital games and entertainment technologies* (pp. 1–16). Springer.

Chess, S. (2012). Going with the flo: Diner dash and feminism. *Feminist Media Studies*, *12*(1), 83–99.

Chess, S. (2013). The mystery of the hidden gamer: Women, leisure, and hidden object games. *AoIR Selected Papers of Internet Research*, *3*.

Conditt, J. (2018). *'florence' turns falling in love into a video game. the creator of 'monument valley' is back with a new mobile experience*. Retrieved from https://www.engadget.com/2018/02/14/florence-game-ios-love-ken-wong-interview-mobile/ (Last visited on 28/05/2018)

Crawford, C. (n.d.). *What do women want?* Retrieved from http://www.erasmatazz.com/library/game-design/what-do-women-want.html (Last visited on 28/05/2018)

Crawford, C. (1993-1994). *Personality modeling in jcgd volume 7*. Retrieved from http://www.erasmatazz.com/library/the-journal-of-computer/jcgd-volume-7/personality-modeling.html (Last visited on 28/05/2018)

Crawford, C. (2005). *Chris crawford on interactive storytelling*. New Riders.

Crawford, C. (2012). *Chris crawford on interactive storytelling*. New Riders.

Crawford, C. (2014). *Is interactive storytelling stuck?* Retrieved from http://www.erasmatazz.com/library/interactive-storytelling/is-interactive-storytelling.html (Last visited on 28/05/2018)

Crawford, C. (2017a). *Encounter editor*. Retrieved from http://www.erasmatazz.com/library/software/encounter-editor.html (Last visited on 29/05/2018)

Crawford, C. (2017b). *Lecture #2*. Retrieved from https://www.youtube.com/watch?v=l87BcwMMP6U (Last visited on 29/05/2018)

Denner, J., Bean, S., & Werner, L. (2005). Girls creating games: Challenging existing assumptions about game content.

Downing, K. (2009). Gender and cognition. In *Proceedings of the 2nd international conference of teaching and learning*.

esa. (2017). *Entertainment software association: 2016 annual report*. Retrieved from http://www.theesa.com/wp-content/uploads/2017/05/ESA-AnnualReport-Digital-5917.pdf (Last visited on 28/05/2018)

Florencegame. (2018). *Florence. an interactive love story about love and life*. Retrieved from http://florencegame.com/ (Last visited on 28/05/2018)

Fullerton, T. (2014). *Game design workshop: a playcentric approach to creating innovative games*. CRC press.

Galloway, A. R. (2006). *Gaming: Essays on algorithmic culture* (Vol. 18). U of Minnesota Press.

Games, U. O. (2018). *Never alone*. Retrieved from http://www.upperonegames.citci.org/ (Last visited on 28/05/2018)

Given, L. M. (2008). *The sage encyclopedia of qualitative research methods*. Sage Publications.

Greenfield, P. M. (1996). Video games as cultural artifacts.

Halpern, D. F., Straight, C. A., & Stephenson, C. L. (2011). Beliefs about cognitive gender differences: Accurate for direction, underestimated for size. *Sex Roles*, *64*(5-6), 336–347.

Hartmann, T., & Klimmt, C. (2006). Gender and computer games: Exploring females' dislikes. *Journal of Computer-Mediated Communication*, *11*(4), 910–931.

Heeter, C., Egidio, R., Mishra, P., Winn, B., & Winn, J. (2009). Alien games: Do girls prefer games designed by girls? *Games and Culture*, *4*(1), 74-100.

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, *15*(9), 1277–1288.

IGDA. (2015). *International game developers association: Developers satisfaction survey 2015, summary report*. Retrieved from https://c.ymcdn.com/sites/www.igda.org/resource/collection/CB31CE86-F8EE-4AE3-B46A-148490336605/IGDA%20DSS%202015-SummaryReport_Final_Sept15.pdf (Last visited on 25/05/2018)

IGDA. (2018). *International game developers association: Developers satisfaction survey 2017, summary report*. Retrieved from https://c.ymcdn.com/sites/www.igda.org/resource/resmgr/2017_DSS_/!IGDA_DSS_2017_SummaryReport.pdf (Last visited on 25/05/2018)

Jenkins, H., & Cassell, J. (2008). From quake grrls to desperate housewives: A decade of gender and computer games. *Beyond Barbie and Mortal Kombat: New perspectives on gender and gaming*, 5–20.

Jenson, J., & De Castell, S. (2010). Gender, simulation, and gaming: Research review and redirections. *Simulation & Gaming*, *41*(1), 51–71.

Kafai, Y. B. (1996). Gender differences in children\'s constructions of video games.

Kafai, Y. B., Heeter, C., Denner, J., & Sun, J. Y. (2008). Preface: Pink, purple, casual, or mainstream games: Moving beyond the gender divide. *Beyond Barbie and Mortal Combat. New Perspectives on Gender and Gaming. The MIT Press: London*.

Kafai, Y. B., Richard, G. T., & Tynes, B. M. (2017). *Diversifying barbie and mortal kombat: Intersectional perspectives and inclusive designs in gaming*. Retrieved from https://www.lulu.com/ (Last visited on 25/05/2018)

Kiviranta, H. (2017). *Women as video game consumers*.

Kondrat, X. (2015). Gender and video games: How is female gender generally represented in various genres of video games? *Journal of Comparative Research in Anthropology and Sociology*, *6*(1), 171.

Kowert, R., Breuer, J., Festl, R., & Quandt, T. (2015). Women are from farmville, men are from vicecity: The cycle of exclusion and sexism in video game content and culture. In *65th annual convention of the international communication association, san juan, puerto rico*.

Krankel, S. (2017). *Gdc: Building game mechanics to elevate narrative in 'oxenfree'*. Retrieved from https://www.gdcvault.com/play/1024270/Building-Game-Mechanics-to-Elevate

(Last visited on 28/05/2018)

Lankoski, P. (2011). Player character engagement in computer games. *Games and Culture*, *6*(4), 291–311.

Laurel, B. (2004). Narrative construction as play. *interactions*, *11*(5), 73–74.

Lazar, J., Feng, J. H., & Hochheiser, H. (2010). *Research methods in human-computer interaction*. John Wiley & Sons Ltd.

Lombard, M., Weinstein, L., & Ditton, T. (2011). Measuring telepresence: The validity of the temple presence inventory (tpi) in a gaming context. In *Ispr 2011: The international society for presence research annual conference*.

Louchart, S., & Aylett, R. (2004). The emergent narrative theoretical investigation. In *the 2004 conference on narrative and interactive learning environments* (pp. 21–28).

Mateas, M., & Stern, A. (2003). Façade: An experiment in building a fully-realized interactive drama. In *Game developers conference* (Vol. 2, pp. 4–8).

Mateas, M., & Stern, A. (2018). *Projects: Façade*. Retrieved from `http://www.interactivestory.net/` (Last visited on 28/05/2018)

Mayer, V. (2003). Living telenovelas/telenovelizing life: Mexican american girls' identities and transnational telenovelas. *Journal of Communication*, *53*(3), 479–495.

McDonald, H. (2016). Are gamers ready for gay love? improving romance in games. *Diversifying Barbie and Mortal Kombat*, 247.

Mixon, L. J. (2018). *About laura j. mixon*. Retrieved from `http://laurajmixon.com/about/` (Last visited on 28/05/2018)

Moneta, G. B., & Csikszentmihalyi, M. (1996). The effect of perceived challenges and skills on the quality of subjective experience. *Journal of personality*, *64*(2), 275–310.

NightschoolStudio. (2018). *What is oxenfree*. Retrieved from `http://nightschoolstudio.com/oxenfree/` (Last visited on 28/05/2018)

Oliver, M. B. (2000). The respondent gender gap. *Media entertainment: The psychology of its appeal*, 215–234.

Phan, M. H., Jardina, J. R., & Hoyle, W. S. (2012). Video games: Males prefer violence while females prefer social. *Usability News*, *14*(1).

Ray, S. G. (2004). Gender inclusive game design. *Expanding the market*, *1*.

Redfern, N. (2012). Correspondence analysis of genre preferences in uk film audiences. *Participations*, *9*(2), 45–55.

Reed, A. A. (2017). *Changeful tales: Design-driven approaches toward more expressive storygames* (Unpublished doctoral dissertation). University of California, Santa Cruz.

Richard, G. T. (2013). Gender and game play: Research and future directions. *Playing with Virtuality, Theories and Methods of Computer Game Studies, Peter Lang*, 269–284.

Royse, P., Lee, J., Undrahbuyan, B., Hopson, M., & Consalvo, M. (2007). Women and games: Technologies of the gendered self. *New Media & Society*, *9*(4), 555–576.

Ryan, M.-L. (2001). Narrative as virtual reality. *Immersion and Interactivity in Literature*.

Ryan, M.-L. (2006). *Avatars of story*. U of Minnesota Press.

Ryan, M.-L. (2009). From narrative games to playable stories: Toward a poetics of interactive narrative. *Storyworlds: A Journal of Narrative Studies*, *1*(1), 43–59.

Scharkow, M., Festl, R., Vogelgesang, J., & Quandt, T. (2015). Beyond the "core-gamer": Genre preferences and gratifications in computer games. *Computers in Human Behavior*, *44*(1), 293-298.

Schoenau-Fog, H. (2011). The player engagement process-an exploration of continuation desire in digital games. In *Digra conference*.

Searle, K. A., & Kafai, Y. B. (2009). Boys' play in the fourth space: Freedom of movements in a tween virtual world. In *Digra conference*.

Shaw, A. (2017). Diversity without defense: Reframing arguments for diversity in games. *Kinephanos, journal of media studies and popular culture, Special Issue July 2017*, 54–76.

Siboot. (n.d.). *Siboot.* Retrieved from http://siboot.org/ (Last visited on 29/05/2018)

Sreejesh, S., Mohapatra, S., & Anusree, M. (2014). *Business research methods: An applied orientation.* Springer.

Starbreeze. (2018). *Brothers: a tale of two sons.* Retrieved from http://www.brothersthegame.com/ (Last visited on 28/05/2018)

Stebbins, R. A. (2001). *Exploratory research in the social sciences* (Vol. 48). Sage.

Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: a meta-analysis of sex differences in interests. *Psychological bulletin*, *135*(6), 859.

Subrahmanyam, K., & Greenfield, P. M. (1998). Computer games for girls: What makes them play. *From Barbie to Mortal Kombat: gender and computer games*, 46–71.

SugarCube. (n.d.). *Tsugarcube.* Retrieved from http://www.motoslave.net/sugarcube/ (Last visited on 29/05/2018)

Tondello, G. F., Mora, A., & Nacke, L. E. (2017). Elements of gameful design emerging from user preferences. In *Proceedings of the annual symposium on computer-human interaction in play* (pp. 129–142).

Tondello, G. F., Wehbe, R. R., Orji, R., Ribeiro, G., & Nacke, L. E. (2017). A framework and taxonomy of videogame playing preferences. In *Proceedings of the annual symposium on computer-human interaction in play* (pp. 329–340).

Trépanier-Jobin, G. (2017). Introduction: Gender issues in video games. *Special Issue. Gender in Video Games*, 1–11.

Twine. (n.d.). *Twine is an open-source tool for telling interactive, nonlinear stories.* Retrieved from https://twinery.org (Last visited on 29/05/2018)

Webster, A. (2017). *Florence is a game about love from the designer behind monument valley.* Retrieved from https://www.theverge.com/2017/10/24/16533918/florence-iphone-game-announce-ken-wong-interview (Last visited on 28/05/2018)

Wilhelm, C. (2018). Gender role orientation and gaming behavior revisited: examining mediated and moderated effects. *Information, Communication & Society*, *21*(2), 224–240.

Wood, H. (2017). Dynamic syuzhets: Writing and design methods for playable stories. In (pp. 24–37).

Wühr, P., Lange, B. P., & Schwarz, S. (2017). Tears or fears? comparing gender stereotypes about movie preferences to actual preferences. *Frontiers in psychology*, *8*, 428.

Yee, N. (2015). *Gender differences in gaming motivations align with stereotypes, but small compared to age differences.* Retrieved from https://quanticfoundry.com/2015/08/28/gender-differences-in-gaming/ (Last visited on 25/05/2018)

Yee, N. (2017). Beyond 50/50: Breaking down the percentage of female gamers by genre. *Quantic Foundry*, *23*. Retrieved from http://quanticfoundry.com/2017/01/19/female-gamers-by-genre/ (Last visited on 25/05/2018)

APPENDIX A

DIGITAL APPENDIX

This page contains an overview of the Digital Appendix. When the appendix is cited in the text, it utilizes the structure as seen below. For example (Appendix A, 3/a/i/B, 12:30 min) means that a test participant has mentioned something 12 minutes and 30 seconds into the interview, which can be found in the Digital Appendix folder under:

Iterations and Methods and Data/First Iteration/Data/P3_2018_04_12_Interview.mp3.

As a note, not all interviews have been transcribed, which is why some Data folders only contain sound files.

1. Interview with Laura Mixon and Chris Crawford
    a) 2018_05_02_Laura.mp3
2. Initial Round Of Data Collection
    a) Women and Entertainment Media.pdf
    b) Women and Entertainment Media (Responses).xlsx
3. Iterations Methods and Data
    a) First Iteration
        i. Data
            A. P1-P2-P4_2018_04_09_FocusGroup.mp3
            B. P3_2018_04_12_Interview.mp3
            C. Transcribed Focus group and Interview
        ii. Focus Group Guide
        iii. Content Analysis
    b) Second Iteration
        i. Continuation Desire (Questionnaire + Responses)
            A. Continuation Desire.pdf
            B. Continuation desire (Responses).xlsx
        ii. Data
            A. 2018_04_12_P1.mp3
            B. 2018_04_12_P4.mp3
            C. 2018_04_21_P2.mp3
            D. 2018_04_22_P3.mp3
            E. Transcribed Interview P2
            F. Transcribed Interview P4
            G. Transcribed Interview P1

iii. Content Analysis
iv. Interview Guide

c) Third Iteration
i. Data
A. 2018_05_02_P2.mp3
B. 2018_05_14_P1.mp3
C. 2018_05_20_P4.mp3
D. 2018_05_21_P3.mp3
ii. Content Analysis for third iteration
iii. Interview Guide

4. Prototypes
a) First Iteration
i. The Dinner.html
ii. ReadMe.txt
b) Second Iteration
i. GossipV2.zip
ii. ReadMe.txt
c) Third Iteration
i. Exe file.zip
ii. ThirdIteration.zip
iii. ReadMe.txt

5. AV Production
a) AV_Production_Thesis.mp4