In The Mood for Horror

A Game Designers Approach on Investigating Engagement, Involvement, and Immersion in Horror Games.

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Acknowledgement

This has been a time consuming experience, many hours spend working; however, I have not done this completely alone. There is a number of people I would like to thank for assisting this project, and making it a reality.

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1. Introduction

Engagement and immersion theories have long been on a universal level aiming to be true for all game genres. This has rendered it difficult if not impossible to apply said knowledge to conventional game design, which demands more specific guidelines. Researchers such as Boyle and colleagues (Boyle, Connolly, Hainey, & Boyle, 2012) points out that future research should be aimed at specific genres thus agreeing with this statement. Prior research conducted by myself in engagement and immersion (Nielsen, Positive emotions in horror games, 2012) (Noack, Nielsen, Hansen, & Tranto, 2012) (Nielsen, Kim, Hansen, & Traskinaite, 2011) (Nielsen, Aesthetical Narrative Devices, 2012) has come to the same conclusion that specific theories are required. Discarding traditional engagement and immersion theories will allow for the generating of new applied theory specifically for horror genre video games.

Previously there has been proposed several models of engagement and immersion such as (Brown & Cairns, 2004) that differentiate immersion between engagement and engrossment (similar properties to immersion) through an emotional affection. Latter theory is also supported by (Busselle & Bilandzic, 2009) who describes emotional engagement, controversial, yet confirming to (Chapman, 1999) whom states that engagement is what *hooks* us to a game. Among the newest developments in engagement and immersion theories we see (Calleja, 2007) six forms of involvement and (Schønau-Fog, 2012) model of continuation desire. The general problem with the previous solutions is that they tend to view games as a universal concept, thus neglecting specific differences in genres and game types.

In order to solve the problem of inapplicable theories I propose a framework based on applied research within engagement, involvement, and immersion for horror games. Grounded theory methodology will be used to determine specific design principles that can be used to close the current gap between research and game design, thus anticipating the level of engagement, involvement, and immersion in the design phase of game development should be possible.

A specific model for continuation desire in horror games was created, based on grounded theory research approach. The model was used to create a design framework for horror games; latter was used in designing a prototype game, testing the potential of said framework.

This report will present a grounded investigation on said topic, as well as a detailed description and example of applying the knowledge in game development. Furthermore, testing a game prototype based on the design framework shows the potential of applying genre specific engagement, involvement, and immersion theory. Figure 1: Relationship between research and model development displays relationship between research and model development until applying a final model of continuation desire to a design framework for horror games.

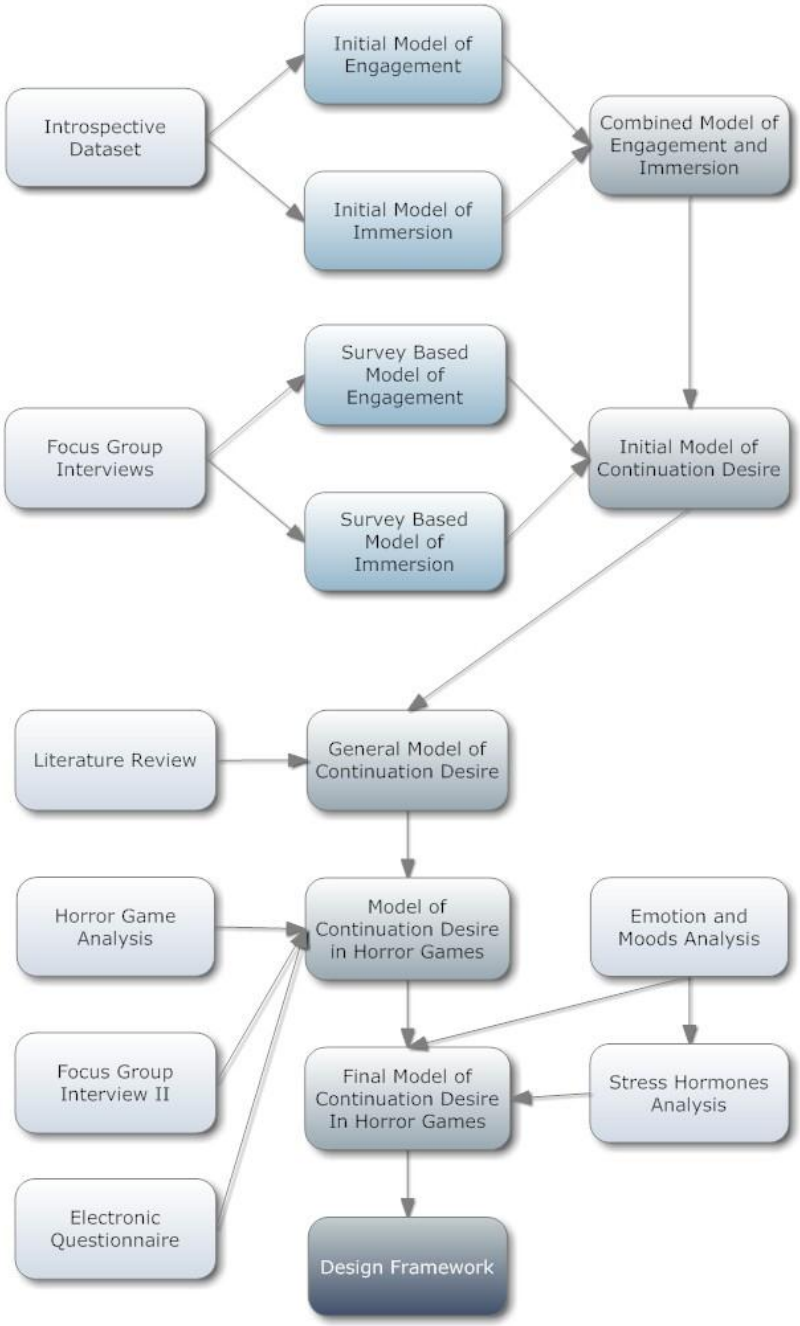

Figure 1: Relationship between research and model development

The initial problem statement which this project is based upon follows:

Is it possible to create a universal design framework for horror games based on a proposed model of engagement and immersion; which is categorized within horror?

2. Pre-Analysis

The field of engagement and immersion is a vast array of much uncorrelated knowledge. The terms are often used in different context and takes different meaning, which makes them difficult to utilize. For this reason I will base my pre-analysis on *grounded theory* methodology (Glaser & Strauss, 1967) (Strauss & Corbin, 1994). I will separate my pre-analysis into three data sets: an introspective data set, where I interview myself about engagement and immersion, and the relationship between the terms. A qualitative data set, in the form of a focus group interview collection. Lastly I will do a literature review of existing theories to see if some of those correlate with my findings. From these three datasets it should be possible to create a theory about engagement and immersion that will function as the basis of this report. I am aware that traditionally you would let the data speak for itself when working with grounded investigations; however, at the same time I felt it important to let the reader understand my initial level of knowledge and understanding within the subject. In starting with an introspective approach I also display my entire progression through the project.

2.1. Grounded Theory

I have chosen to work with a grounded theory methodology as the foundation of the project. The reason I chose this particular methodology is that it offers a great opportunity to think outside the box and is specifically designed in order to generate new theories. Even though this approach was initially designed for social science it has been adapted to a vast branch of research. Essentially there are lots of similarities between grounded theory methodology and other qualitative and quantitative methodology forms, as Strauss & Corbin states themselves:

> *"Grounded theory studies share some similarities with other modes of carrying out qualitative research. Sources of data are the same: interviews and field observations, as well as documents of all kinds (…)"*
>
> (Strauss & Corbin, 1994, s. 274)

However the greatest difference is that grounded theory focuses on creating a new theory, where other methods starts out with a hypothesis. This usually means that the researcher postpones looking into existing material until after a dataset collection has been made. In my case I will refer to my own notions in an introspective form, a focus group interview consisting of gamers, and lastly I will conduct a literature review.

> *"(…) that interpretations must include the perspective and voices of the people whom we study"*
>
> (Strauss & Corbin, 1994, s. 274)

Hence I select a group of gamers, as they are the daily experts in the field. Referring to an actual engagement expert will most probably result in the same data as reviewing the literature, after all it is the experts of the scientific world that has written the material, and that is best saved for last. According to Strauss & Corbin a theory consist of a plausible relationship between concepts (Strauss & Corbin, 1994, s. 278). These concepts will be provided by my three different data collection methods and should provide me with the material to create a general theory for engagement and immersion. Readers might find it confusing that I start out with expressing my frustration about the general tendency that researches has with expressing general and universal theories in the field, and then making one myself. However, this is to

create some common ground and to establish a point to work from, which later will be the foundation for a specific model for horror games.

This approach is not without dangers however, it is a well-known danger that a grounded theory might result in re-inventing the deep plate all over, however that is a risk I am willing to accept; in a worst case-scenario I will simply confirm what others has already established.

2.1.1. Introspective Dataset

Here I will provide the first dataset for the grounded theory. This will be my own notion on engagement and immersion and what relationship there exists between the terms. This is introspectively and is derived by prior knowledge of the area and my own thoughts as a gamer. As this is far the least scientific pleasing data collection which easily can be criticised as a biased set of propaganda to support my own conclusions, I will stress that this dataset is but one out of three datasets that will be used in the grounded theory. The advantage of this dataset is that it is unaffected by the other findings in the research and in that sense pure.

2.1.1.1. Engagement

Based on my prior research and knowledge of engagement and immersion, I will attempt to make naïve statements of what these terms are. To me, engagement is what hooks us to a game, and keeps us playing. Thus we could quickly make a model for engagement as seen in Figure 2: Basic Model of Engagement.

Figure 2: Basic Model of Engagement

Here we can see that we have a hook, or motivation, which can vary a lot between different types of games. Competitive gameplay such as *StarCraft II: Wings of Liberty*[1] hooks the player by the nature of the competition; essentially the player wants to win, and in order to this he has to put his attention into the game. Compared to story based games such as *Dragon Age: Origins*[2] where the player is hooked by a personal storyline and a vast game world waiting to be explored. This makes it difficult to generally define the motivating; however, we can state a set of attributes that can be used as an engaging factor for players. This can extend our extremely simple model for engagement to Figure 3: First Extension of Model of Engagement.

[1] Blizzard Entertainment, 2010
[2] Electronic Arts, 2009

Figure 3: First Extension of Model of Engagement

Here we see that I have added six sub-categories to the motivation. Each sub-category is added because I have strong belief as a gamer myself that these topics are relevant for the motivation of playing a game. *Mechanics* refer to game mechanics, Schell define game mechanics as follows:

"Game mechanics are the core of what a game truly is. They are interactions and relationships that remain when all of the aesthetics, technology, and story are stripped away."

(Schell, 2008, s. 130)

Game mechanics can be a sort of novelty, which can also be referred to as *the shiny factor*. An example of this is the gravity gun in *Half-Life 2*[3] which was something new that was extremely motivating and fun to begin with, however, the further the player progressed in the game the less important and entertaining will you find the feature. Mechanics can often be great motivators for players, and some indie games tend to rely solely on a single game mechanic to motivate the player, such as *Trine*[4] that almost solely relies on the gravity feature in the game.

Game Premises is the world and premise the game presents. This is what makes games like *The Elder scrolls: Skyrim*[5] extremely successful and motivating. The game presents a vast interactive game world in a medieval fantasy setting with a large array of deep storylines to choose from, which alone is extremely motivating for many players.

Aesthetics is both the visual as well as the auditory aesthetics which can motivate players to investigate the game further. This we see in games like *Limbo*[6] which is largely known for its aesthetical pleasing look and feeling, which help motivates players to play the game.

Competition has already been described as the leading factor in competitive gameplay. This is often found in multiplayer games, were players can compete directly or indirectly by a scoreboard. This is extremely motivating for many players, and is also a trend you see in the game design for competitive games to allow achievements and scores, or ranking systems, to beat other players.

[3] Valve, 2004
[4] Frozenbyte Inc., 2009
[5] Bethesda Softworks, 2011
[6] Playdead Studios, 2010

Controls are related to the functionality of the interface, and are the basic of human-computer interaction. This is not only a matter if the controls themselves work, and are mapped responsibly, but also that they do not interfere with the experience of the game. To difficult, or poorly designed, controls will make the game demotivating.

Functionality is related to the overall functionality of the game. If the game works as intended and is understandable to the user. The player should not spend hours figuring out how to jump or open a door; the game should offer an easy functionality in order to motivate the player.

It is my belief that one or combinations of several of these factors are what creates the motivation for any type of computer game and player. I also believe that whatever the factor or combination of factors causes the motivation it forces the player to invest his attention in the game, this process of motivation is a brief episode where the player determines if it is a game they will want to play or not. This attention can then lead the player to become engaged in the game, and spurs the desire to continue the game. Without attention there can be no engagement. Note that attention is a requirement to become engaged, but not a factor of motivation. I stress that the motivation is what creates the attention, and it is up to the engagement to hold that attention. Again we extend our model of engagement, see Figure 4: Further Extended Model of Engagement.

Figure 4: Further Extended Model of Engagement

Once we have been motivated and have generated attention into the game we can start to become engaged. Note that engagement is a higher level of motivation. This is the desire to continue playing, where motivation is the desire to try the game out. Once the player enters a state of engagement attention is no longer generated in the same sense, here it is rather sustained. The sustaining of attention still requires the same factors as motivation, however, four additional factors have been added, which helps in holding the attention of the player.

Challenge is directed to the player who needs a game to challenge their skills. A game that offers no challenge quickly loses the players interest and thus their engagement and even their motivation. Therefore, for extended playing experience challenge is vital for the player's engagement.

Exploration is tied to the game premises. Now the player is already hooked on the world and space of the game, and want to explore the game and see what is behind the next door. In essence the players desire to explore the game world provided.

Narrative this is aimed for story based games such as *Dragon Age: Origins* where the narrative holds the players attention and desire to continue playing. This can be said to be tied to a type of exploration; that is exploring the narrative of the game world.

Sense of Freedom is the sense that the player has complete freedom within the game. As an example there are a lot of different conversations in *Dragon Age: Origins* where it does not matter what conversation option you pick, the outcome is always the same, no matter what you do. This provides a certain sense of freedom, as long as the player does not realize this fact.

As a result of engagement I believe that these factors are capable of generating focus and involvement. Involvement is when the player gets emotionally affected by the game directly. This can be due to several different things, and different types of involvement might be possible. Personally I would distinguish between competitive involvement and narrative involvement. Competitive involvement is when we get emotionally affected by competitive gameplay. This is being happy or angry that you win or lose a game of StarCraft; while narrative involvement is emotional responses based on the content of the game which affect you due to identification with the in-game avatar or related animated characters.

2.1.1.2. Involvement

As previously discussed the player can through engagement become involved in the game. Involvement means the player is emotionally affected by the game. I distinguish between two types of involvement; *Competitive Involvement* and *Narrative Involvement*. Competitive involvement is a product of challenge, competition, controls, functionality, and sense of freedom. When several of these factors are present and at a high enough level the player will start to show emotional responses to the game events. We commonly see this in the competitive game world with games such as *StarCraft 2*. Players often show emotional responses when either winning or losing a competitive game. Narrative involvement is a product of game premise, aesthetics, narratives, and exploration. This is when the player is emotionally affected by the game to experience happiness, fear, sadness, joy etc. by the game content. Often this is carried mostly by the narrative and the way it touches the players' feelings.

2.1.1.3. Immersion

Immersion is as engagement a difficult term to specify. However, it is the state where the player has his full attention in the game and will start to forget time and space around him. Most gamers has experienced this state, however, few can explain accurately what it actually is. The player needs a high level of involvement in order to even enter the realm of immersion; this means the player needs to be affected by the game emotionally, specifically narratively involved. Competitive involvement does not offer immersion per my definition. If it did we come out in the problem with being focused and emotionally involved in Tetris. I might be sad that I lose at level 100 in Tetris, while I put all my attention and focus in the game, however, I was never immersed, if anything I was competitively immersed, which is simply a different aspect of engagement. As we have seen involvement is derived from engagement. However emotionally affection is not enough to achieve immersion, which simply means the player is involved. The player needs to subconsciously disregard the real world, or in a sense forget it. It is when you hear someone talk to you while playing the game, you hear some words, but you simply disregard it because you are so focused on the game that the real world no longer matters. This I will call the level of focus. Focus is related to attention, however, the difference lie in attention being that a person take notice of an object, while focus is when the same person starts to selectively (consciously or subconsciously) disregard other things than

said object. With this in mind focus is a higher level of attention given to a certain object, in this case a game.

This gives us the following model for immersion, see Figure 5: Basic Model for Immersion.

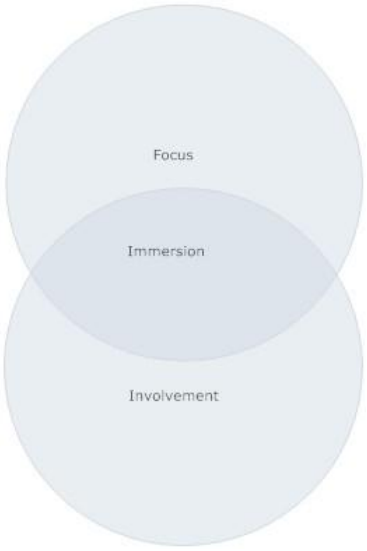

Figure 5: Basic Model for Immersion

This is extremely basic, however, both focus and involvement stems from engagement, as I already established focus as being a product of attention, and involvement being a product of engagement. Note that one cannot be immersed with a single of these two factors; both needs to be fulfilled in order to achieve an immersive state. This means that in general terms, immersion is a product of engagement. As a product of engagement, immersion shares all the same factors as motivation and engagement does, with the added factors of involvement and focus.

2.1.1.4. Introspective Model for Engagement and Immersion

From this data a unified model for engagement and immersion can be constructed, see Figure 6: Basic Model for Engagement and Immersion.

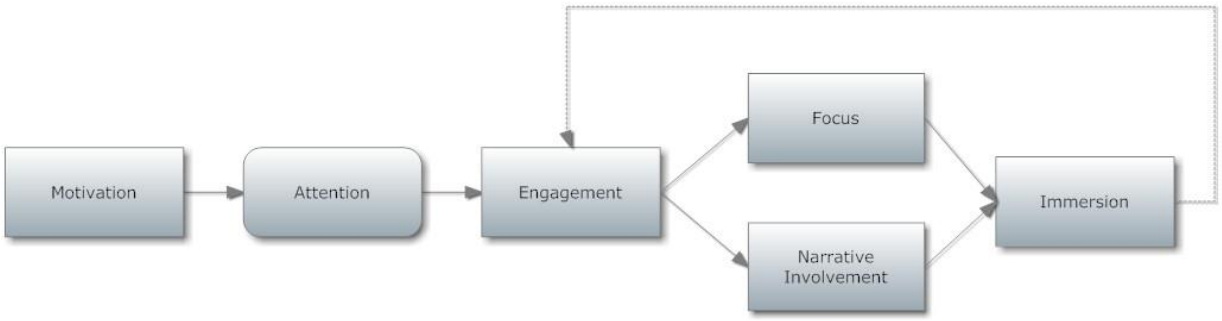

Figure 6: Basic Model for Engagement and Immersion

Here we see that the model works like a road the player must follow. One cannot jump from motivation into being involved. The person needs to be engagement before he can advance. This also means a player can have a high degree of engagement, without ever being immersed. However, once immersed I do

believe that a player can sustain their engagement by their immersive state. This is when the player is so involved and focused that the desire to continue belongs to the desire of staying in the immersive state, thus immersion can work rather self-reinforcing. This means the player does not stop being engaged once they are immersed, instead they remain in an even higher level of engagement, that we call immersion. However, this is still only my own speculations and notions.

2.1.2. Focus Group Dataset

I have chosen to make a dataset based on a series of focus group interviews. I chose this methodology because it offers a qualitative way to get peoples meaning and understanding of specific problems and subjects. Focus groups also offers the possibility to find new information one might elsewise overlook as the core of a focus group is an open discussion between the participants (Poels, de Kort, & Ijsselsteijn, 2007) (Morgan, 1996). Besides that I can even use a focus group without doing research into the field that I wish the focus group to discuss; this supports the use of a grounded theory, as I will stay unbiased by the existing literature until the literature review, however, still possibly biased by my own ideas and notions. I will not personally attend the discussion myself, so every bit of information derived from the interview will come from the participants themselves.

2.1.2.1. Approach

Ideally I will have 3-4 groups of 4-5 participants to attend the focus groups. Each participant should be consistent gamers that play computer games at least twice a week. The general goal is to get the participants insight on engagement and immersion.

I will use a much similar procedure as Poels and colleagues (Poels, de Kort, & Ijsselsteijn, 2007) I separate my procedure into the same phases as them, however, with slight differences in some steps. I chose to reuse the basics of their methodology because I already know that it is a functional approach that offers a light and brief introduction phase, which is used to let the participants get slightly familiar with each other. And an individual task phase that grants an unbiased set of information from the participants. After this we begin a group discussion where everyone is already prepared for the general point with a focus group, and at the end a group task where the participants will try to reason with each other as a result of their discussion.

Introduction Phase:

I introduce myself as moderator and I will give the group a brief description about the purpose with the interview. After that I will ask the participants to introduce themselves and state their game frequency and most preferred game genre/type.

Individual Task:

Each participant is asked to write down (on Post It provided) their most memorable gaming experience, and what game they experienced this with. They are also asked to note their favourite game, and genre. They will also be asked to write down what the first thing that catch their attention in a game. This will be timed for five minutes, to ensure that this phase does not get to extensive for participants that are faster at responding than others.

Group Discussion

The group will be asked to discuss their notes freely. The moderator (me) will also prompt the participants with a short list of main questions:

- Why do you play computer games?
- Once you have started a game, what makes you want to play the game extensively?
- What makes you keep playing a game?
- What makes you NOT keep playing a game?
- Have you ever experienced to forget time and or events around you while playing?
- Have you ever been emotionally touched by a game? (How and why?)
- Have your urge to keep playing a game ever changed during a game experience?
- Do you do something yourself to immerse yourself in a game?
- How would you describe engagement?
- How would you describe immersion?
- How would you distinguish between being engaged and immersed?

This list of questions was stated based on my presumption that these will provide me with the needed information about engagement, involvement, and immersion. Other than that the participants are free to ask questions themselves, as long as they stay within the realm of the interview. Participants are asked to note down new relevant gaming experiences and the cause of them on the Post It's. The participants are also asked to note down on Post It's what causes them to play games, and what causes them to continue playing a game.

Group Task

The group is asked to stick the Post It's on a blackboard. The most relevant in the centre and the less relevant further away from the centre. This representation is used to compare results between the groups (Poels, de Kort, & Ijsselsteijn, 2007).

Each interview is estimated to take about 1½ hour, and will be audio recorded. Transcription of the most relevant parts will be included in the appendix.

2.1.2.2. Results & Discussion

In total three groups was conducted with each four participants, twelve male and two female students, with an age range from 19-28 years old, of frequent gamers. All participants were students at Aalborg University Copenhagen – Medialogy, ranging from first semester bachelor students to third semester master students. In each group there was ensured to be at least one master student, to avoid a full group of master students. A full list of notes and images can be seen in Appendix I Focus Group Interviews for Pre-analysis, Notes & Results. As an overview of the interview I have chosen to make a set of word clouds. These are made by labelling statements and answers with a common denominator, as an example every time someone talks about story related elements, that statement has been labelled story. The word clouds do not weigh the importance of what has been said; simply how many times a single label has been mentioned during the discussion, within the entire session or within a set of questions. These labels come from notes I made during the discussion and from listening to the interviews again (from an audio-recording). This may be a bit of a bias approach, but it should provide a fairly general overview.

To get an overview of the collective data for the entire session I have made a word cloud that includes answers from all the questions and statements[7] across the interviews see Figure 7: Word Cloud of the Collective answers and statements for all focus groups. Even though that word clouds is not strictly a scientific tool, it is a handy tool to give a quick overview of a data collection.

Figure 7: Word Cloud of the Collective answers and statements for all focus groups

From this we can quickly see that the most discussed topics was; Story, Challenge, Fun, Mechanics, Character, Escapism, Choices, Controls, Relive-Experience, and Difficulty. These topics represent the most discussed for all questions. This gives us an overview of the most important aspects of engagement and immersion for the focus groups.

To give a more specific overview, I have chosen to divide the questions into questions regarding engagement and questions regarding immersion. This gives us the following two figures; Figure 8: Word Cloud for Engagement, Figure 9: Word Cloud of Immersion.

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Figure 8: Word Cloud for Engagement

On the first word cloud we can see that the most mentioned topics are; Story, Challenge, Escapism, Mechanics, Fun, Relax, Gameplay, Progression, Controls, Reward, Choices, Interest, Character, Difficulty. The fact that story is the most mentioned in these discussions could be due to that most of the participants' favoured role-playing games, which has a tendency to be very story based, compared to competitive games such as *StarCraft 2: Wings of Liberty*. However, this gives a strong indication that one of the leading factors within engagement could be the narrative of the game.

Figure 9: Word Cloud of Immersion

When we look upon the second word cloud, which concerns itself with immersion, we get the following list of topics; Story, Fun, Challenge, Part of the Game, Mechanics, Character, Involvement, Attachment, Relive Experience, Forget the real World. As expected we see that some of the same topics as in engagement, as both these clouds are products of the same discussion session. However, we see that more emotionally linked and more narrative supported topics are more often mentioned.

As one of the last things, the participants were asked how they would distinguish between being engaged and immersed. Even though it was difficult for the participants to come up with concrete sentence as an answer, one stands out from the rest.

"Engagement elements is the thing is what gets you hooked, which makes you want to continue. Where the immersive part of it, is the state that you're in"

Participant #4, in focus group 3.

However, one could speculate if the participant had done research in the field as well, or had attended courses concerning engagement and immersion. In conjunction the most precise statement for engagement in my opinion was the following quote:

"I want to do this, I want to reach this, I want to finish this."

Participant #1, in focus group 1.

Basically it was reaching goals, and discovering the next thing. This did not matter much what kind of goal it was, it could be a personal goal or a goal specified by the game. But it was the desire to keep pressing the boundaries of your game time. This was discussed in all the groups. The player is engaged when he keeps setting new goals and has a strong desire to continue playing.

When asked to discuss immersion, the following quotes sums up the collective opinion of the groups.

"Basically the fact that I get emotionally involved in the game"

Participant #3, in group 2.

"Being the player in the game, moving around as he does"

Participant #1, in group 2.

Most participants agreed that when you get emotionally involved in the game content, or attached to the character, and/or side-characters, you have a strong possibility to become immersed.

We can support this with a specific word cloud of these two questions Figure 10: Word Cloud for "How would you describe engagement while playing?", and Figure 11: Word Cloud for "How would you describe immersion while playing?".

Figure 10: Word Cloud for "How would you describe engagement while playing?"

In Figure 10: Word Cloud for "How would you describe engagement while playing?" the most discussed topics for the posed question about engagement can be seen. The most discussed topics were; Re-

Engagement, Escapism, Continuation Desire, Need to Finish, Challenge, Motivation, Reward. Topics like Reward, Need to Finish, and Challenge support the statement of trying to reach new goals, whether they are personal or game specified.

Figure 11: Word Cloud for "How would you describe immersion while playing?"

In Figure 11: Word Cloud for "How would you describe immersion while playing?" we can see that the most discussed topics were: Part of the Game, Forget the Real World, Involvement, and Emotions. This also supports the speculations of immersions being an emotional involved state that the player reaches.

We also see that what motivates people and what they notice as the first things in a game differs somewhat from what makes them play a game extensively. This can easily be seen from the word clouds in the appendix. Escapism, Story, Controls, Challenge, Fun, Social Aspects, Relaxation, and Interest are the most important aspects of playing a new game, and the first things that are noticed when playing them. While; Story, Mechanics, Gameplay, Challenge, Achievements, Fun, Progression, Difficulty, and Investment are the most important for extensively gaming sessions.

Seeing this results I feel comfortable in my previous notions, however, one could argue for the purity in the sample of participants. Several of the participants are currently in the master programme of Medialogy and have without doubt dealt with engagement and immersion to some degree. This of course means that some have more background knowledge of the topic than others, and their answer might be more of academic pride than their own notions. However, the consistency of the data speaks for itself; also I made sure that there were scattered master programme students in each focus group interview, to avoid too many experts on the subject in the same group.

Attributes	Engagement	Immersion	Describe Engagement	Describe Immersion	Motivation	Extensive Gaming Session
Story	x	x			x	x
Challenge	x	x	x		x	x
Escapism	x				x	
Mechanics	x	x				x
Fun	x	x			x	x
Relaxation	x				x	
Gameplay	x					x
Progression	x					x
Controls	x				x	
Reward	x		x			
Choices	x					
Interest	x				x	
Character	x					
Difficulty	x					x
Part of the Game		x		X		
Involvement		x		X		
Attachment		x				x
Relive Experience		x				
Forget the Real World		x		X		
Re-Engagement			x			
Continiuation Desire			x			
Need to Finish			x			
Motivation			x			
Emotions				X		
Social Aspects					x	
Investment						x

Table 1: Overview of Engagement & Immersion Relations

Table 1: Overview of Engagement & Immersion Relations shows the attributes of my collection of the relevant questions for engagement, immersion, the answers from the description of engagement and immersion, what motivates people to play computer games, and what causes them to play extensively.

We can see that the columns Engagement, Describe Engagement, and Motivation have some correlation and coherence, as well as Immersion, Describe Immersion, and Extensive Gaming Sessions also have correlation across the attributes.

From this we can say that according to the focus group interviews engagement is what get people hooked to a game, and what makes them want to continue playing a game.

"You can't stop cause you know, something is not finished."

Participant #4, in focus group 1.

This involves the following topics; Story, Challenge, Motivation, Fun, Controls, Interest, Mechanics, *Escapism* (However, this is more focused on why they play games in general, and not why they play new games. This is escaping the real world, which can be viewed as a complex psychological problem, therefore, I will disregard it in that sense.), Reward, Difficulty, Character, and Continuation Desire (derived from sippets of the interviews.). Thus we can split engagement into two; motivation, and engagement. From the data we can see that motivation involves the following aspects:

Escapism varies from experiencing something unique that you cannot experience in the real world, or when you attempt to avoid boredom or relax and forget the problems of the real world. As the word suggests the player seeks to escape from the real world and the concerns within, instead delving into another world where they can be someone else, unconcerned with the real world.

"In games you can experience things that you would not able to experience in real life."

Participant #2, in focus group 2.

"Kill people, and screw the world"

Participant #1, in focus group 3.

Controls are an important aspect for motivation, and continuation desire as a whole. Controls do not need to be new and exciting; they simply need to be seamless and functional. So long as the player do not have to spend time figuring out the controls, and they feel the controls works as intended the players seems to be satisfied. Bad or dysfunctional controls are directly tied to demotivation. This could be a 3rd person camera getting constantly stuck in the geometry or difficult to remember combinations of keys to preform desired moves in the game.

Story; relates to the expectations of the story, rather than the actual story itself. If the story is able to hook the player in some way, the player will most certainly be motivated. This is often done by an introducing cinematic or in-game cut-scene. If the player can relate to the story, and find some interest within the first few moments, they are likely to continue to discover the rest of the story content.

"If it is not interesting, you might have nice graphics and nice effects, but if there is no good story you feel you are just wasting your time on it"

Participant #3, in focus group 3.

Relaxation is directly tied to escapism, and one could argue that relaxation is a subcategory of escapism. The player seeks to relax, just like some people would watch a movie or read a book in order to relax, the same goes for games.

Social Aspect is often tied to multiplayer experiences. We see this in games like *World of Warcraft* where the players sometimes login to the game, simply to be social with the other gamers. It can also relate to more events based social activities as participant #3 in group 3 who had a very memorable experience playing *Need for Speed* with his friends in a local area network (LAN) setting.

Challenge is much like story at this point; the player will have some expectation of the difficulty of the game, and what types of challenges they might encounter. The challenge has to compare to a certain skill level of the player.

"I like a good story and a good gameplay, but also games that don't have a story but then it becomes the challenge of it, because I want to beat the game or the challenge"

Participant #4, in focus group 3.

"I find games that are too easy, very quickly becomes very boring"

Participant #3, in focus group 2.

Interest is rather self-explanatory. The player needs some valid interest in the game; this can sprout from many different aspects, such as the visual style or the sound design, or the mechanics of the game.

Fun is a rather difficult topic to pin-point, as when is something fun? However, the groups agree that having fun while playing is an important factor when getting motivated to invest more time in the game. Fun is also somewhat related to interest as well, as having fun with game mechanics, such as the gravity gun from *Half-life 2* could spark an interest in the game.

There is slight difference in what we see for engagement as it involves:

Story is now at a deeper level, the player will want the story to progress and see if their initial expectation of the story was correct. They will start to invest themselves in the story of the game.

"If it is a game that has a great story I will get invested in it"

Participant #2, in focus group 3.

Challenge is just as in motivation. The challenge of the game must match the skillset of the player. The player also needs to feel that they are getting better at the game, or progress in their skill level. Whenever the game becomes too easy or too difficult it can quickly become dis-engaging.

"You should have the feeling that you should be able to win"

Participant #4, in focus group 3.

Motivation is a requirement for getting engaged. One can view it as the stage before engagement. Essentially the player needs to be motivated in order to become engaged at all.

Mechanics needs to be fun, interesting and well integrated into the game. It is agreed that coherence is important for the game, and that the mechanics has to back up the theme of the game, such as the use of physic based puzzles in *Trine*.

"If anything doesn't match, if the sound is poor, if the game mechanics does not back up the visuals, if the visuals are off compared to the story"

Participant #4, in focus group 2.

Reward is important for any player. The player needs to get some kind of reward for their actions, whether this is a new item in *World of Warcraft* or to unlock the next area in *Metroid Prime* the player needs some kind of reward to feel that what they are doing is meaningful.

"If you take a game like WoW, you get rewarded right away"

Participant #2, in focus group 3.

"A little ego boost"

Participant #3, in focus group 3.

Difficulty is related to challenge; however, challenge is not as explicit. Where challenge concerns with different types of challenges, and the indirectly also the difficulty of these challenges. Difficulty directly concern itself with how hard the game is, as an example the challenge of *Tetris* is the same no matter which level you are playing at, however, the difficulty is notably different from level one to level twenty.

Character is related to story, however, when engaged the player is able to become involved in the character. The player will start invest emotions in the main or side characters. If engaged enough in the narrative they will start to become attached to the character, and will start to be affected by the events that surround the character.

Fun, Controls, **Interest,** and **Escapism** is the same as in motivation.

Immersion, however, is related to; Story, Challenge, Involvement, Feeling that you are part of the game, Attachment, Experience (And reliving this experience), Forgetting the real world, Mechanics, Fun, Emotions, and Continuation Desire (Also derived from the general discussions of the interviews.). Some of these like, challenge, mechanics, and fun are the same as in engagement, and is considered to simply be carried on from engagement to immersion. However;

Story differs from engagement and motivation. When immersed the player gets caught up in the story, and start to feel like they themselves are no longer simple onlookers, but participants in the games narrative, or when the level of attachment is so powerful that they feel with the character.

"You get caught up in the story"

Participant #3, in focus group 1.

"If I feel that I created this character, and feel like I influence on who is and how he acts"

Participant #2, in focus group 1.

Involvement is related to attachment in engagement, and story in immersion. The player can be emotionally affected by the story or the choices available in the game. Several of the participants mentioned creating emotional bonds with the characters, and the story content.

Feeling that you are part of the game, is a phrase often used when someone describes immersion. Essentially it is when they feel as they are part of the game world, and their attention is directed only towards the game. This is the sense generated by immersion.

Attachment is related to story and the character. The player attaches themselves to the game narrative, and in that sense becomes part of the game rather than just an onlooker.

Experience; this was discussed as when you are immersed you are no longer playing the game for the sake of achieving specific goals, but to get a good experience. Several of the participants reported that they forgot about the real world and simply played the game, just for the sake of the experience.

Forgetting the real world; the player no longer gives the real world any attention, as their complete attention is in the game. One participant reported that he had such an experience where people entered his room, and he did not notice them until he was done playing.

"I had such an experience yesterday. The game got such a big grip on me"

Participant #3, in focus group 3.

Emotions can be affected directly by the game when the player is immersed. In this context it is the story elements that affect the players, such as one participant had a memorable experience of a game making her cry over the death of a side-character of the *Mass-Effect* series.

However, how exactly engagement and immersion is correlated with each other is hard to tell from this data alone, but it is clear that there is a narrative bond between the two terms, according to the focus groups.

2.1.2.3. Focus Group Model of Engagement & Immersion

A model for engagement and immersion can be synthesized based on the respondent's feedback of the focus group interviews by looking at tendencies in the data. This model will be used to further the development of a general model of engagement and immersion, and will be used as the base for the literature review.

As already mentioned engagement involves: Story, Challenge, Motivation, Fun, Controls, Interest, Mechanics, Escapism, Reward, Difficulty, Character, and Continuation Desire. However, Progression and Investment are also frequently mentioned. When we look at what motivates people to play, and what the first things they notice in a new game we get: Escapism, Controls, Story, Relax, Social, Challenge, Interest, and Fun (see Figure 44: Word Cloud #1). If we isolate the game elements (regarding only elements that exists inside the game), we can make a model of engagement based on the focus groups answers.

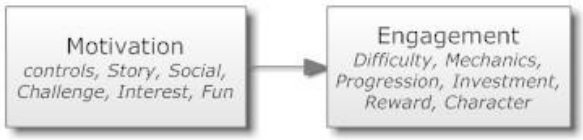

Figure 12: Model of Engagement based on Focus Group Data Set

In Figure 12: Model of Engagement based on Focus Group Data Set**Error! Reference source not found.** it should be known that the topics that is important for motivation, which is the elements that let us decide whether we want to invest time in the game or not, also carries on into engagement. If the game is motivating enough we can become engaged. According to the focus group engagement is very focused on setting goals and progressing in the game, whether these goals are personal or predefined it does not matter, as long as the player feels that they are rewarded and that they feel they are progressing they often have a strong urge to continue playing. This continuation desire often springs from the fun they are having with the game, the way the mechanics work and how well they can relate with the characters, and the story of the game.

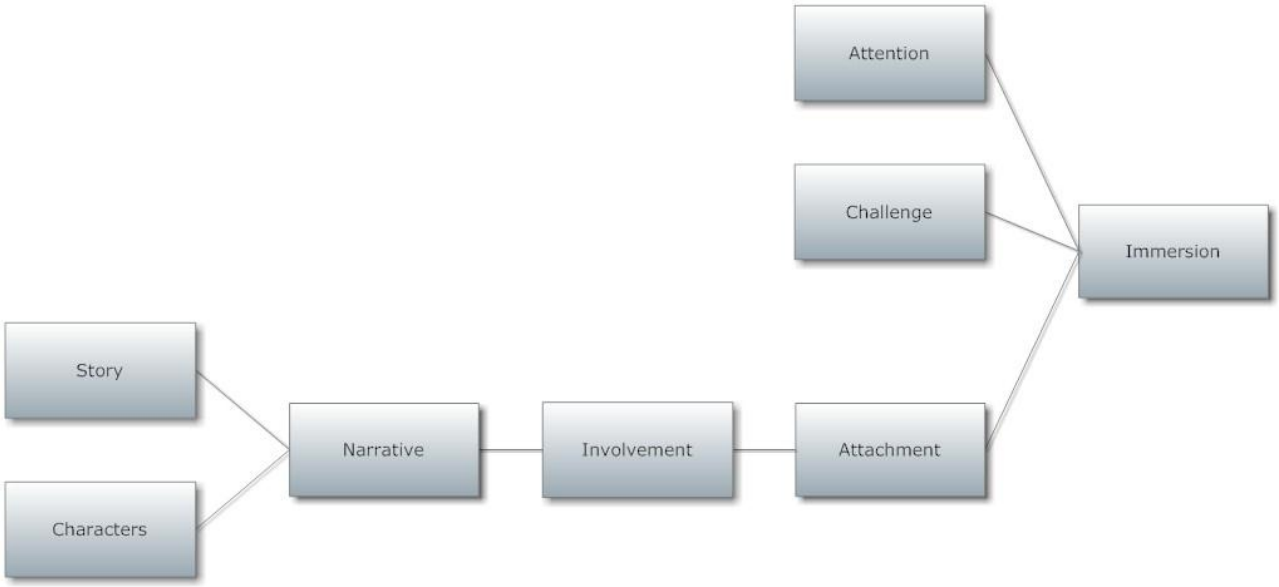

Figure 13: Model of Immersion based on Focus Group Dataset

Figure 13: Model of Immersion based on Focus Group Dataset**Error! Reference source not found.** shows a model of immersion based on the focus groups answers. Involvement comes from identification, sympathy, and relating to the story and characters of the game. Once the player get involved enough in the game, they will get attached to the narrative of the game and they will have a reason to become immersed. Attention and constant challenge is essential for immersion as well. Once immersed the player will forget the real world, and transport the player himself into the game world. They no longer play for achieving personal or in-game goals, but as stated in the interview, it is when you just play. Emotional responses are common; this could be joy, sadness, or fear as examples. Even some choices in the game will be hard for

the players to make; this could be choices that would affect in-game characters such as hurting them or dominate their fate. Immersion can be stated as a continuation desire as well, we clearly see this in Figure 37: Group 1 Continuation Desire Task where immersion and engagement is sat to be the cause of continuation desire.

From this we can see that engagement and immersion is related on the narrative level as well as sharing attributes such as challenge and attention. Engagement is able to create a high level of involvement, when this level gets high enough the player will get attached to the game world and will have cause to become immersed. To distinguish between engagement and immersion, the player seizes to be simply engaged when emotional responses to the narrative of the game are apparent.

2.1.3. Combined Model of Engagement and Immersion

Before making the literature review I would like to make a combined model of engagement and immersion. This model is based on models from the introspective dataset and the focus groups dataset. When we look upon the models Figure 6: Basic Model for Engagement and Immersion, Figure 12: Model of Engagement based on Focus Group Data Set, Figure 13: Model of Immersion based on Focus Group Dataset we can see some attributes that are already shared, such as challenge, controls, and narrative elements for engagement, and narrative involvement for immersion. There is no doubt that the bridge between engagement and immersion lies in the level of narrative involvement. Once a certain level of involvement has been reached the player becomes immersed in the game. Immersion is the state where competition and challenges no longer occupy the mind of the player; instead the continuation desire lies in an emotional level.

Engagement is split into motivation and engagement, the player needs to have some sort of interest in the game that will motivate them to be playing it at all. This interest can come from, mechanics, narrative, aesthetics, gameplay, challenge, and novelty. However, equally important is the seamlessness of controls and functionality of the game. If there is problems with the controls or game bugs that interfere with the game functionality the player is likely to quit the game. The motivation phase is actually an evaluation process, where the player consciously and/or subconsciously decides whether the game is worth their attention. Attention and motivation is essential to engagement. As motivation the controls and the game functionality must be seamless, however, they do not contribute directly to the engagement of the player, instead they are simply considered to be distractors if they interfere with the gameplay. Engagement involves mechanics, fun, exploration, narrative, progression, challenge, and reward. Once engaged, the player will lose track of time, supress bodily needs such as hunger and thirst, and their full attention will be at the game. From here the player can become involved in the game.

There are two types of involvement; competitive involvement, and narrative involvement. Competitive involvement is primarily tied to competitive gameplay, hence the name. It is a product of challenge, progression, and reward. A player is competitive involved when the emotions of the user is directly affected by the game. This is often seen in multiplayer games such as *StarCraft* where the player shows frustration, anger, or sadness when losing a game to another player, or when joy is triggered when the player triumph. Competitive involvement is revealed by the players desire to beat the game, or defeat their opponent (in case of multiplayer games), as well as the triggering of emotional responses with the game as a stimuli. Narrative involvement is a product of narrative, aesthetics, and progression. Narrative involvement differs from competitive involvement as the emotional responses are triggered due to identification or empathy to

the game characters and/or story, rather than the outcome of a challenge. A player that is narratively immersed can become immersed. The player enters a state where they simply play them game, just for the sake of the experience. This experience quickly becomes the subconscious continuation desire. Immersion therefore involves; attachment, narrative, exploration, and challenge.

It is clear from the current data that engagement and immersion can be categorised as a continuation desire. Also it is clear that the player can be both narratively and competitively involved in a game at the same time, however, if the player becomes immersed the competitive involvement becomes less apparent.

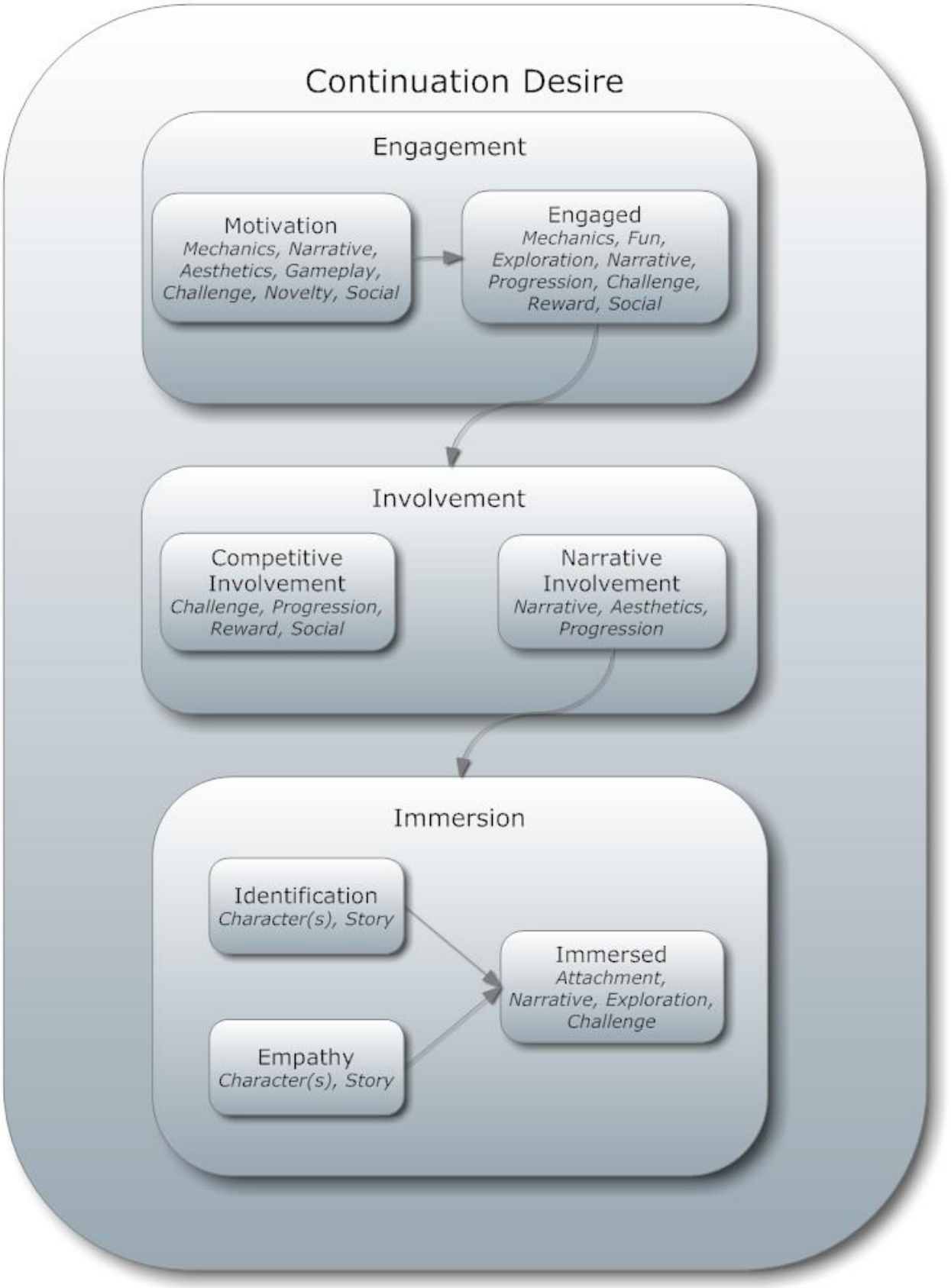

Figure 14: Continuation Desire Model

On Figure 14: Continuation Desire Model**Error! Reference source not found.** I have shown the relationship between engagement, involvement and immersion; I found it prudent to gather all the terms up under continuation desire. Several times during the investigations participants have stated that each state; engagement, involvement, and immersion, causes them to desire to continue playing the current game. I did not include game functionality, controls, attention, and focus to the model, as they are equally important for all aspects of continuation desire. If the player breaks their engagement at any point, the level of involvement and immersion immediately returns to null. Consider Figure 14: Continuation Desire Model as a decent into continuation desire levels. At the first level there is *Engagement.* Engagement is split into two parts, being motivated and being engaged. If the players motivation is high enough they will have reason to become engaged, from here they can become involved. However, involvement comes in two distinct ways; competitive involvement, and narrative involvement. It is possible to be involved in both ways; however, one will always be more dominate than the other, if the player gets narrative involved they have cause to be immersed. Immersion comes through identification or empathy for the avatar, therefore immersion is always a product of narrative involvement. It should also be noted that motivation and even continuation desire can be result of boredom – however, this is not taken into consideration in this paper as escaping from boredom, or not being able to cope with real life situations is a completely other project to begin with. People who are bored often seek some activity to avoid being bored for a prolonged state; one of such an activity can easily be playing a computer game.

2.1.4. Literature Review Dataset

Having stated that engagement, involvement and immersion is all part of an overall term; continuation desire, I seek to challenge these findings and interpretations of my current data with existing literature on the subject. My intension with this study is to find a genre specific model for continuation desire; this has already been considered to some extend by Boyle and colleagues:

> *"Future research should aim to develop this in conjunction with a better understanding of player preferences for different kinds of games."*
>
> (Boyle, Connolly, Hainey, & Boyle, 2012)

They made a rather extensive literature review of engagement studies, based on different searching methods; however, the conclusion is rather vague. They made a review spanning over ten years of research papers, and concluded that engagement was to multi-factorial to draw a direct conclusion of the concept. However, they do believe they touched most of what engagement can be about, such as enjoyment, affect, and reward. However, they stated that to get a specific grasps of engagement one should look into specific game types. The concept of continuation desire is also introduced by Schønau-Fog (Schønau-Fog, 2012) (Schønau-Fog, 2011):

> *"The desire to continue could be argued to a prerequisite for any engaging interactive experience, and the determination, tenacity, persistence and perseverance to continue experienced by an engaged player may thus be the fundamental drivers for player engagement."*
>
> (Schønau-Fog, Hooked! Player engagement in Digital Games as Driver in Interactive Storytelling, Learning Scenarios and Teaching, 2012)

His theory of engagement is split up into *Activities, Objectives, Affect,* and *Achievement*. The essence in his theory is quite simple; Objectives can be *intrinsic* or *extrinsic* that would be self-determined goals/objectives or game defined goals/objectives. Whatever the cause for an objective it initiates an activity. An activity is what you do in order to solve the objective, such as solving problems, exploration, creation, or destruction etc. Once the activity has been done (correctly) the player accomplishes the objective, this means the player either complete something, progress, or achieve something. Through accomplishment the player will experience some kind of affect; be that positive, negative, or absorption. Note that it is possible for activities to trigger an affect as well. When the affect has been experienced the player is ready for a new objective, thus a circle for continuation desire has been established. At the activity level we see similarities in my own framework, such as *experiencing story, experiencing characters, socializing* and *exploration*, remember that activities can cause an affect; this affect is what I claim to be involvement which is due to some activity or event in the game. In general I do not discard the concept of continuation desire, but simple expand the term by adding that involvement and immersion belongs to the overall continuation desire as well. The six forms of involvement described by Calleja who describes narrative and affective involvement which resembles my own general description of involvement (Calleja, 2007). The six forms of involvement, according to Calleja (Calleja, 2007) are *Tactical-, Spatial-, Affective-, Narrative-, Shared-,* and *Performative-Involvement.* In unison these six involvement forms defines Calleja's *Incorporation* the term that he uses to replace the traditional phenomena of immersion.

"This state of deep involvement results in shortening or disappearance of distance between player and game environment. When this shortening of distance occurs, however momentarily, players may interpret the actions of their of their avatars as being their own actions in the game world"

(Calleja, 2007)

This means the player can directly identify with the game avatar and get the sense of transportation or projection into the game world. This shortening of distance between player and game environment can be observed when the player are deeply involved in various ways, such as spatial involvement where the player makes complex movement patterns and combinations, such as traversing narrow catwalks while aiming a weapon at their opponent at the same time, without given any noticeable thought of their controls. Affective, Spatial, Narrative, and Perfomative-Involvement combined states the essence in my definition of involvement so far. Recall that I claim that we can get narratively involved if we start to relate with the game character, thus entering Calleja's affective involvement. At the same time performative and spatial involvement correlate with my notions of competitive involvement as this is when the player's performance and competitive skills spawns an affective state.

Emotional engagement (Busselle & Bilandzic, 2009), which has similarities with affective involvement and narrative involvement (Calleja, 2007) also has similar properties to my notions of engagement and the bridge to involvement. Busselle and colleagues (Busselle & Bilandzic, 2009) states that players can be emotionally engaged in a video game through the games avatars. They talk about three kinds of emotional engagement; empathy, sympathy, and identification. Strictly speaking their views on engagement is in my view a compact way of looking on continuation desire, as I would argue they enter the realm of immersion as well. This emotional engagement, or involvement is also reflected by Nah and colleagues (Nah, Zhou, Boey, & Li, 2012) who found the following feelings, relaxing, enjoying, satisfied, interesting, task completion, excited, happy, frustrating, and tiring, as result of engagement. They also found what they

label as a cognitive aspect of engagement to be immersion, which correlates with the general idea that immersion is achieved through a high level of engagement, and that immersion can be labelled as a continuation desire (Nah, Zhou, Boey, & Li, 2012). Through engagement is what *hooks* the player and keeps them playing (Chapman, 1999), from there it is possible to become immersed or engrossed (Brown & Cairns, 2004) according to Brown & Cairns this is a matter of emotional involvement granted by the game construct. Furthermore, Brown & Cairns claims that immersion is a higher level order of engagement, thus again more scientists confirm that engagement and immersion belongs in the same realm, which I now – as well as Schønau (Schønau-Fog, Hooked! Player engagement in Digital Games as Driver in Interactive Storytelling, Learning Scenarios and Teaching, 2012) calls continuation desire.

Some argue that immersion is a matter of narrative involvement and attachment in the game, others claim that immersion is based a matter of technological submergence (Slater, Linakis, Usoh, & Kooper, 1996). Basically Slater and colleagues states that technical immersion is a matter of how many senses are affected by the technology of the game, as an example a virtual reality installation would be more immersive than an ordinary PC game. It is difficult to narrow down a tendency of what causes immersion other than either technological submergence of the senses or by being involved narratively in the game, however most agree that engagement is what causes us to continue playing a game, and the state of immersion is the feeling of being there, and to some extent substituting the real world with the artificial one provided. There are also thoughts of immersion causing the sense of presence (McMahan, 2003), however, that goes beyond the scope of this study.

I can see several similarities to my findings and the mentioned reviewed literature, however, as stated earlier in this report scholars have a strong tendency to neglect others research within the field of engagement and immersion, thus resulting in a long list of intersecting theories that differs a lot in goal and perspective. Another aspect of engagement, which I have neglected so far, is *Flow* (Csikszentmihalyi, 2002). A player reaches the state of flow when there is a match between skill and challenge; this is verified by Poels and colleagues in their investigation of gaming experience (Poels, de Kort, & Ijsselsteijn, 2007). They had several focus group participants whom stated that they lost track of time and surroundings when they felt challenged, yet able to complete. This is surely a missing part of my description of continuation desire so far, as well as the range and diversity of different forms of involvement. However, I still believe that in general terms both engagement and immersion can be labelled as a continuation desire; however the model needs to be extended. Extension of the model should include flow and an extension of the attributes of engagement and immersion.

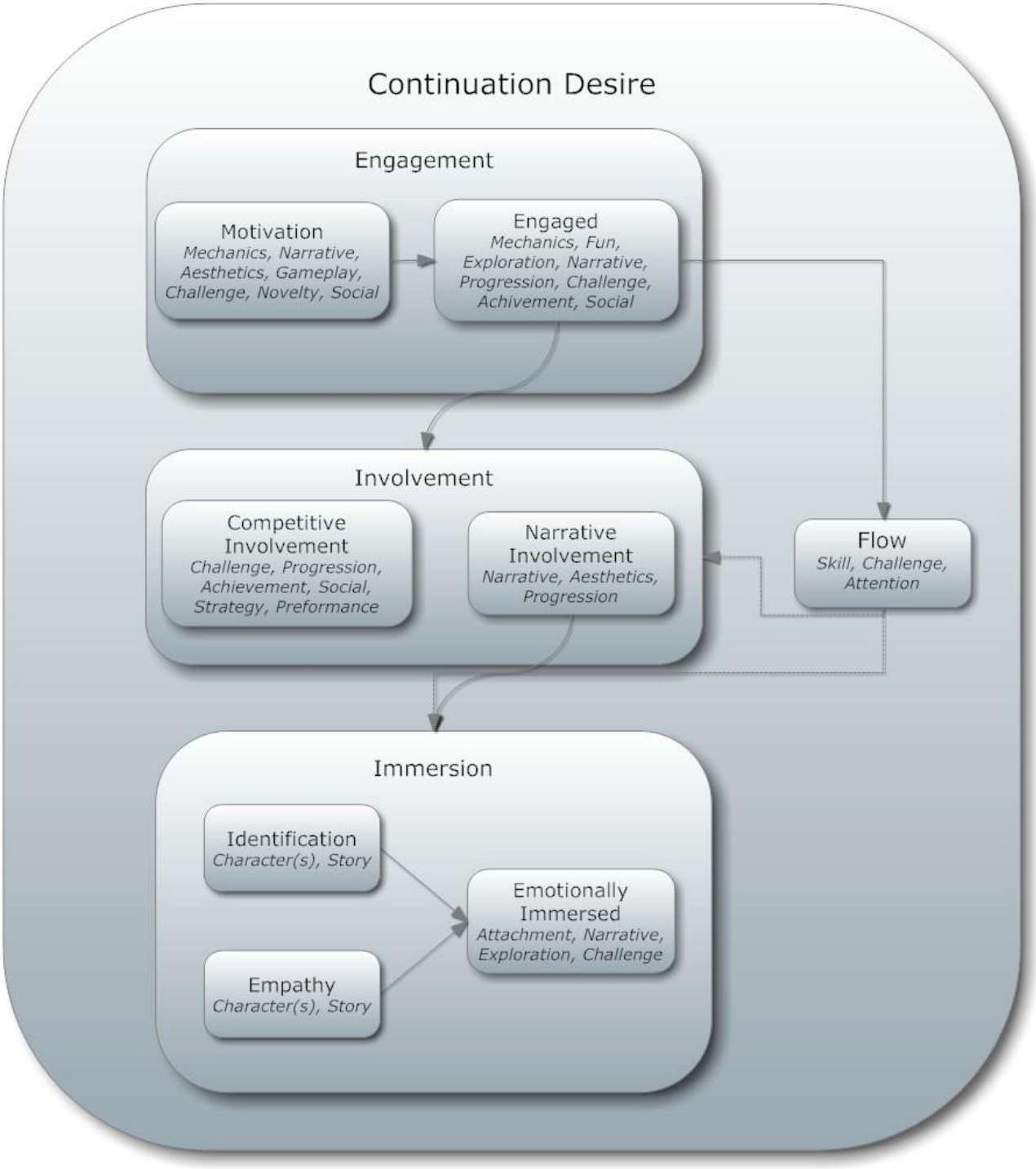

Figure 15: Final Continuation Desire Model for General Games

Figure 15: Final Continuation Desire Model for General Games shows the combined model for continuation desire. There is no doubt that this model could be taken even further, and there are several layers under some of these aspects, such as achievement could be divided into Schønau-Fog's (Schønau-Fog, Hooked! Player engagement in Digital Games as Driver in Interactive Storytelling, Learning Scenarios and Teaching, 2012)aspect of accomplishment (Achievement, Progression, and Completion), however, as a general overview for the fundament of this report this model is deemed sufficient to state a final problem

statement for the project. I have renamed immersion into emotional immersion, as I considered the possibility of technological immersion as stated by Slater and colleagues, however, I will not further the investigation on the subject I simply wish not to rule the possibility out. I find that the data on technological immersion, and the borders to presence Insufficient and will therefore not pursue it any further, as it will offer little or no relevance to this study. Presence has been defined in several different ways, such as:

"… the subjective experience of being in one place or environment, even when one is physically situated in another".

(Witmer & Singer, 1998)

This refers to a total experience of "being there" where immersion is the feeling of being part of it. In essence if a player experiences presence they will act in the game as they would in real life, as they would be afraid to get hurt themselves; as an example imaging a game where the player stands on a skyscraper, and then asked to jump off the edge. A player that is in total presence would most likely hesitated as they would be afraid themselves to be actually hurt.

".. the perceptual illusion of nonmediation."

(Lombard & Ditton, 1997)

Lombard and Ditton refers to presence as when people no longer are able to distinguish between the real world and the virtual one.

"... the perceptual illusion that a mediated environment is not mediated."

(Ravaja, Saari, Salminen, Laarni, Holopainen, & Järvinen, 2004)

Ravaja and colleagues simply extended the statement from Lombard and Ditton to make it more specific, but the essence is the same. In reflect to these studies, they most often refer to large virtual reality installations, and is very focused on technology submergence (or technical immersion). This makes it hard to use when discussion ordinary PC and Console games that does not allow the same level of technology, and thus sense of presence.

2.2. Final Problem Statement

As the goal for this project is not to draw yet another universal model of engagement and immersion, but rather to make a specific set of guidelines for horror games, then I will spend my analysis investigating how the horror genre differs from the general games, and how designers can benefit from this knowledge. I have concluded so far that engagement and immersion can be labelled under continuation desire and that narratively involvement is the leading factor in emotional immersion. It is my belief that the model for continuation desire that I have created can be applied to conventional games at a universal level, however, for designing specific games it may not be adequate. More specific considered models are required for this, for this project I will pursue a model for survival-horror games. My final problem state thus is as follows:

How does the continuation desire in survival-horror games differ from that of other general genres, and how can this knowledge benefit game designers?

3. Analysis

Now that I have a general model for continuation desire which function as a foundation, I will start working on a specific model for survival-horror games. Again I will triangulate my research methods, so that I have several datasets to work with and correlate between. First I will make an analysis and combined literature review of survival-horror games and the uncanny. Essentially there is not much research in the uncanny or specifically on horror, so I will rely more on my own analytic powers to find tendencies in horror game design. The second dataset will be another round of focus group interviews, much similar to the first collection of focus groups, however this time I will focus it on horror games instead of games in general. The last dataset will be an electronic questionnaire which should yield quantitative data on the subject. By using these three datasets and Figure 15: Final Continuation Desire Model for General Games as a basis, I should be able to generate a model for continuation desire within survival-horror games.

3.1. Survival-Horror Game Analysis

In order to generate a design framework for survival-horror games it is important to see how these games function. I will seek for tendencies found in survival-horror games so I can better my understanding of the genre, and locate weak and strong points in the general designs, and ways to improve on these. One of the first things that come to mind is the use of the uncanny valley in horror games, compared to other game genres (Grimshaw, 2009) (Grimshaw & Tinwell, 2009) (Kirkland, 2009). The uncanny valley was introduced in the field of robotics, and refers to when a humanoid robot seems familiar, however at the same time something is unfamiliar in the movements, facial expression, emotional display, voice, or in any other way. Whenever something seems amiss, that induces some kind of uneasiness; we refer to it as being uncanny (Mori, 2005). Even though this was originally indented as a term to be used within robotics, it has quickly spread to the field of computer studies as well. As horror does not require the use of the uncanny valley in order to induce fear, it can greatly help, as the sense of uneasiness is one step in the right direction when wanting to scare people. Also we often see this in the monster designs of the *Silent Hill* series which are famous for the abominations roaming the game.

Figure 16: Silent Hill Nurse

One of their most notable would be the nurses of *Silent Hill,* see Figure 16: Silent Hill Nurse. No doubt that these nurses are humanoids, however zombified, the visual look of deformity and mutilation, and the stiff and strange movement pattern, that are nigh humanly impossible, however plausible, and the strange sounds produced when they move, is an excellent recipe of the uncanny. The use of high pitched and de-familiarised sounds for their movement only confirms Grimshaws work (Grimshaw, 2009). Also as Kirkland argues; the architecture of games like *Clive Barker's: Undying* shows an uncanny display of a great mansion turned into a maze, making the mansion seem like an ordinary set of architecture but without the doubt that something is amiss, as no one would ever design a house in such a manner. As Grimshaw also points out, the use of warning or alarm systems increases the uncanny (Grimshaw, 2009). If we hear a sound that we already relate to something dangerous, it will induce uneasiness in us; however, it can be argued whether this alone can be categories as uncanny. As an example a lions roar might sound scary out in the savannah however, there is nothing uncanny about the experience, however if the sound was distorted in such a way that we no longer could be sure if it was a lion, it is a completely other story. However, distorting sounds, movement and visuals should not be done completely carelessly as it also borders to comedy, such as the film *Kung Pow: Enter the Fist*[8].

Another general characteristic of horror games is the deep use of narrative. Often we see first person games like the *Call of Duty* series or *Painkiller* that focus on the action on the game, to generate a thrilling exciting experience. However, the power of narrative use is often neglected in these kinds of games. With horror games we rarely see a vague plot, or story. Furthermore, many horror games tend to rely on some kind of inner conflict with the protagonist, where action games often rely on external threats, threating to destroy the world or a civilization. This inner conflict that exists in horror games is often projected as the arch enemy, such as *Condemned: Criminal Origins* where the protagonist is directly tied to the disturbances of the main plot. Also, the narrative is often more apparent in horror games.

Horror games can be divided into several sub-genres, such as adventure-horror, action-horror, and survival horror (more may be present, but I will focus on Survival-Horror). Survival-horror I define as games that follow the standard horror conventions, from other horror games and horror films, while at the same time making it impossible or extremely difficult to overcome your enemies. This we see in games such as the *Penumbra* series, where the combat system is a slow and difficult process, with small chance of success. In *Amnesia: The Dark Decent* and *Silent Hill: Shattered Memories* there is no combat system at all in the core gameplay; everytime an enemy is present the player has to escape or hide or in other ways avoid a direct confrontation. This correlates directly to the emotion fear, and it can be assumed that this design choice enhances the sense of fear in the game. Fear is a negative basic emotion, as defined by Ekman (Ekman, Handbook of Cognition and Emotion - ISBN: 9780470842218, 1999) Chapter 3. This emotion is a stress reaction to an internal or external stimulus; essentially fear is a result of something perceived as a potential danger or threat, that one feel they are unable to overcome. In action horror games, where the player has a fair chance of defeating their opponent, one can argue that they have less to fear than from an opponent in a survival horror game were they have no chance of victory. The survival aspect is something we rarely see in other game genres, and when we see it, it is most often for small portions of the entire game. The difficulty or lack of combat system is clearly what defines a survival game, and the use of this aspect can be assumed to enhance the sense of fear in games.

[8] 2002, directed by Steve Oedekerk

Survival horror games also tend to have a rich and perceivable open sandbox style of architecture. I assume that in order to compensate for the lack of heavy action these games tend to rely on letting the player explore and interact with a lot of different elements in the game. These elements are often puzzles that let the player progress through the levels, as in the *Resident Evil* and *Alone in the Dark* series. Or narrative devices such as virtual journals, emails, and books, which often generates more atmosphere in the game world.

To sum up survival horror games has a strong tendency to use the uncanny in order to induce fear in the players. This varies from enemy design, to architecture, and sound design. Another typical attribute of a survival horror game is the use of narrative, which often is focused on some kind of inner conflict that the protagonist has to face, rather than an external threat. The use of narrative devices, and puzzles are often abundant, and the use of these increases with the lack of combat systems. Exploration seems to be an essential part of the horror game design. Survival horror is defined by the absence or extreme difficulty of the combat system, often forcing the player to escape or avoid any threat faced, rather than challenging it head-on.

3.2. Surveys

For the analysis I have chosen to include two different surveys, a focus group interview, and an electronic questionnaire for quantitative and qualitative feedback.

3.2.1. Focus Group

In order to identify a continuation desire model for survival horror games, I will repeat my focus group experiment; however, I will focus this on the specific genre, rather than just games in general. The procedure will be almost identical as in 2.1.2.1 Approach, however with slight difference. Prior to the interview each participant will be required to attend a gaming session. The gaming session will be held the day before the interview, and the participants will be able to choose between *Penumbra: Black Plague, Silent Hill: Homecoming,* and *Amnesia: The Dark Decent* (preferable a game they have not yet played). They will able to play for as long as they desire; once they are done they will be asked why they chose to quit and for how long they played. The purpose of the gaming session is to ensure all the participants has a recent experience with horror games which they can use in the focus group.

For the interview the participants will undergo the following phases: Individual Task, Introduction, Discussion, and Group Task.

Individual Task: The participants are asked to note down their age, sex, how much time a week they spend on playing horror games, and what their favourite horror game is, and shorty describe why.

Introduction: The participants are asked to introduce themselves to the group and state their favourite horror game, and why that is.

Discussion: The participants will have some time to discuss their favourite games, after that I will start posing them with a list of questions that they will discuss. The questions are as follows:

- What motivates you to play a horror game?
- When playing horror games, what makes you continue?
- What makes you play a horror game extensively?

- Do you get scared while playing horror games?
- (if so, are you afraid that you will be hurt yourself, or do you fear the character in the game will be hurt?)
- What causes you to quit a horror game?
- What causes you to return to a horror game?
- What elements of a horror game do you enjoy the most?
- What elements of a horror game do you dislike the most?

Group Task: The participants are asked to make a map of continuation desire on a whiteboard. This uses the same method as the previous focus group interview. The participants may write one word at the time, the centre word is the most important for their continuation desire of horror games.

3.2.1.1. Focus Group Results

In total only a single focus group was conducted with four participants. Unfortunately I had to disregard the gaming session as it proved impossible to assemble the group two days in a row. The complete notes can be found in the appendix II Focus Group Interview for Analysis, Notes. They had an age ranging from 19-26 years. Because I was only able to gather four participants for a single interview, this dataset will be weighed slightly less compared to the other data collected. Even though there is what seems like solid information it is completely uncorrelated due to the extremely small sample, thus making it impossible to observe tendencies across participants. All of them had a hard time stating how many hours they spend on horror games per week; they tended to play a specific horror game for period of time. Once they finished or have given up on the game there could go a long time before they played another horror game, thus they did not play horror games regularly on a weekly basis.

In general the discussion evolved a lot more around immersive elements than the once we see in engagement such as challenge and novelty. As an example the participants agreed that their motivation for playing a horror game was to have a special kind of experience, overcoming their boundaries and fears.

"The motivation for playing a horror game is to become afraid(…)"

Participant #1

In the same sentence the participant even pointed out that his motivation for playing other game genres differed, thus supporting the entire project.

"(…)where in a puzzle game you challenge yourself differently, you do not overcome your fear. In a puzzle game you challenge yourself mentally"

Participant #1

This also sparked discussion whether or not fear was an indirect challenge posed by the game itself. The argument was that you have to cope with your fear in order to finish the game. If you become too scared you are likely to quit the game, and might not even try it again. However, it seems like fear, or overcoming your fear belongs much in the motivation aspect, as the discussion about fear became less dominate when I asked them about what makes them continue and what makes them play extensively.

"Being tied to the character"

Participant #2

Suddenly the conversation was dominated by the story and character. The participants repeatedly expressed that they needed to be able to either identify or feel sorry for the protagonist. They also stated that the game needed a good story to keep them hooked. Participant #1 however, did state that there were good horror games even where the story was not the leading factor, but the game mechanics and gameplay instead; at that point he referred to *Clive Barker's Undying,* which is an action horror game. Still all agreed that a good story and the ability to explore the area were of great importance to any horror game. Surprisingly none of the participant would play a horror game for several hours in a row, usually they would get bored or too scared to continue for too long. At the same time they expressed little interest in revisiting a horror game they already had completed, however, if they had not finished the game they would likely return to finish the story.

When asked if they were afraid for their own welfare or the characters there were some split answers, and contradictions within the group. First response was stated by Participant #4

"Fear is irrational, I do not fear for the character or for myself, it is just fear"

Participant #4

Later the same participant also stated that he did not get attached to the game character. However, all agreed that when they were afraid while playing a horror game, they were all also afraid of dying within the game. This indicates that they have some level of identification, through their fear. Participant #2 also expressed that uncanny events or modalities could really enhance his fear of the game.

One of the most interesting points of the discussion was when they were asked what they enjoyed the most in horror games. First off they all agreed that the auditory side of a horror game is one of the most essential for the sensation of fear. But then they started to discuss breaks in the horror of the game. Essentially they liked it when they could get some relief from the horror, and relax for a moment before resuming the intense feeling of fear.

"In horror games I enjoy to get a chance to relax between the scary parts"

Participant #2

"If you feel fear for a long time you don't feel fear anymore, you get used to it"

Participant #3

Also they all agreed that fear caused by other things that so called jump scares are preferable and enhance the entire experience. In fact most of the participants disliked jump scares the most when playing horror games, they believe them to be cheap tricks and accused them of being too obvious.

For the group task they drew the map into three dividing circles. The inner circle contained exciting, audio, and visual. The middle circle contained story, character, and adrenalin. The last circle contained testosterone, and sense of achievement.

From this I can state that the story, character, fear, challenge, and exploration are the most important factors in a horror game, based on this focus group. As excepted; these elements mentioned belongs in the involvement and immersive part of my own continuation desire framework. What is surprising is how little time the participant spend discussion what I earlier classified as engaging elements. Even though this is a very small survey by itself it still indicates that the players seek a certain experience when they pick out a horror game to play, and that they are driven by coping with their fear, and the narrative of the game (divided into story and character). Furthermore, I find it interesting that they would mention adrenalin; apparently they seek to get a rush out of the experience. Some general knowledge about fear and secretion of adrenalin and other related stress hormones could prove useful when designing horror games.

3.2.2. Questionnaire

As an addition to the focus group interviews I will use an electronic questionnaire to get some quantitative data. The purpose is to get answers from a larger sample, which can be compared to the qualitative data from the focus group. The questionnaire will be aimed at people that play horror games, and I will not discriminate on gender or occupation, as everyone is a potential gamer. The questionnaire can be seen in the appendix III Electronic Questionnaire.

3.2.2.1. Questionnaire Results

The questionnaire was shared with all students at Aalborg University and posted on, reddit.com, horror.com, frictionalgames.com, facebook.com, blackmarket.dk, and darkorbstudios.com. In total 78 people answered the questionnaire, the raw data can be viewed on the DVD in appendix LAV REF HER.

3.2.2.1.1. Demographics

In total 78 people answered the questionnaire, 65 male and 13 female.

They had an age range of 14-40 years old, on average 22, the mode is 25, and it has a standard deviation of 4,8 which means that we have a fairly large spread on the age continuum.

The playtime per week can be seen in Table 2: Playtime per week.

	Less than 2 hours	3-8 hours	9-14 hours	More than 15 hours
Number of Participants	51	23	3	1

Table 2: Playtime per week

The most common games played can be viewed in Table 3: Most commonly played games below, refer to the appendix on the DVD for the full list.

Game Title	Number of participants
Amnesia: The Dark Decent	52
Silent Hill Series	37
Resident Evil Series	32
Slender	21
Penumbra Series	20
Dead Space Series	18
F.E.A.R. Series	11
Call of Cthulhu: Dark Corners of the Earth	8

Condemned Series	8
BioShock Series	7
Fatal Frame	7
Alone in the Dark Series	6
Left 4 Dead Series	6

Table 3: Most commonly played games

3.2.2.1.2. Quantitative Results

Out of the 78 participants, 73 believed they know what a survival horror game is. However, 11 of the participants had poor, vague, or misplaced definitions of survival horror games. These were participant no. 20, 22, 25, 31, 41, 47, 49, 54, 57, 64, and 72, which can be seen on the DVD.

In Table 4: List of answers for appointed questions it can be seen how many participants selected the different options for appointed questions.

	What motivates you to play a horror game?	When playing a horror game, what makes you want to continue playing?	What makes you want to play a horror game extensively?	What do you enjoy the most in horror games?	What do you enjoy the least in horror games?
Story	71	64	62	57	1
Exploration	45	39	33	36	2
Interaction	29	16	12	17	0
Difficulty	28	15	16	12	15
Novelty	18	8	12	10	6
Game Mechanics	37	22	27	28	2
Progression	27	31	24	20	0
Sensation of Fear	64	40	49	50	11
Experience	44	30	31	32	2
Aesthetics	34	14	20	18	5
The Character(s)	35	23	20	23	3
Challenge	27	20	23	16	10
Strategy	29	13	17	12	13
Achievement	16	11	11	13	16
Reward	15	13	11	10	12
Attachment to the Game	32	25	26	19	3
Fun	31	22	17	21	10
Social Aspects	17	9	10	13	22
Gameplay	46	27	28	29	0
Others	5	6	4	6	20

Table 4: List of answers for appointed questions

The answers are represented likewise for the identification and empathy answers in Table 5: Answers from identification and empathy questions.

	Average	Mode	Standard Deviation
I am afraid I will get hurt myself, when I am playing horror games	1,858974359	1	1,15163606
I am afraid that the in-game character will be hurt, when I am playing horror games	3,115384615	3	1,270783821
I play horror games because I like being scared	3,641025641	5	1,310454599

Table 5: Answers from identification and empathy questions

At the question *"Is there a specific reason you chose to play a horror game, instead of a different game genre?"* 50 answered *Yes*, and 28 answered *No*.

3.2.2.1.3. Qualitative Results

As already stated, 73 participants stated that they know what a survival horror game, from the comments they made there are three main trends in the replies, minimal combat, vulnerability, and scavenging.

"It is a game where resources are scarce (for example bullets) so you need to stretch your supplies for as long as possible."

Participant #4

"Game with spooky environment, limited resources, often have to run away instead of facing danger head on"

Participant #16

"Horror game generally focused on gore/visceral horror, where management of limited resources is a key gameplay element. The player character is usually alone in an extremely hostile environment."

Participant #30

"A survival horror is a game where the player by the most part is helpless and contrary to other games, they have limited resources like health and ammo, in some games, the player don't have a weapon at all. What characterize a survival horror is the lack of hope and the sense that the player have landed in an impossible situation, combined with a lot of challenges and puzzles along the game, if story is a central part of the genre is arguable, since there are some really scary games out there both with and without storyline, that said, the story can be inadequate but still be a scary and interesting experience."

Participant #48

These comments are only a small sample of the entire list, but they show some of the most common trends in the answers. Besides combat, vulnerability, and scavenging for limited resources, the participants also repeatedly stated that the story of the game was important.

67 of participants stated that they experienced being scared when playing horror games. There are some obvious trends in the answers, specifically, not knowing what to except, jump scares, immersion, the fear of dying, and the atmosphere of the game (typical created by the visual and auditory aesthetics).

"The unknown, and dying... Usually, I am most afraid at the start of the game, before I've had any deaths, because then the fear of dying is more real. Once I've died and started from a checkpoint, this fear is calmed down considerably because the consequences of dying were so few."

Participant #2

"I become absorbed in the game world. When that happens the world becomes real - and so does the monsters! In a game like Amnesia the fact that you do not have any means of stopping the monster also makes it so much scarier because you are always taking on the role of a victim."

Participant #4

"Suspension of disbelief! I accept the reality of the game as being true for the sake of the experience."

Participant #13

"If it's a well made game, it'll make you feel like you're actually in the game, rather than a person playing a game. If a game has an interesting and deep story, it has a way of enveloping you and making you feel like you're actually part of it. When a game manages to pull that off, all you need is the right atmosphere and it's not too hard to get someone legitimately scared. So I guess the right atmosphere, a deep and engaging story, and a good pace to the game are what makes horror games scary."

Participant #26

"Honestly, I have no idea, It probably similar to how one gets scared while watching a horror movie, but at the same time, you're partly the one experiencing what's going on, being the one in control, one gets immersed into the experience even more."

Participant #28

"I'm not sure why, but it's the fear of dying. Even though you just get to restart the level if you die it's still very scary. I also believe the enemies (If there are any) should be pretty creepy, scary, bizarre etc. for the game to be scary."

Participant #67

The majority of the participants scored 1 on "I am afraid that I will get hurt myself, when I am playing horror games" However, the participants falls into two groups, one that is not afraid of being hurt themselves, and stating it is simply just a game.

"that it is a game."

Participant #3

"it's a game"

Participant #6

"Its a game, I am well aware that I can't get hurt."

Participant #9

"It's not real, just a game! I know that and I can shut i down when I want!"

Participant #46

However, those who did not score one tended to score 4 or 5 and their reason for this is completely different. They show a trend to get immersed in the game to such an extent that they identify themselves with the character, thus fearing for their own safety.

"As stated before I get really immersed when I play horror games."

Participant #4 (scored 5)

"On some level you identify with the character that you are playing and therefore what happens to the character may in a way affect you psychologically,"

Participant #5 (scored 4)

"If you're properly immersed, you don't feel like you're playing a game, you feel like you're part of the game. and whatever ungodly monster is running straight at you is actually there and is about to attack you in real life."

Participant #26 (scored 5)

"If the atmosphere is good, and the story is appealing, i get more engaged into the character. This makes me believe that i AM the character im playing, making me care for it just as much as i would for myself if i were to be in the situation he is; thus, making me fear getting hurt/dying."

Participant #37 (scored 4)

"That I feel the character is a sort of extension of my self."

Participant #56 (scored 4)

This really puts a gap between players; some will identify themselves with the character and thus immerse themselves to the point that they fear for their own safety, while others will not be able to identify with the game character at all. However, most of the participants that scored a 1 on the latter questions scored higher in "I am afraid that the in-game character will be hurt, when I am playing horror games". Here the answers differs more from a type of empathy to preserving the character because it is one of the challenges of the game, if the character dies you cannot complete the game.

"You dont want to die in this game, so you will make sure he survives. As long he doesn't get hit he have a better chance for surviving the game."

Participant #3

"Depends on the story and how closely connected to the character i feel"

Participant #7

"The character in-game is ME, as I am playing him/her. If he/she gets hurt, I am closer to dying. Scary!"

Participant #12

"Well it really depends. If I am really attached to the game and it has an interesting character that you control, then I try to not get hurt and play more carefully. And in the end, in most of horror games, the character can die very fast and easily if he gets hurt, thus you have to be really carefully anyway."

Participant #21

"A well designed horror game will pull you in an immerse you in what is going on, thus making you concerned for the character."

Participant #33

"In game I feel a deeper attachment to the character further into the game as I play."

Participant #40

"the goal is to survive, and complete..a character getting hurt would kinda ruin the chance of completing"

Participant #54

50 of the participants said they had a specific reason for playing horror games, compared to other genres. When reviewing their reasons there are trends that the player wants a certain kind of experience, that they cannot have in their daily live. Also the fact that they can get a kick out of the experience seems to be a factor worth considering.

"I like getting sucked into a nice story. I also enjoy finding specific gamemechanics that helps create the setting and the mood I am in."

Participant #11

"because the sensation of fear is somewhat not common in our society and playing a game that is obviously affecting you in that way can be interesting"

Participant #19

"Simply because I love getting scared."

Participant #69

"You get adrenalin kicks from being scared"

Participant #72

3.2.3. Discussion & Conclusion of Surveys

If we compare these results with the previous model of continuation desire, Figure 15: Final Continuation Desire Model for General Games, we see a number of differences in the entire model. The first thing to notice is the motivation for playing a horror game is much more specific than for games in general. For general gaming we see that it involves mechanics, narrative, aesthetics, gameplay, challenge, novelty, and social aspects; all of these weighted equally. However in horror games there is much more focus on narrative and experience. In essence people start up a horror game and will start getting hooked because they want a different experience than usual. To put it simple, they want to be scared and they desire a good story and an immersive experience. This makes it difficult to identify engaging factors in horror games, as they seem of so little importance to the player. Surely the player wants to be challenged, have fun, and progress like any other game, but these topics are weighted much less than having a great horror experience and getting attached to the game and the game characters. Therefore, it seems that the player is able to become involved in the game almost instantly. Even before the player starts the game he has prepared himself to become afraid during gameplay thus he will be able skip the engagement part of the game and jump right into being involved in the game, and very quickly get emotional response that is not just triggered by so called jump scares. Furthermore, horror games seems to be restricted in having only a narrative involvement, and not a competitive involvement, as the game is not about competing with other players or NPC's but about having a great experience. Having a high level of involvement and possible immersion seems essential for a horror game. As stated earlier the players get annoyed when a horror game does not scare them, or give them the experience they anticipated, therefore emotional attachment to the game is king. In a large sense the players want to feel like a victim, in some sense we can compare that to S/M and bondage sex were people willingly let themselves become victims for the sake of a pleasurable experience.

Similar to general games, once the player is involved they can become immersed by either identifying with the game character, and seeing the character as a part of themselves or fearing for their own safety when playing, or they can have a great deal of empathy for the character. However, this level of investment reflects more than identifying and feeling sorry for the character. The player actually goes so far in their immersion and we can start talking about self-preservation and a symbioses relationship with the character. The player either fears for their own safety, and on some level of consciousness are afraid that the game world will suddenly become a reality, even after they quit the game, or they see the character as a real person they have to care for and protect and guide through the game. In both cases, and a combination of both, the player is absorbed by the fear, narrative, character, and stress hormones released in the body. Actually quite a few people in the survey reported than getting an adrenalin kick out of the experience was a very motivating feeling that would get them to continue playing the game. Through this data, and by comparing and combining it with the previous model, and new model for continuation desire in horror games has been constructed, Figure 17: Model for Continuation Desire in Horror Games.

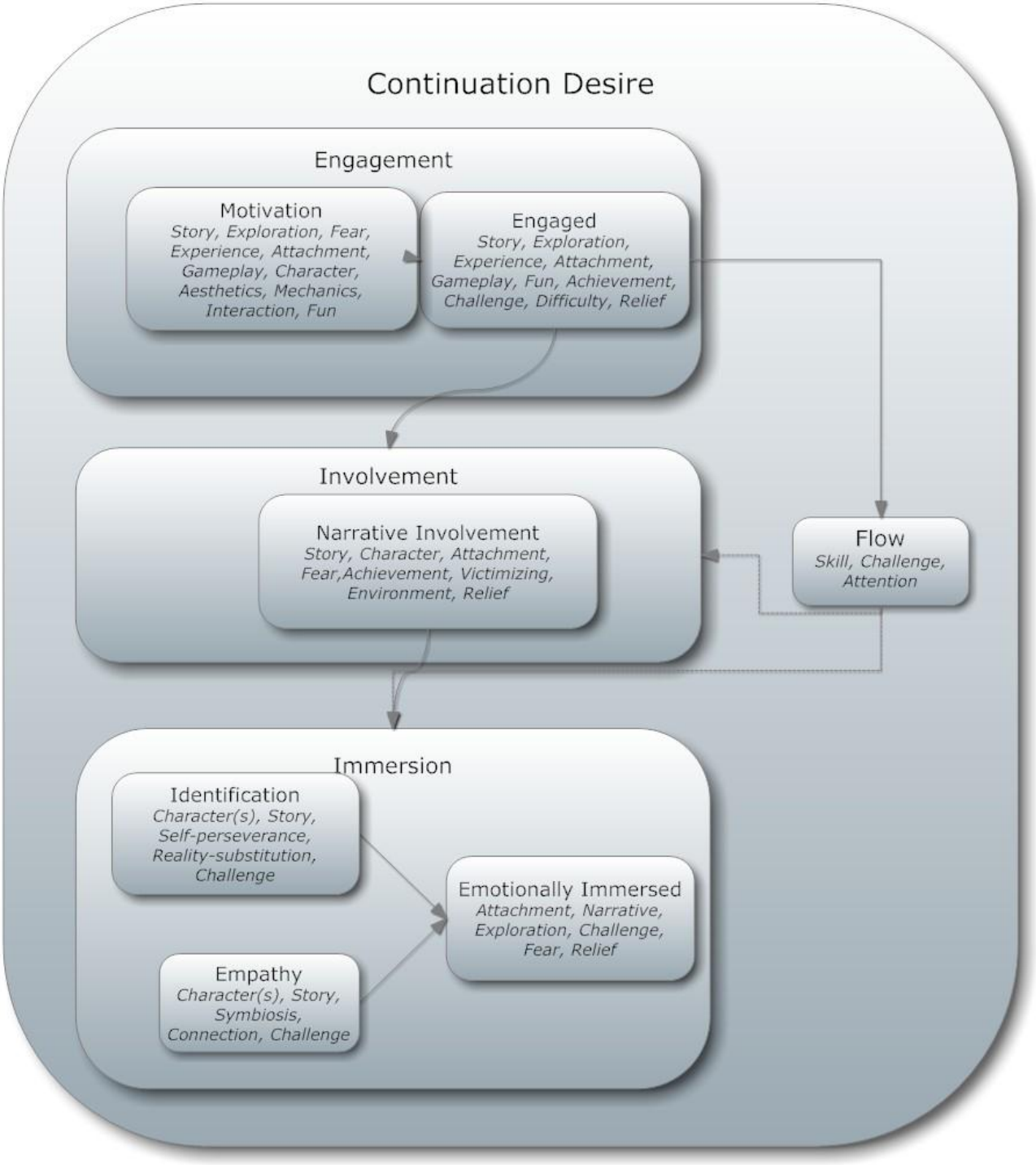

Figure 17: Model for Continuation Desire in Horror Games

3.3. Emotions & Moods

In order to understand how gamers get emotionally involved in a computer game I will take a look into emotions, and specifically fear and anxiety. Besides that I will also look into the related topic of moods, which might help explain extensive gameplay. Emotions can be defined as:

"A relative brief episode of coordinated brain, autonomic and behavioural changes that facilitate a response to an external or internal event of significance for the organism"

(Fox, 2008)

Any emotion we have is nothing more than a combination of a physiological and mental response to some internal or external stimulus. There are several different emotions, and it is quite possible all are yet to be mapped, however, Ekman pioneered by pointing out six basic emotions that can be found across species. Those six basic emotions are; Anger, Fear, Sadness, Enjoyment, Disgust, and Surprise (Ekman, 1992); note that he do object to the notion that more basic emotions exists, and a number of other emotions has also been defined.

This means for a game, that the game must have some sort of significance to the gamer. It is the developer's job to make the game meaningful and important for the gamer, and I can hypothesize that the more immersive and involving the games narrative is the greater an emotional response will the gamer experience.

As I research horror games it is only prudent to address the fact that players are motivated to play these games because they want to be afraid, and scared. However, this is more complex that just a single emotional response; in fact two comes to mind when being scared, fear and anxiety.

"Fear is irrational, I do not fear for the character or for myself, it is just fear"

Participant #4

As participant #4 stated, fear can be argued to be an irrational state of mind. Fear is a, according to Ekman, a negative emotion which is related to the expectation of failure, contrary to sadness which occurs when we experience actual failure (Ekman, 1999). To relate it to games, designers are able to induce fear in the player when making them face some threat such as a monster that the player has little or no chance of defeating. This is seen in games like *Penumbra* where the combat system is very slow and ineffective, making every enemy a real challenge to overcome, and often sneaking past the enemy seems like the better course of action. Fear can be defined as:

"the response to the threat of harm, physical or psychological. Fear activates impulses to freeze or flee. Often fear triggers anger."

(Ekman & Cordaro, 2011)

In essence fear is a response to acute stress, this response can also be called the *fight or flight* response (Reevy, Ozer, & Ito, 2010). This is the moment that the subject decides to either confront the threat or to flee from it; however, a third option has been added later called the *freeze* where a person is physically paralysed or cognitive impaired by fear (Shaver, Schwartz, Krison, & O'Conner, 2001).

Anxiety is similar to fear in almost every way, except the nature of the stimuli. Fear is triggered by some identifiable and real threat. Anxiety can occur without any immediate threat, and is therefore often referred to be future orientated (Sylvers, Lilienfeld, & Laprairie, 2010).

"Long acting future focused, broadly focused towards a diffuse threat and promoting caution while approaching a potential threat"

(Sylvers, Lilienfeld, & Laprairie, 2010)

An easy way to distinguish fear and anxiety in games is to look at games like *Amnesia: The Dark Decent*. Approximately the first 30 minutes of the game there are no enemies at all, but the player will most likely experience anxiety because the environment presents a certain sense of vulnerability. The player anticipates that there is a threat nearby and therefore experience stress. Once an enemy enters the game area there is cause for fear and that emotion will most likely take over. However, the physiological measurements for both fear and anxiety are rather similar, like increased heart rate, blood pressure, shaking, pupil dilation, unsteady heart-rate, and increased sweating (Gleitman, Fridlund, & Reisberg, 2004) (Funkenstein, 1958). This makes it difficult to distinguish between fear and anxiety, and when the player experience which. The only real indicator we have is observing when the emotion occurs, and determine if there is cause for either anxiety or fear. Still in the greater perspective it does not matter much which emotion occurs, the aim is to emotionally involve and immerse our player, and as fear and anxiety is so similar we could simply state that the player is currently in a scared mood. Moods differ from emotion as clearly stated from following definition:

"… Moods on the contrary, are not so much a reaction that is triggered by an event, but more a summary of our affective state"

(Payne, 2001)

*"a conscious state of mind or predominant emotion **:** feeling; also **: the expression of mood especially in art or literature"***

(Merriam Webster)

So in short, emotions are automatic responses to set stimuli, while moods are a collection of emotions over time, which set our current mood. Also moods last for longer periods than emotions, which have a relatively brief duration. As an example you can be in a bad mood all day, but you cannot be directly angry an entire day, as it requires a lot of tension in the body and some stimulation to respond angrily about. I hypothesised in a mini-project that there could exist an undefined gamer mood, which is the collective impressions a gamer gets when they play computer games. This gamer mood would be much the same as continuation desire.

"As I can see no direct link between the previously discussed topics of fear, joy, relief, the rush, immersion and player types I however insists that a connection is presence. This vast collection of topics leads me to the notion that there could in fact be something as a gaming mood which could answer the illusive question I asked myself for this paper. This is drawn from the statement that I used earlier that moods differ from emotions by being more of a summary of affective states. What if all these affective states I have investigated actually puts the player in a certain mood which is what drives people to approach horror."

(Nielsen, Positive emotions in horror games, 2012)

Above quote illustrates the complexity of continuation desire within horror games. Even though horror games contain good game design they still face the difficult aspect of being a horror game; a game designed to induce negative emotions and affections in the player. Forcing negative input on oneself is highly contradictive to conventional entertainment. This makes the concept of being in the mood for horror come to mind, and by defining it as a mood I avoid problems of finely defined horror game designs with little success, because it did not consider the players state of mind and general mood.

Related to experiencing fear, anxiety, or suspense, player will often experience joy and relief as well as a secondary emotional response. Fear and anxiety is often related to suspense, this is easily seen in any Hitchcock or Hitchcock inspired film which heavily depends on suspense. Suspense can be defined as:

"a noxious affective reaction that characteristically derives from respondents' acute, fearful apprehension about deplorable events that threaten liked protagonists, this apprehension being mediated by high but not complete subjective certainty about the occurrence of the anticipated deplorable event"

(Zillmann, 1996, p. 208)

Suspense can be experienced in almost every aspect of our life, we can be suspenseful when watching sports, or reading a fictional novel. We can even be so when waiting for an answer on a job application or an exam grade. However, the reason why suspense pairs so well with horror, and thus horror games; is that suspense is caused by uncertainty (Carroll, 1996) which to a large extent is related both to anxiety and fear. As the definition from Zillmann suggest, we experience suspense when we are uncertain of the outcome of a giving situation in which a liked or disliked character is present. In other words, the less likely, however still within possible limits, the chance of a positive outcome, the greater the suspense. In horror games this would be the uncertainty of what is behind the next door, or around the next corner, and how will it the players' character. Depending on the level of uncertainty, as Carroll states that the greater the uncertainty, the greater the suspense, and the level of involvement gives grant us how suspenseful and fearful a given scene in a game will be. Suspense often leads to relief which in some sense can be defined as a disconfirmation or counterfactual emotion (Madrigal, Bee, Chen, & LaBarge, 2011). According to Madrigal and colleagues enjoyment is directly correlated with the level of suspense and relief. Considering this a horror game should aim for a high level of suspense, thus the enjoyment of the game will increase as well, and by allowing the players a brief episode of respite, or relief, we can avoid autonomous play which was addressed in 3.2.1.1 Focus Group Results.

From this section we can deduce that game designers should strive after generating anxiety, fear, suspense, and relief in order to create an emotionally involving horror game.

Anxiety is an irrational emotional response, which is triggered without any identifiable threat. It is future-temporal and focuses on the chance of a potential threat. Anxiety is an important element in horror games as it can be used to keep the player on edge constantly, and if used properly the game can scare the player even when there are no monsters or other threats imminent. It can be assumed that anxiety in horror games comes from the level design and audio-visual feel of the game. This brings embedded narratives to mind.

Fear is contrary to anxiety as it is a rational emotional response which is triggered by some imminent threat, where the victim feels that their current resources are inadequate to deal with the threat. Fear can be used by introducing some threat, typical a monster that wants to kill the player. The less likely it is that the player can conquer the assailant the greater the fear of the monster. Fear can easily be induced in the player by limiting their combat capabilities.

Suspense is more an affective state than an actual emotion. Suspense is a result of expectation of a certain outcome. The less likely a positive outcome, the more powerful the suspense. Through anxiety and fear suspense can be generated, and the more reason the player has to become uncertain of what lurks in the game world the more reason they have to become suspenseful.

Relief is a result of expectation versus outcome. This can come from being suspenseful or fearful and experiencing a positive outcome, such as overcoming the imminent threat or escaping. Relief is important to reward the player and give them a respite from the horror in the game. Constant horror can lead to an autonomous gameplay which will become stale and boring, resulting in a less immersive and affective experience.

3.3.1. Stress Hormones

When we experience acute stress, such as fear and anxiety, we secrete three different hormones; adrenaline, noradrenaline, and cortisol (Fakta om stress, 2009) (NFA: Projecter: Arbejde, Stress og Kroppen: Hvordan måles stress? Hvad er kortisol?, 2009) (Natasha Selberg, 2012) (Stress Hormones, 2011) (Jakob, 2012). The main function of these hormones is to enhance our cardio performance and prevent cognitive impairment. This means that we will perform better if it comes to fighting for our life or running from some imminent threat.

Adrenaline and noradrenaline is hard to distinguish between as they have much the same effect, and adrenaline is secreted in a much bigger quantity than noradrenaline (Natasha Selberg, 2012), and for this reason I will only focus on adrenaline. When adrenaline is secreted from the adrenal glands we will experience that the level of blood sugar will increase, glucoses will be more easily broken-down, fat from various fat depots will start to breakdown, blood pressure and heart rate will increase, oxygen in the bloodstream will increase, sweat will be secreted, and the digestive system will shut down (Natasha Selberg, 2012) (Fakta om stress, 2009). All in all this means that we will have more energy transferred to our muscles making us physically more capable than normal, and there will be transferred more oxygen and energy to the brain as well, making us able to better think and avoid cognitive impairment. When the heart rate and blood pressure increase we can feel it directly on our own body, this is often referred to as an adrenaline rush/kick, which has been mentioned previously in several focus group interviews and questionnaire comments.

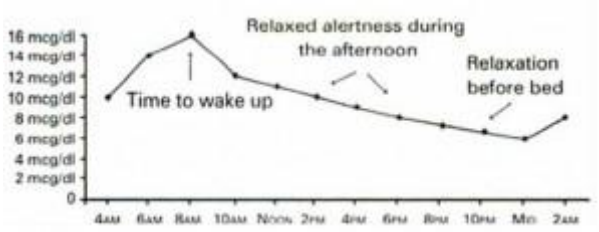

Figure 18: Graph of cortisol levels during the day

Cortisol is secreted constantly in small quantities during the day, as it can be seen in Figure 18: Graph of cortisol levels during the day, which shows the average cortisol level of an ordinary person. It helps regulate our sleep patterns but is secreted in larger quantities when we experience long term or acute stress (Fakta om stress, 2009) (Jakob, 2012) (Natasha Selberg, 2012) (Stress Hormones, 2011) (NFA: Projecter: Arbejde, Stress og Kroppen: Hvordan måles stress? Hvad er kortisol?, 2009). Cortisol can be related to anxiety as it can be secreted when there is no identifiable source as stressor (Fakta om stress, 2009). Cortisol got the unique trait that it makes you indifferent to the given situation, especially when exposed for longer periods (Fakta om stress, 2009) one can assume that this help the subject cope with the sensation of fear or anxiety. Cortisol helps regulate how much glucoses shall be broken-down and obtained in the body. This means like adrenaline cortisol helps transferring oxygen and energy to the muscles and brain. However, cortisol does also breakdown muscle tissue over longer periods.

This seems extremely important for our continuation desire in horror games. Stress hormones reward the player by giving them a rush, in terms of increased heart rate and blood pressure, and they will be more capable on a cognitive level. I assume that a person who plays a horror game has a constant higher level of cortisol than they would without the experience; and at times both cortisol and adrenaline levels will spike on certain in-game life threating situations in the game. It seems sensible to assume that these hormones indirectly causes the player to continue even though they may be terrified of the game, because they get a great sensational experience from the game. At the same time measuring cortisol and adrenaline levels in a test participant may be a way to estimate how deeply involved or immersed the participant is, as it requires some emotional response to secrete the hormones.

3.4. Final Model for Continuation Desire in Horror Games

Included the knowledge of emotions and stress hormones, a final model of continuation desire in horror games has been made, Figure 19: Final Model of Continuation Desire for Horror Games.

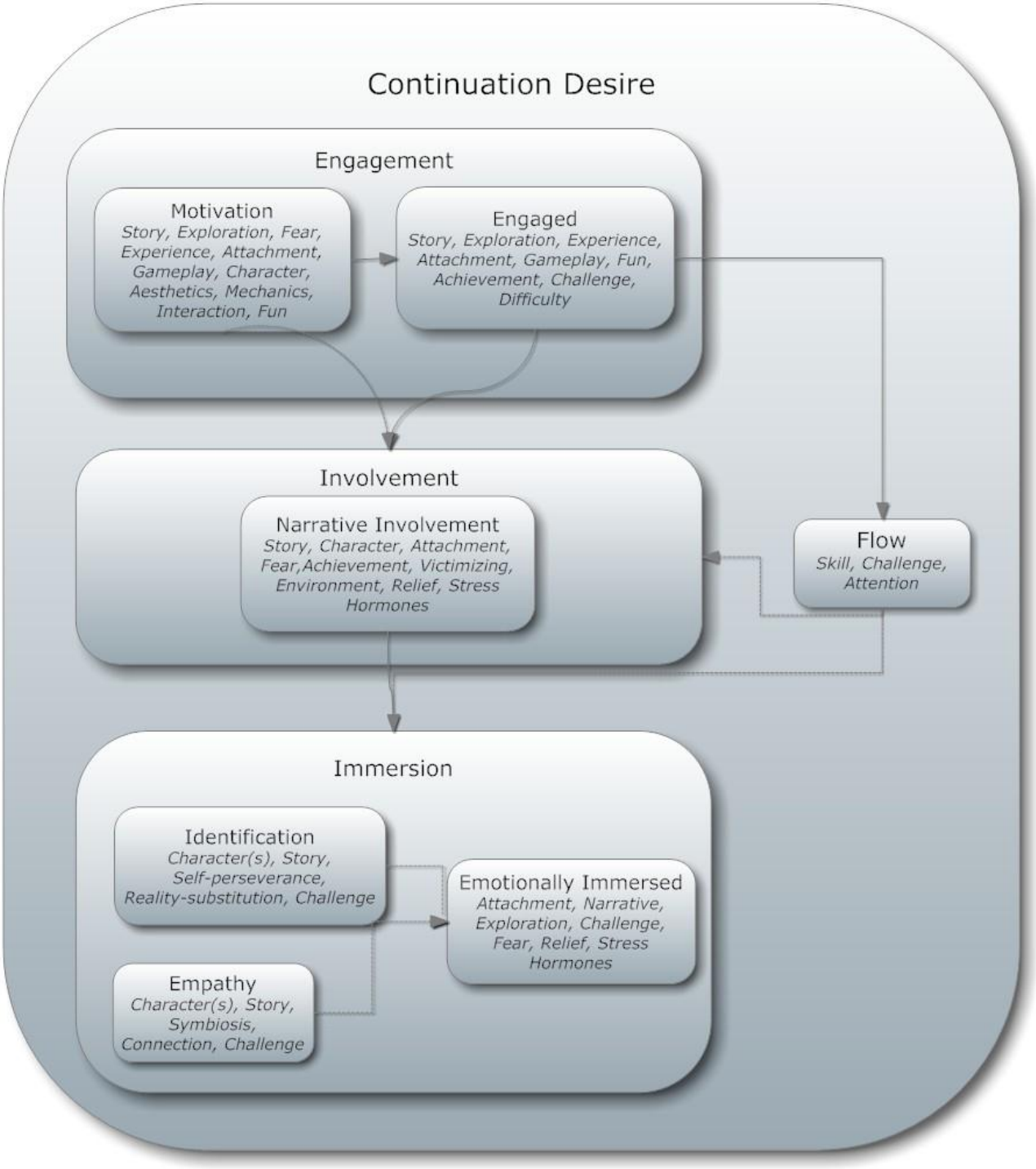

Figure 19: Final Model of Continuation Desire for Horror Games

3.5. Success Criteria

The goal with this project is to figure out how to design a good horror game, in order to that I will simplify my model for continuation desire, Figure 19: Final Model of Continuation Desire for Horror Games, to a few elements that the designer is able to directly pinpoint and tweak for a desired outcome.

Horror games are all about having a great experience, an interesting narrative, and of course it has to terrify the player. The ultimate horror game is an extremely immersive game experience; however, before we can go so far we need the player to go through the entire model of continuation desire, though we might be able to skip being *engaged*.

3.5.1. Motivation

I have defined motivation as:

"A relative brief process of evaluation of the overall first impression of the game"

However, motivation starts even before the player starts the game. Motivation starts with some expectations for a certain experience provided by the game, in case of horror people expects to be horrified and to get a very different experience than they can get in their daily life, such as being a victim in a hopeless situation. To get the player motivated we have to meet their expectations, or at least make a promise that we will not disappoint. Aside from that we must make sure the game is functional, both interface and core game design has to implement seamlessly, and if new controls or mechanics are used they must be easy to understand and use.

3.5.2. Engaged

I have defined engagement as:

"non-affective state where the constantly player pursue new intrinsic and/or extrinsic goals."

In order to engage the player we have to focus on much the same things, with little difference. Adding challenge and achievement as major elements of being engaged; letting the player achieve and strife for constantly new intrinsic and extrinsic goals. The key component in engagement is having goals the player can pursue, and give the player a sense of accomplishment.

3.5.3. Involvement

I have defined involvement as:

"An affective state where the players emotions are directly affected by the game experience"

All horror games should strive for being involving if not immersive. To get players involved we need to cause the players to invest emotions. In horror games this can be done easily by scaring the player, thus, directly creating attachment to the game character. Scaring the player creates attachment to the game and/or its characters. Emotional responses in horror games often come from embedded narratives (Anxiety) and confrontations with enemies (Fear) or the sense of safety which results in relief.

3.5.4. Immersion

I have defined immersion as:

"An affective state where the player accepts the virtual reality and identify and/or emphasizes with game character(s)"

In horror games immersion is king. Having people accept the virtual world, and directly identify or completely emphasize with the game character will only enhance the experience that the player was seeking in their motivation. This can be done by a deep and well-constructed narrative, with narrative

devices[9] that fits seamlessly into the game environment. Other than that, a constant increased level of stress hormones and the sense of being able to explore and being challenged can lead to immersion, however, I believe that no immersion can be achieved without a well-constructed narrative which allows the player to attach themselves to the character.

3.5.5. Continuation Desire

Continuation Desire is difficult to pinpoint as single factor of continuation desire, as it is a large term which includes several sub-terms. Each state of continuation desire differs; however, some aspects, such as narrative and challenge, follow through all the way from motivation to emotional immersion. In engagement the continuation desire belongs in objectives; be those intrinsic or extrinsic. In involvement the sensational impressions of emotional response, and physiology drives the player, as they strife for being scared and coping with their fear. One could once again view this challenge to be an intrinsic objective, such as described by Schønau-Fog. In immersion the player no longer care much for extrinsic objectives, and to a large extend the continuation desire belongs with exploring the environment to get a deeper understanding of the narrative, as well as having the sense of living in symbioses or self-preservation, the player no longer thinks of the game as a game, but as previously stated simply just play.

What we can see is that all stages of continuation desire the desire to achieve objectives remains, only the nature of the objectives seems to changes, and the reward granted by achieving them.

3.5.6. Success Criteria

To involve all the terms of continuation desire in horror games I would claim we could design for a certain mood. As stated earlier moods is a result of our affective states. This means that several impressions, events, and emotions, forms our mood. It is the game designer's sole job to grant the player an experience, and keep them in the mood for gaming, this can be compared to the mood to party, watch a film, or go to a concert. We only do these things as long as we are in the mood for the certain event. One could argue that the player will already be in the mood to play horror games prior to the actual game starts, otherwise, why would they ever have opened the game? So what we have to focus on is retaining the mood to play the game. By defining the continuation desire as a pursuit for a mood we can simplify the entire concept into key elements that needs fulfilment in order to retain the continuation desire. Basically we need to keep the player in a mood to be scared.

The game has to be scary; the player seeks a scary experience, and therefore we need to apply intelligent use of horror in the game. This can be done I several ways which has already been addressed throughout this report.

3.5.6.1. Narrative

A deep narrative that allows the player to invest emotions into the character and the storyline can deepen the horror portrayed by the game. The player should be able to connect the character due to the nature of the persona or the events that surrounds the character. The use of doubt in the sanity of the character and uncertainty of the oncoming events relates directly to anxiety and can induce such emotions in the player. Furthermore, direct confrontations with enemies or direct threats can induce fear, however, the main focus of any horror game to avoid the game being too scary should be anxiety through embedded narratives and

[9] Narrative Devices are every element in the game which is used to tell the story or reveal the plot, such as virtual emails and books or cinematic and conversations.

uncanny architecture in the level design. The story itself should be uncanny in nature however plausible to allow the player to reflect if the game presents a reliable story that might actually happen in the real world. This way I deem it easier to involve and immerse the player, as identification with the game character might come more natural than in an unacceptable storyline. The narrative should be deep and the player should have sufficient freedom to spend time to investigate the narrative if they so desire.

3.5.6.2. Freedom

The player needs a deep sense of freedom as the absence of action needs to be filled out with other meaningful content; else the game would most likely feel empty and vague. The player needs the freedom to explore the game world and the narrative. The game world should not necessarily be an open spaced sandbox, but the player should have the possibility to choose which area they want to explore. This can be done by separating levels into smaller subareas, each subarea holding game elements such as keys or notes that allow the player to eventually progress to the next level. This way we contain the player in a specific level but grant them the freedom to explore the level in their own pace. Furthermore, the narrative should be subject to exploration. Narrative devices should be integrated seamlessly into the game, like *Clive Barker's: Undying* where the gift of a second sight grants the protagonist hidden story elements in the architecture. By allowing the player to choose whether or not to investigate the narrative we achieve two things; first we target more player types. Not all players have the desire to read long text paragraphs and would rather spend their time progressing in the game. Secondly we achieve in increasing game time for immersionist players, who spend a lot of time reading and investigating narrative devices.

3.5.6.3. Victimizing

In order to achieve the greatest sense of fear and anxiety the player should feel like a victim rather than a contender. This can be done by removing or greatly limiting the combat ability from the player, and/or unbalancing the change of defeating an enemy in direct confrontation. If the player has the feeling that they do not have a fair chance of winning there is a great change that fear will be triggered, and if the player has this knowledge a constant sense of anxiety might exists.

4. Final Test Method

The final test needs to reflect upon my findings in my previous research in the pre-analysis and analysis. In my success criteria I found that to create a successful horror game the game should include *Narrative*, *Freedom*, and *Victimizing*, for further details see 3.5.6 Success Criteria. Intelligent use of these three terms should provide a strong continuation desire, starting from motivating the player to immersing them either by identification or empathy.

However, testing the effect of a design framework is a difficult thing to grasp. First thing that comes to mind is to establish several designs based on the framework, then somehow measure the level of continuation within each design to see if it is at a high enough level to be significant compared to designs that is not based on the same framework. However, designing and implementing several games is a time consuming process which steals focus from the academic work in this project. Therefore, I have decided to design a single prototype game, consisting of a single level divided into several areas, which is based on the design framework. In order to test the validity of the framework I will attempt to design the prototype in such a way it is possible to isolate each topic *(Narrative, Exploration, Victimizing)* in such a way it is possible to exclude a topic in the otherwise same design.

By doing so I will have five versions of the same prototype, the difference in the versions can be seen in Table 6: Relationship between prototype versions A-E and Success Criteria.

	Version A	Version B	Version C	Version C	Version E
Narrative	X		X	X	
Exploration	X	X	X		
Victimizing	X	X		X	

Table 6: Relationship between prototype versions A-E and Success Criteria

Full details of the prototype can be found in 0 The participant will be introduced to the nature of the project, and informed that they will play a horror game which they are to complete. They will also be told that blood pressure, pulse, and heart rate variability will be measured during the experience.

Once they have been briefed they will be seated in a chair to relax for 5 minutes. After that the first bio-measurement will be taken. Then they will be asked to commence playing the game. In the game there will be placed computers at key checkpoints of the level. Each computer is required to be used to proceed. When the player interacts with a computer the intrusion method is being used to check for engagement. Furthermore, they will pose questions about their emotional state as well to check for involvement and immersion.

After they are done playing they will be asked to fill out a questionnaire and a last bio-measurement will be taken five minutes after the game experience. The test is expected to take about 30 minutes per participant.

4.1. Questionnaire and Intrusion Questions

The prototype game level will include computers used for the intrusion method. When a player interacts with a computer they will be posed with the question “Would you like to continue?” If they answer ‘No’ the

game will stop and the test will end, if they answer 'Yes' the game will continue and the computer will list a set of new questions which can be seen below:

- Briefly describe why you would like to continue? (cues are encouraged)
- How much do you agree to the following statements:
  - I feel I have a goal in need to accomplish – 1-7.
  - I am excited about the story and want to know more – 1-7.
  - I want to explore the game – 1-7.
  - I am attached to the character and want him to succeed – 1-7.
  - I enjoy feeling like a victim – 1-7.

Each computer will have the same list of questions. After the game has been completed I will ask the participant to fill out the following questionnaire:

4.1.1. Final Test Questionnaire

Final Test Questionnaire

Please answer all questions to the best of your ability and as truthful as possible.

* Required

Version *

Filled in by moderator

Age *

Gender *

How much time do you spend playing video games per week? *

- Less than 3 hours
- 3-8 hours
- 9-15 hours
- More than 15 hours

What is your preferred game genres?
Please mark all relevant

- ☐ Action
- ☐ RPG
- ☐ RTS
- ☐ Horror
- ☐ FPS
- ☐ Racing
- ☐ Sports
- ☐ Puzzles
- ☐ Others

Do you/Are you?
Please mark all relevant

- ☐ Smoke
- ☐ Take prescriptive medicin
- ☐ Work out
- ☐ Do sports
- ☐ Currently sick
- ☐ Other

Please Elaborate
What do you smoke and how much, what sports do you attend and how often, which medication are you on, what illness do you suffer?

Did you finish the game? *

What do you smoke and how much, what sports do you attend and how often, which medication are you on, what illness do you suffer?

- ○ Yes
- ○ No

Why/Why not? *
Why did, or did you not finish the game?

How much did you enjoy the overall experience? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I want to play it again,.	○	○	○	○	○	○	○	I want to play it again

How much would you like to play the game again? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I really want to play it again,.	○	○	○	○	○	○	○	I really want to play it again

Why/Why not would like to play the game again? *

Elaborate your previous statement

How scared where you during the game? *

1	2	3	4	5	6	7

Not at all

Select a value from a range of 1,Not at all, to 7,I wanted to quit,.

I wanted to quit

Why were you/why were you not scared during the game? *

Elaborate your previous statement

How much did you feel like a victim? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I felt completely like a victim,.								I felt completely like a victim

How much do you want to explore the environment more? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I wanted much more to explore,.								I wanted much more to explore

How much do you want to explore the story more? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I wanted much more story to explore,.								I wanted much more story to explore

I was attached to the game character *

How much do you agree with the statement?

	1	2	3	4	5	6	7	
Not at all								
Select a value from a range of 1,Not at all, to 7,I was strongly connected with him,.	○	○	○	○	○	○	○	I was strongly connected with him

I felt the character was an extension of myself *

How much do you agree with the statement?

	1	2	3	4	5	6	7	
Not at all								
Select a value from a range of 1,Not at all, to 7,The character was part of me,.	○	○	○	○	○	○	○	The character was part of me

Where there some elements of the game that you wanted more or less of?

This could be a desire for more story, weapons, enemies, etc.

Did you wish the game was longer? *

Please explain your answer in the previous questions *

Briefly describe why you chose the option you did.

Comments

What ever you would like to comment on

4.2. Equipment Test

In order to know how the blood pressure monitor behaves, and how often I can take a sample during a gaming experience without interrupting the game experience, or otherwise ruin it, I have conducted a small equipment test.
The test was quite simple. Participants were asked to play *Amnesia: The Dark Decent* for no less than 20 minutes, while wearing the blood pressure monitor. Bio-measurements were also taken before the gaming session began, as well as after it ended. During the game experience, the blood pressure monitor would be activated with a five minute interval. Test participants were asked after the test too state whether or not the equipment interfered with their game experience, and if they were indeed scared during the game experience.

In total five people participated (two female, three male), and all completed the 20 minutes playtime. The results for their bio-measurements can be seen in Table 7: Equipment Test Results.

Participant #1				**Participant #2**				**Participant #3**				**Participant #4**				**Participant #5**			
Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB
135	78	64		146	89	96		117	71	78		130	72	67		123	82	104	
132	76	65	x	139	73	90		144	85	77	x	128	81	84		133	79	89	x
116	84	62		136	73	91		118	92	93	x	125	78	83		136	79	89	x
137	80	64		123	72	89		129	62	85	x	124	73	71		135	81	89	x
130	59	67	x	131	74	90		114	80	73	x	135	79	71	X	136	90	77	x
116	72	71		127	73	90		116	101	77	x	113	74	58		131	73	79	

Table 7: Equipment Test Results

It should be noted that the measurements are biased because I did not discriminate between participants who smoked, drank coffee prior to the test, or other bio-measurement disturbing factors. However, one can observe that an increasement is present, at least from the gaming sessions to the relaxed state after the game experience, where it is almost every case is lower than the previous measurement. Furthermore, it can be observed that irregular heart beat has been detected in all but one participant. This indicates anxiety as we have seen in 0

Emotions & Moods.

All participants stated that they were scared during the test, and that they did notice when their bio-measurements were taken, but they did not deem it disturbing for their experience. Also several of the participants stated that they were much more aware of the blood pressure monitor when they were not playing the game, than when they were. Furthermore, the fact that they had a wire running down their arm while playing did not disturb their game experience either.

In conclusion I can without disturbing the participants take bio-measurements with at least a five minutes interval, and possible a shorter interval is possible as well.

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By having several versions of the same prototype I am able to make a simple yet effective comparison test between-subject test (Tullis & Albert, 2008), in the same manner I have done in a previous project (Nielsen, Kim, Hansen, & Traskinaite, 2011) where we tested the effect of psycho-acoustic properties of infra-sound. However, the problem with the final test is not to set up the test parameters, but how to measure continuation desire on a simple scale.

Continuation is in itself extremely multi-factorial as we have seen in both Figure 15: Final Continuation Desire Model for General Games and Figure 19: Final Model of Continuation Desire for Horror Games. The test has to consider engagement, involvement, and immersion in one combined test. To make the method clearly defined I will divide the method up in engagement, involvement, and immersion.

4.3. Engagement

To recap; I have defined engagement as:

"non-affective state where the constantly player pursue new intrinsic and/or extrinsic goals."

Schønau-Fog proposed several methods for testing engagement (Schønau-Fog, 2012); *The Player Engagement Ranking Method* (PERM) which is a qualitative method linked to his categories of continuation desire. *The Intrusion Method* which means interrupting the player during game time, asking them if they are willing to continue or if they would like to stop now. This method has similarities to Schell's method of controlling game design; *Sneak Glances* (Schell, 2008) where the player has to observe his emotional states and experience. However, such method has it downsides. As Schell argues said method requires some practice to overcome the Heisenberg problem of participating while observing at the same time. Also one could argue that by interrupt players we might generate a higher level of continuation desire as we add to the suspense of the experience depending on when we interrupt. Furthermore, a player might get discouraged from playing the game when asked, this instantly lowering the continuation desire, essentially we are reminding the player that they are playing a game, and that might disrupt their involvement and especially immersion. However, the intrusion method would be cooperated within the game, the invasive nature might be lessened and the overall continuation desire might be measured by in-game reports. Busselse & Bilandzic (Busselle & Bilandzic, 2009) interviewed participants about their experience afterwards. However, the specific questions asked are not described in said article. The measurement of engagement was based on the narrative of a film displayed to the participants. Dividing narrative engagement into four parts; *Narrative Understanding* – how meaningful the narrative was and how free it was for distractors[10], *Attentional Focus* – measurement of how much attention was put into the stimuli rather than other internal or external thoughts or events, *Narrative Presence* – how 'close' the stimuli felt to the participants such as feeling being a part of the experience rather than an onlooker, *Emotional Engagement* – how emotionally affected the participants became of the experience. This division can be used as well in my model of continuation desire. Observing the attentional focus of the player as well as asking them about their narrative understanding should provide some indication of their level of engagement.

[10] Negative narrative elements that interferes with the meaningfulness of the overall narrative (Busselle & Bilandzic, 2009)

By using the intrusion method, incorporated into the gameplay, combined with the use of a post-playing questionnaire about attentional focus, narrative understanding, and general questions about the nine categories of engagement (story, exploration, experience, attachment, gameplay, fun, achievement, challenge, difficulty) I am confident in being able to determine whether the participant was engaged or not. Furthermore, using in-game logs of the player's movement behaviour might show their desire to explore the area and narrative, such logs should correlate with the other measurements. However, exploration logs might also simply show that the player was lost for the duration of the game time, therefore questions about the navigational easiness of the level will be implemented.

4.4. Involvement

Measuring involvement is a rather intangible thing, as I have to measure the emotional affection of the player during the experience. Several ideas come to mind. Measuring the bodily reactions to the sensation of fear such as level of adrenalin and cortisol, as well as skin conductance and heart-rate and variability seems like a logical starting point. As we see in 3.3.1 Stress Hormones the level of fear and anxiety can be estimated with a cortisol and adrenalin test. Ideally, participants would be asked to be subject to such procedures, however, after conversing with several hospitals in the area the idea was ruled out. Such test requires analysing in an appropriate laboratory and personal and such expertise is too time consuming and expensive for the scope of this report. However, I would recommend further studies in this area to look into these kinds of measurements combined with self-reported data. Fortunately there is other ways to measure emotional responses, such as fear and anxiety, mainly heart-rate, blood pressure, and sweat conductance as I found in 0

Emotions & Moods. Taking bio-measurements of the participants prior the game experience in a relaxed state would give a baseline to compare with data collected during the game experience. I am not, however, going to rely solely on bio-measurements due to the vast set of variables that can influence such data. A normal blood pressure number lies on less than 120/80 where high blood pressure lies above 140/90 (NIH, 2012) however, there can be a number of reasons why blood pressure seems to increase, in fact most causes are unknown (Strandgaard, 2012). Causes could be several heart related diseases, or damaged heart, blood vessels, kidneys or other factors (NIH, 2012) (Strandgaard, 2012) (Heart Rhythm Society). Measuring heart-rate (pulse) also poses some problems, as the pulse can change due to a number of things. Damaged heart tissue, high blood pressure, fever, smoking, alcohol, coffee, narcotic abuse, air temperature, body position, body size, and medication usage are among some of the things that can cause an increased pulse (American Heart Association) (Sundhed-Online.dk). This is a lot of factors to consider when relying on bio-measurements, though with healthy, sober participants and with having data for a relaxed state prior to the game experience the measurements should provide consistent reliable data. However, due to the long list of disrupting factors I will not rely solely on bio-measurements. Instead I will

add self-reported data using a simple likert scale on associated questions to get an indication of the player affective state. Furthermore, Takatolo and colleagues (Takatalo, Häkkinen, Komulainen, Särkelä, & Nyman, 2004) tested players emotional involvement in digital games. Their method was to measure on the following factors; Mediarichness, Valence, Pleasant, Impressed, Involvement of the played game, Playful, and Innovative – which are factors they associate with emotional involvement. A similar approach can be used by me by asking participants about the story, character, attachment, fear, achievement, victimizing, environment, relief, and stress sensation. Putting them on a likert scale of how powerful the sensations and impressions are I can put a defendant number on their involved state.

4.5. Immersion

Immersion is as much an affective state as involvement, thus distinguishing between can be rather difficult. If the participant's measurements suggest involvement there is cause for immersion – The gap between involvement and immersion is the depth of the relationship with the character of the game. Thus asking questions about empathy and identification should provide sufficient data on the player's immersive state. If the player states they wishes to continue because they feel a tie between the character and themselves, I will deem them immersed.

4.6. Summery

Continuation desire involves engagement, involvement, and immersion. In order to measure the level of continuation desire of a player I will use the intrusion method (asking if people want to continue), bio-measurements (pulse, blood pressure, and sweat), and self-reported data (questionnaire). Using these three methods I should be able to correlate data across methods and recognize patterns in the general continuation desire, thus measuring the effect of the design framework. Furthermore, I will isolate the success criteria from each other thus establishing five versions of the same basic design in order to make a comparison test.

Primarily I will rely on interval data (Tullis & Albert, 2008) in the self-reported data. In such a way I will be able to compare the data in between subjects.

4.7. Test Setup & Procedure

As the participant has to play a computer game during the test they will be sitting comfortably in a chair in front of the computer screen. The game will require the use of a mouse and keyboard. In order to make sure the experiment is conducted undisturbed and controlled I will be in the room to assist the player if they should get stuck, and to make sure the bio-measurements are being measured correctly. I will sit opposite the participant behind a cubicle wall, to hide me from sight. The player will have a blood pressure monitor[11] attached to their left arm. When they are posed with intrusion questions, measurements will be taken.

The participant will be introduced to the nature of the project, and informed that they will play a horror game which they are to complete. They will also be told that blood pressure, pulse, and heart rate variability will be measured during the experience.

[11] The blood pressure monitor used is a *Automatisk Digital Blodtryksmåler HC60BM* (Homecare.dk). The monitor measures blood pressure, pulse, and displays if the heart-rate is irregular. This monitor is able to take all measurements used for this study in a rather non-invasive was; however, the data is not continuous.

Once they have been briefed they will be seated in a chair to relax for 5 minutes. After that the first bio-measurement will be taken. Then they will be asked to commence playing the game. In the game there will be placed computers at key checkpoints of the level. Each computer is required to be used to proceed. When the player interacts with a computer the intrusion method is being used to check for engagement. Furthermore, they will pose questions about their emotional state as well to check for involvement and immersion.

After they are done playing they will be asked to fill out a questionnaire and a last bio-measurement will be taken five minutes after the game experience. The test is expected to take about 30 minutes per participant.

4.8. Questionnaire and Intrusion Questions

The prototype game level will include computers used for the intrusion method. When a player interacts with a computer they will be posed with the question "Would you like to continue?" If they answer 'No' the game will stop and the test will end, if they answer 'Yes' the game will continue and the computer will list a set of new questions which can be seen below:

- Briefly describe why you would like to continue? (cues are encouraged)
- How much do you agree to the following statements:
  - I feel I have a goal in need to accomplish – 1-7.
  - I am excited about the story and want to know more – 1-7.
  - I want to explore the game – 1-7.
  - I am attached to the character and want him to succeed – 1-7.
  - I enjoy feeling like a victim – 1-7.

Each computer will have the same list of questions. After the game has been completed I will ask the participant to fill out the following questionnaire:

4.8.1. Final Test Questionnaire

Final Test Questionnaire

Please answer all questions to the best of your ability and as truthful as possible.

* Required

Version *

Filled in by moderator

Age *

Gender *

How much time do you spend playing video games per week? *

- Less than 3 hours
- 3-8 hours
- 9-15 hours
- More than 15 hours

What is your preferred game genres?
Please mark all relevant

- Action
- RPG
- RTS
- Horror
- FPS
- Racing
- Sports
- Puzzles
- Others

Do you/Are you?
Please mark all relevant

- Smoke
- Take prescriptive medicin
- Work out
- Do sports
- Currently sick
- Other

Please Elaborate
What do you smoke and how much, what sports do you attend and how often, which medication are you on, what illness do you suffer?

Did you finish the game? *

What do you smoke and how much, what sports do you attend and how often, which medication are you on, what illness do you suffer?

- Yes
- No

Why/Why not? *
Why did, or did you not finish the game?

How much did you enjoy the overall experience? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I want to play it again,.								I want to play it again

How much would you like to play the game again? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I really want to play it again,.								I really want to play it again

Why/Why not would like to play the game again? *

Elaborate your previous statement

How scared where you during the game? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I wanted to quit,.	○	○	○	○	○	○	○	I wanted to quit

Why were you/why were you not scared during the game? *

Elaborate your previous statement

How much did you feel like a victim? *

	1	2	3	4	5	6	7	
Not at all Select a value from a range of 1,Not at all, to 7,I felt completely like a victim,.	○	○	○	○	○	○	○	I felt completely like a victim

How much do you want to explore the environment more? *

1	2	3	4	5	6	7

Not at all

Select a value from a range of 1,Not at all, to 7,I wanted much more to explore,.

I wanted much more to explore

How much do you want to explore the story more? *

1 2 3 4 5 6 7

Not at all

Select a value from a range of 1,Not at all, to 7,I wanted much more story to explore,.

I wanted much more story to explore

I was attached to the game character *

How much do you agree with the statement?

1 2 3 4 5 6 7

Not at all

Select a value from a range of 1,Not at all, to 7,I was strongly connected with him,.

I was strongly connected with him

I felt the character was an extension of myself *

How much do you agree with the statement?

1 2 3 4 5 6 7

Not at all

Select a value from a range of 1,Not at all, to 7,The character was part of me,.

The character was part of me

Where there some elements of the game that you wanted more or less of?

This could be a desire for more story, weapons, enemies, etc.

Did you wish the game was longer? *

Please explain your answer in the previous questions *

Briefly describe why you chose the option you did.

Comments

What ever you would like to comment on

4.9. Equipment Test

In order to know how the blood pressure monitor behaves, and how often I can take a sample during a gaming experience without interrupting the game experience, or otherwise ruin it, I have conducted a small equipment test.
The test was quite simple. Participants were asked to play *Amnesia: The Dark Decent* for no less than 20 minutes, while wearing the blood pressure monitor. Bio-measurements were also taken before the gaming session began, as well as after it ended. During the game experience, the blood pressure monitor would be activated with a five minute interval. Test participants were asked after the test too state whether or not the equipment interfered with their game experience, and if they were indeed scared during the game experience.

In total five people participated (two female, three male), and all completed the 20 minutes playtime. The results for their bio-measurements can be seen in Table 7: Equipment Test Results.

Participant #1				Participant #2				Participant #3				Participant #4				Participant #5			
Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB	Sys	Dia	HR	IHB
135	78	64		146	89	96		117	71	78		130	72	67		123	82	104	
132	76	65	x	139	73	90		144	85	77	x	128	81	84		133	79	89	x
116	84	62		136	73	91		118	92	93	x	125	78	83		136	79	89	x
137	80	64		123	72	89		129	62	85	x	124	73	71		135	81	89	x
130	59	67	x	131	74	90		114	80	73	x	135	79	71	X	136	90	77	x
116	72	71		127	73	90		116	101	77	x	113	74	58		131	73	79	

Table 7: Equipment Test Results

It should be noted that the measurements are biased because I did not discriminate between participants who smoked, drank coffee prior to the test, or other bio-measurement disturbing factors. However, one can observe that an increasement is present, at least from the gaming sessions to the relaxed state after the game experience, where it is almost every case is lower than the previous measurement. Furthermore, it can be observed that irregular heart beat has been detected in all but one participant. This indicates anxiety as we have seen in 0

Emotions & Moods.

All participants stated that they were scared during the test, and that they did notice when their bio-measurements were taken, but they did not deem it disturbing for their experience. Also several of the participants stated that they were much more aware of the blood pressure monitor when they were not playing the game, than when they were. Furthermore, the fact that they had a wire running down their arm while playing did not disturb their game experience either.

In conclusion I can without disturbing the participants take bio-measurements with at least a five minutes interval, and possible a shorter interval is possible as well.

5. Design

Throughout the pre-analysis and analysis I have identified the roots in our continuation desire within horror games. In essence I narrowed the concept of continuation desire in horror games down to retaining the mood to be scared. I have stated that this can be done by applying intelligent use of narrative, freedom, and victimizing. However, a game is more complex than a few general terms, thus a list of sub-terms should reveal themselves during the game design such as general functionality of the game, controls schemes, story, plot, level design, etc. Furthermore, the design will address the matter of both good game design and bad game design. If all three success criteria is theoretically fulfilled it will be deemed good game design, however, if one or more of the criteria is not met the design will be deemed bad game design. This will be a useful differentiation when I am to conduct my final test. For my design and implementation I will work closely with a small indie game company *Dark Orb Studios* thus the majority of graphical and auditory assets are created in collaboration with Dark Orb Studios, as well as code fragments or entire scripts.

5.1. Framework

To logically divide the framework up I will separate it into three parts equal to the success criteria with each explaining on how to achieve the overall goal and with sub-terms explained as well. I will only focus the framework around these three parts; narrative, freedom, and victimizing. I will not address conventional game theory as I assume the users of this framework is familiar with these theories and read relevant books prior to this report.

5.1.1. Narrative

Every survey I have conducted has shown the importance of narratives in involvement and immersion, and especially in horror games. In essence conventional theory of narrative structures should be used when generating the story, plot, and characters of a horror game. However, some guidelines can be established which can assist in the players involvement of the game.

- *Relatable Character:* A character which is a plausible projection of the player themselves will be easier to relate to than someone completely opposite and devoid of reality. As an example playing a mechanic or lawyer is more plausible than taking on the role of Rambo, thus we already start building a bridge towards immersion from the very beginning. The more common the protagonist is the more sense does it also make that the player should feel like a victim, after all what does Rambo have to fear?
- *Plausible Plot & Story:* As important it is with a relatable character, it is equally important to at least make the plot and story of the narrative seem plausible in the game universe. This does not exclude the uncanny and occult, I rather encourage the writer to support these terms, however, always remember to make it sensible for the player to ensure involvement in the game. The player should be able to project themselves into the game story and relate to the events that occur. Furthermore, the use of the uncanny can induce anxiety in the player. The use of the uncanny might sound strange as ghost as monsters are not a proven fact, but one can assume that every person has heard tales of ghost, demons, and monster. Using common known stories or legends or creating similar monster stories triggers some uneasiness in us humans due to the plausibility that the occult could be true.
- *Victimize the Player:* The events in the narrative should make sure the player seems like a victim rather than a hero or a villain. By victimizing the player we make them seem helpless and powerless

to the forces that guided them through the story. This helplessness will enhance the sense of anxiety. As an example the player can feel victimized by inflicting pain or death on the characters loved once, such as family members, or by granting negative outcomes from player based choices, such as *Penumbra: Overture* where the player is forced to burn and kill his only helper in the game the first time they actually meet.

5.1.2. Freedom

Freedom is one of the essential parts of horror games, as freedom within several fields of the game construct will function as a logical and seamless time sink, which allows the player to stay in the game for a longer period of time and help the player get involved and immersed as they spend time and effort exploring and interacting with the game world.

Schell argues that freedom is best served with some level of control, thus the player only experience a sense of total freedom (Schell, 2008, pp. 284-293). He introduces six forms of indirect control methods that we can use to manipulate the player into believing they have absolute freedom in the game. These six control methods are; constraint, goals, interface, visual design, characters, and music. Constraint, goals, and character is the most obvious to the player, but also in my opinion some of the most effective control methods, or at least the ones where the designer has the most control over the player. In truth there does not exist a game where the player is not constrained by the game rules, however, with a little thought constraint can offer the illusion of absolute freedom. An excellent example is posed by Schell himself:

"Consider the difference between these two requests:

Request 1: Pick a color: _____

Request 2: Pick a color: a. red b. blue c. green

Both of them give the answerer freedom of choice, and they are both asking for about the same thing. But the difference is tremendous because for Request 1, the answerer could have chosen one of millions of different answers — "fire engine red, " "cauliflower blue, " "mauvish taupe, " "sky blue pink, " "no, you pick a color," or just about anything, really."

(Schell, 2008, p. 285)

Constraint can be used for a number of things other than picking colours. You can also constrain the player in levels and sub-levels (in this context called areas, such that a level can contain several areas) forcing the player to be confined in a closed space but give them the freedom to explore the areas in their own way and pace. This can easily be done by scattered important items around the level that is needed to progress onwards to the next level, forcing the player to enter all areas independently of each other.

Goals are also a very effective way of controlling the player, not only do they guide the player through the game by telling him what to do next to progress. But they also provide the player with an engaging factor previously mentioned. Goals can even be optional, giving the player the option to choose whether or not to pursue the goal or not. This can be done in several ways; one such is directly telling the player about an optional goal, another way would be to include elements in the game which boost the players' knowledge of the narrative or somehow boost their score or performance by interacting with. Such as coins in the

Mario series which in itself offers little relevance to the overall gameplay, but people hunt them just to get all the coins in the level, thus creating the option of an intrinsic optional goal for the player.

Characters can be used as well to control the actions of the player, and they are often used in RPG games to grant the goals. This is also seen in horror games, such as *Penumbra: Overture* where the player receives instructions via a portable radio. Not only does the character provide story content and goals, but also sets the player in a difficult situation whether or not to trust the ominous character and further involve the player in the story due to the use of characters.

In essence freedom is about creating and maintaining the illusion total freedom, by confining the player we may just enhance the sense of victimizing without removing the sense of freedom from the player. In a horror game freedom should be focused on constraining the space in which the player can move, and allowing them to explore several areas and narrative elements independently of each other.

5.1.3. Victimizing

Horrors games are to a great extend the need to feel like a victim and to be an ordinary person put in an extraordinary situation, in which they have little control of the events that surrounds them. Not only should the narrative support this fact, but the overall gameplay should be made with this in mind. To ensure the players feels like a victim we can use the following elements:

- Narrative
- Combat
- Level Design
- Aesthetics

Narratives have already been addressed, so I will not elaborate any further on this. The combat system can easily been made such that the player feels victimized and experience fear. The simplest way to do it is to completely deprive the player of any kind of attacks, thus running or hiding from the enemy would be the only option in a direct confrontation. The less the chance the player will have to defeat their opponent the greater the cause for an emotional response; fear.

Furthermore, the entire design of the level can be used to victimize the player. One can logically assume that the more trapped the player feels the greater chance of invoking claustrophobic sensations becomes. Thus the more a victim the player feels like. Uncanny architecture can be used to make the person feel like he is powerless in the giving situation, making it easy for us to use suspense in the level design and employ it to the games narrative. The player will always know that there exists some possibility of completing the game, but we can make sure it seems more and more unlikely by designing the levels as great mazes that the player can get lost in and which has an uncanny nature to enhance the sense of anxiety.

Aesthetics, both visual and auditory is important aspects of any game. Aesthetics is used to set the mood and even guide the player around, as two of Schell's control methods; visual design, and music. What can be described as eyrie music scores and uncanny suggestive soundscapes can be used to set the mood of the game and yet again make the player feel more and more powerless to the situation.

5.2. Game Design

The game design will be divided into two parts; Core Game Design, and Level Design. The core game design will contain all the rules of the game and all the players' interaction design. In essence the core game design is all the design which is unaffected by the level. The level design is all the design which is designed according to the limits and restrictions of the core game design.

5.2.1. Core Game Design

The game is a first person controlled game, which is controlled by mouse and keyboard. This means the player looks around using the mouse, and moves the avatar around using the keyboard.

5.2.1.1. Player Design

The player can do the following basic things:

- Move (Forward, Backward, and Strafing).
- Look around (Using mouse).
- Duck/Crouch.
- Jump (Single Jump).
- Open a variety of menus (Inventory, Main Menu).
- Interact with specific objects (Doors, Drawers, Computers, etc.).
- Turn on/off Flashlight.
- Set strength of Flashlight (Two different options).
- Pick up, and Use Items.
- Sprint (Limited period).
- Bleed (Lose health over time).
- Regenerate/Heal (Regain Health).
- Hide.
- Nocturnal Vision.

Other than that the player has a radio which functions solely as a narrative device. The full design specs can be found in appendix IV Game Design. The overall game design is made in collaboration with Dark Orb Studios, thus some specific design choices is a cooperate matter. The design in the report will discuss the specific design used for narrative, freedom, and narrative – which is the factors that this project is concerning itself about.

5.2.2. Narrative

In order to let the player establish an emotional bridge, in order to trigger narrative involvement and immersion, to the characters, or to identify with the main character, I will establish backgrounds for the characters, as well as posing character diamonds[12] (Freeman, 2003) in order to ensure the characters are unique. According to the hero's journey (Reinhart) I will use three distinct characters in the narrative, the protagonist, the helper, and the opponent. The hero's journey was originally introduced by Joseph Campell

[12] Character Diamonds are unique traits describing the character. Such as the character being shy, inventive, silly, frightful, mean towards kids, etc. Usually a character diamond balances good and evil or bad perks, such as the character being a warmonger or an enforcer, but emphasizes with women and refuses to harm them. Another example could be that the character being a coward, but in tight situations are able to find his courage.

and has been altered to fit several different platforms of storytelling. Figure 20: Hero's Journey (Reinhart) shows the model of the hero's journey.

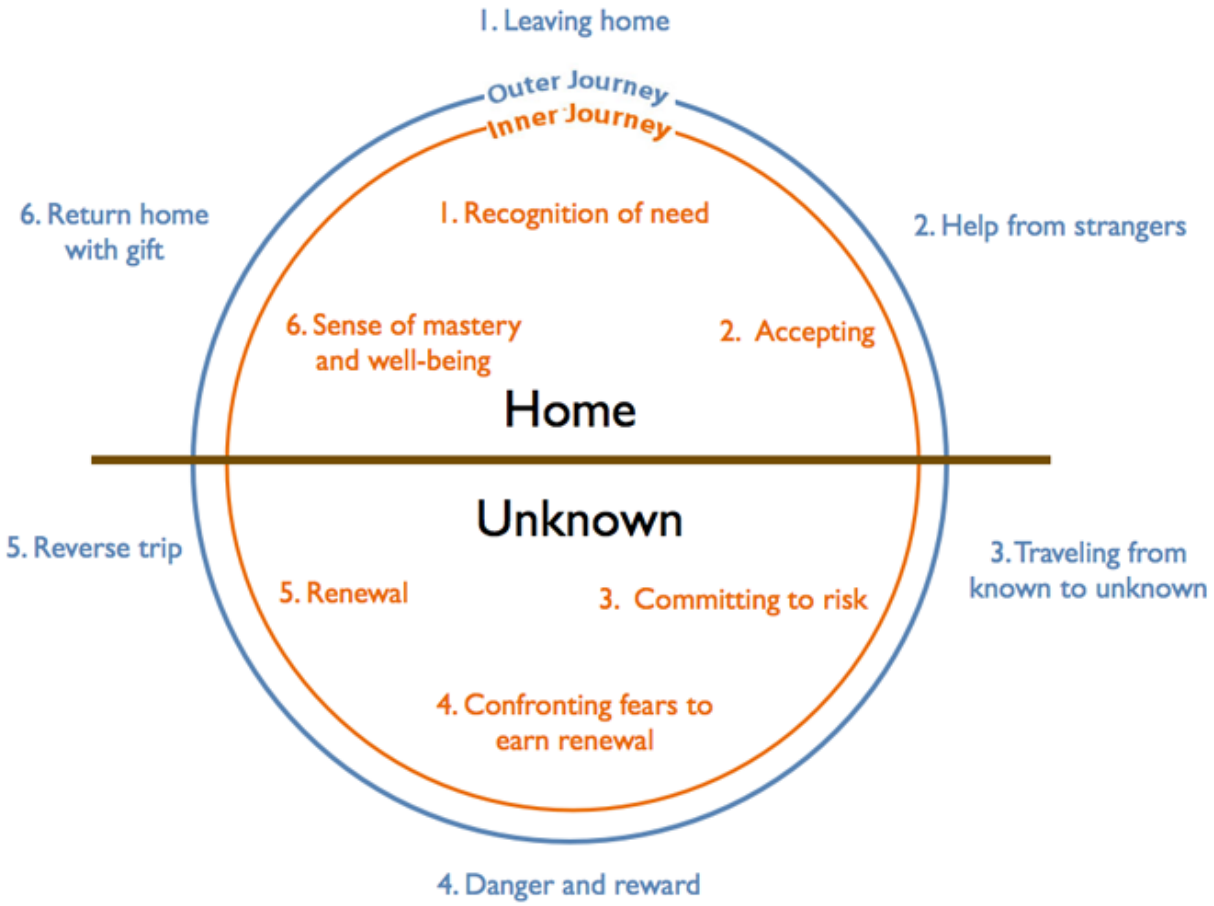

Figure 20: Hero's Journey (Reinhart)

Essentially the hero, or protagonist, ventures from the known home, to some unknown quest. In the hero's travels he will need help from some strangers, or helpers, the further he continue his journey the more dangers and rewarding it becomes. Eventually the hero returns to his point of origin, however, during his quest he has received some kind of reward, be that inner or outer reward such as self-confidence or a castle rewarded by the king. As this being a horror game, and to fit it to the sense of victimizing through the story, the narrative will be structured as a *low mimetic* narrative (Denham, 2012). A low mimetic narrative means that the protagonist suffers from not being superior to the environment because of some single or set of weakness which is supposed to spawn sympathy in the viewer. However, the story of this narrative will take some freedom in the use of the hero's journey, as the protagonist will start in the unknown, and that way be forced on a quest to escape the current situation. This way I emphasize the victimizing of the player and thus the players involvement through emotional responses.

5.2.2.1. Story

The Lazarus Corporation is a vast research corporation which has research and test facilities all over the world. Masquerading as a medicinal company; Lazarus is able to conduct several illegal and macabre

projects in various compounds unnoticed. Their approach is ruthless, as they adopt mainly homeless people and conduct different experiments on them. Life Garden is one of their research facilities, hidden in a vast forest region of Alaska known as the Grizzly Maze. At Life Garden the main concern is a special solution called Eden's Tear which causes violent hallucinations in the subject triggering violent reactions that often leads to murder.

Thomas Miller, the protagonist of the game, has been adopted by the Lazarus Corp. and wakes up confused and still slightly drugged after several days of treatment at Life Garden. He wakes up in a small cold cell, unaware of where he is, he tries to leave but the door is locked. After a while Thomas witness the sound of some struggle outside with something unnatural and his cell door spring open shortly after. His only option now is to try and escape the facility which has been overrun by monsters. Or so he thinks. Some disaster has struck Life Garden and a gas version of Eden's Tear has spread throughout the facility, driving everyone mad. Thomas sees monsters instead of ordinary human beings.

In order to escape Thomas has to travel through the entirety of the facility.

5.2.2.2. Characters

There are four vital characters in the narrative, the protagonist, a helper, an opponent, and a hybrid character which function both as a helper as an opponent.

5.2.2.2.1. Protagonist

Name: Thomas Miller

Age: 30

Background: Thomas Miller is an accomplished technician in a major company. All in all Thomas is an ordinary citizen, except for the fact that he lost his family five years prior to the present. Thomas lost his wife and his twelve year old son in a common house fire five years ago. Unknown to the authorities and Thomas the death of his family was orchestrated by the Lazarus Corp.

Character Diamond: Thomas Miller is an ordinary man put in an extraordinary situation. Thomas is not a courageous person, however due to a strong willpower and determination Thomas is still able to overcome most fears and threats with deductive reasoning. Furthermore, Thomas' skills as a technician allow him to bypass some electronic and virtual systems.

Note: that in D where there is no victimizing the story changes. No longer is the player a helpless captive, but a trained soldier sent by the Lazarus Corp to clean up. The task is the same, but the player will have the ability to kill the enemies by looking at them and using the attack button.

5.2.2.2.2. Helper

Name: Frederich Emmerich

Age: 62

Background: Emmerich is a staff member in Lazarus Corp. He started the study during the Vietnam War, and released the first stages of his dreadful compound on military and civil targets. The results were

devastating and thousands of people died. Emmerich was not the one to actually pull the trigger but the secretary of defence took the decision to put the drug to use.

However, as the attacks was at that time distributed as gas or liquid that would cause gas fumes it is regarded as illegal. Therefore, the study on using nano-bots to deliver the deadly poison started. Emmerich still tried to perfect the compound as it was unstable and to aggressive and hard to contain. In the meantime he also searches for a way to counter the drug, should it ever fall in the wrong hands. So far he has been unsuccessful.

Emmerich only converse with Thomas through a radio, thus Thomas has no way to confirm it, but in fact Emmerich has been dead for some time. In truth the correspondence with Emmerich is a results of Thomas deranged mind and Emmerich is only a fictive character. Prior to his death Emmerich treated Thomas with the compound Eden's Tear together with Dr. Jane Thomas.

Character Diamond: Emmerich is insane; this means that sometimes his hints and statements make little sense at first. However, generally he wishes to help Thomas through his peril.

5.2.2.2.3. Opponent

Name: Jane Thomas

Age: 34

Background: For the last 12 years Jane has worked as a highly esteemed nano-tech researcher. She has worked on several projects involving human test subjects, without consent. She is unmarried; her entire life is the corporation. She is highly loyal towards her research and the corp. which shows during the incident, as she does everything in her power to contain every survivor within the facility until the higher ops are able to contain the situation.

Character Diamond: Jane Thomas is evil through and through. She is determined, but gets easily frustrated if things do not go her way, which leads to her making obvious mistakes.

5.2.3. Freedom

As previously discussed freedom can be an illusion, thus freedom still. One might have a set of choices which makes it feel like you have infinite possibilities within the game; however, total freedom is rarely true. For this prototype I will allow the player to choose themselves in which order they want to explore areas of the level, and let them choose whether or not they want to read the narrative material provided. Furthermore, several areas of the game will be included for exploration alone, basically they will hold no significance for the progression of the game, but rather exists to provide the player more areas to explore. This freedom then includes the freedom to explore insignificant areas, freedom to choose level progression, freedom to investigate narrative elements.

5.2.4. Victimizing

As a horror game it is important to make the player feel like a victim. This will be done in two ways in this prototype. First off, the player will be unable to defend himself against monsters; instead he has to rely on stealth and running away from potential threats. By depraving the player the ability to fight I increase the

suspense of making it through the level and I increase the likeliness for fear to occur. Recall that fear is a result of the current resources available seems insufficient to overcome an immediate threat.

Secondly, the narrative will be constructed so that the player takes on the role of an unwilling and confused test subject of an obscure and macabre experiment. The narrative will increase the feeling of being a victim as the role of the character is closer to that of an ordinary person, rather than taking on the role of a gun blazing hero. Furthermore, I will implement a concept developed in a previous project called *Simulated Emotions* (Noack, Nielsen, Hansen, & Tranto, 2012). Simulated emotions was a concept of letting the in-game avatar simulate the emotion of fear, essentially triggered by external stimuli such as the sighting of a monster or other horrific event. Said simulation was found to enhance the players immersion as well as their sense of helplessness during the game experience. For full details refer to the appendix IV Game Design.

5.3. Level Design

For testing purposes I will only construct one level. This level however, will consist of three areas; cells, offices, and labs. Each area will contain element that are required to finish the level. The level will be done in four different versions; A-D. A will contain each principal from the framework, while B will not contain exploration, C will not contain narrative, and D will not contain victimizing.

I will explain each area in full detail, and then explain the differences in A-D in the end of each area.

5.3.1. Map

The map of the level can be seen in Figure 21: Map of Level.

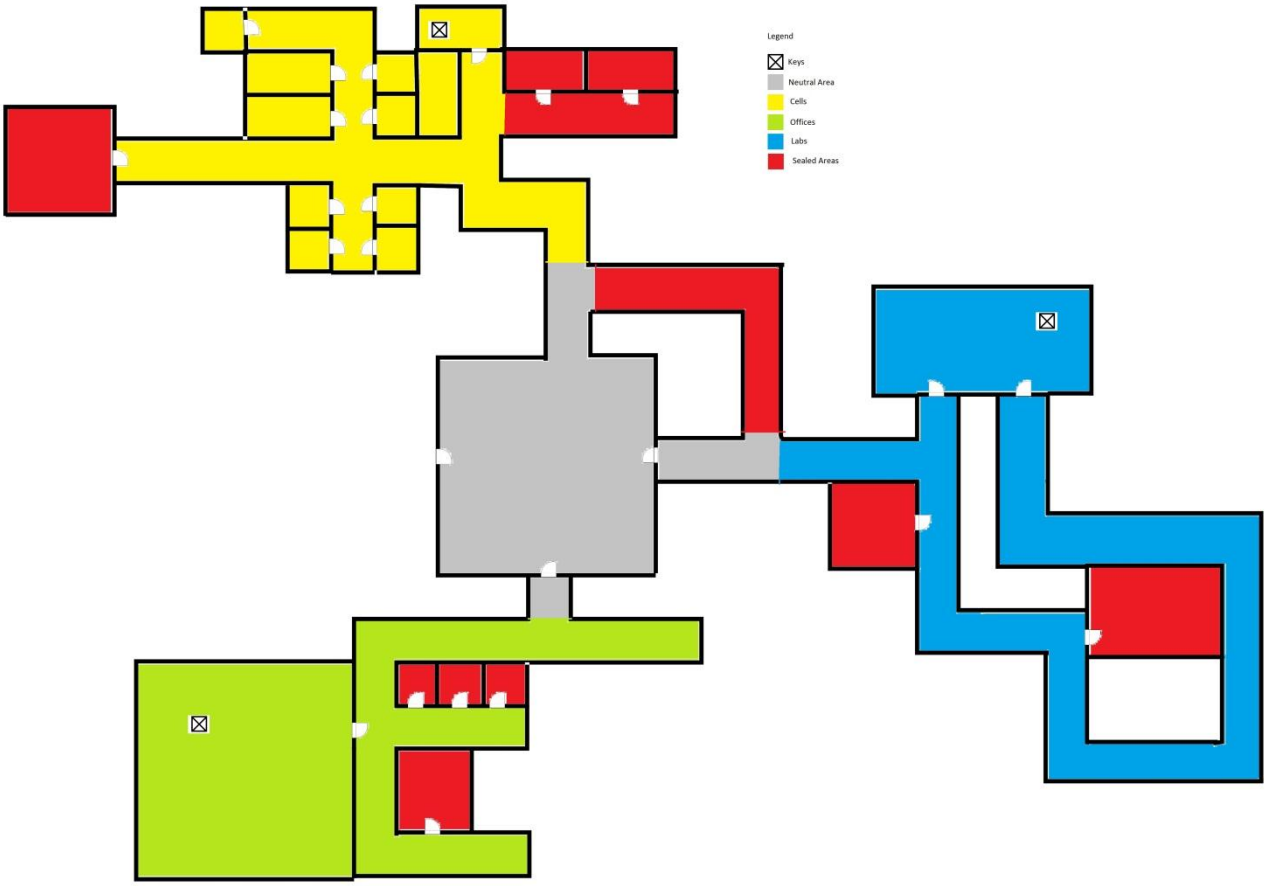

Figure 21: Map of Level

The red areas, or *Sealed Areas*, in the map are zones that are excluded in B. In order to complete the level the player needs to gather all three keys and get to the exit. Each area is in all versions, except for B free to access at any time.

Computers will be found in several sealed areas holding narrative content which the player can explore if they so desire. In the office there will be a monster patrolling.

6. Implementation

The prototype level was constructed in Unity3D version 3.4.1, as well as all scripts was written in C# in mono development which is the compiler used by default in Unity3D. Unity3D was chosen primarily because it is the game engine used by Dark Orb Studios, which makes it convenient to work in the same environment so that assets and already existing scripts can be reused and quickly altered. Other than that Unity3D has a lot of desirable well-functioning features which makes it rather quick to establish a prototype or proof of concept.

Graphical assets (models , textures, and animations), such as props, walls, floors, doors, ceilings, among others was provided by Dark Orb Studios, as well as the majority of the audio assets and the majority of the basic scripts, such as player functionality, basic enemy AI, and environment controls (event controllers and interaction scripts). This has of course allowed me to focus on implementing the test level, and the full functionality of this, as well as putting focus into my specific design concepts rather than spending time on trivial assets production. Most things were implemented as per the design without complications; however, those complications that occurred will be addressed in the following sections, as well as changes made from the design to the implementation. I will not, however, describe trivial code examples and basic functionalities which have already been addressed in the design without any significant changes.

6.1. Change log

A number of changes from the design to implementation have been made. These changes are based either on to time consuming ideas or changes made to improve test reliability and overall game functionality.

- The overall level design has been changed. The level is still separated into three different areas, but in order to utilize the intrusion method to its fullest potential the level was constructed more linear. However, this change also decreased the level of freedom in the initial level design.
- *Visibility* and *Noise* concepts have been implemented but later disabled. I deemed it unwise to potentially kill the player in such a compressed study; therefore, the AI was stripped completely and is unable to even detect the player at all. Hence hiding is simply a placebo, there to make the player feel like they got something to hide from.
- Health has been disabled due to lack of combat damage. Furthermore, syringes and compounds for latter was not implemented, due to the stripping of the enemy AI.
- AI is only able to travel from one point to another using an A* algorithm. Once the destination has been reached the enemy will be destroyed from the scene.
- Voice acting of Jane Thomas and Frederich Emmerich has been removed. Instead the narrative is solely told through virtual mails and journals, as well as the embedded narrative in the level construct. The process of manuscript writing and recording selected voice-actors was too time-consuming.
- The flashlight does not consume battery power; instead it is fully operational at all times. Furthermore batteries have been removed as an item.

6.2. Level implementation

As mentioned in 6.1 Change log; the level design was changed during the implementation. The level was constructed to be more linear; to make it easier to use in-game questionnaires at desired times of the game. A screenshot of the level, top down, can be seen in Figure 22: Screenshot of implemented level.

Figure 22: Screenshot of implemented level

The level however, is still divided into three parts; a cell area, a laboratory area, and an office area. Each area is separated by certain checkpoints. Each checkpoint consists of a locked door that requires a key card (found in the corresponding area), a computer that uses the intrusion method, and a second locked door which can be unlocked via the computer.

Figure 23: Screenshot of checkpoint

Figure 23: Screenshot of checkpoint shows how the checkpoints look like. There are in total three checkpoints, one when exiting the cell area, one when entering the lab area, and one when entering the office area. At each checkpoint the player is confronted with the intrusion method, if the player states that they do not desire to continue the application will immediately quit. However, if the player does desire to continue, the game will go on and the player is able to use the computer to unlock the door and proceed. However, the player needs to find a security key card in the corresponding area before they are able to leave it.

Even though the level has been constructed more linearly than originally designed, the level still offers a great deal of freedom for exploration. Essentially there are only three rooms that the player has to visit to pick up the key cards, which means that effectively the game can be completed in a few minutes, if the player knows the design. However, if the player choses to explore the entirety of the level, as well as read every virtual log and email the game can a bit over 20 minutes to complete instead.

6.3. Enemies & Hiding

The AI for the enemies has been completely stripped. In effect there are no true enemies in the game. Instead an enemy will stay at a specific predefined location from the beginning of the game. Whenever the player get within trigger range (a public integer specific for each enemy in the game) the enemy will go to a specific target location, once the location has been reached they will be destroyed, thus deleted from the current scene.

There are several reasons to effectively remove the only real threat in the game. First of all, the existing AI did only work partly, and the path finding code used had a hard time understanding the obstacles of the level, such as thin walls and doors, often making the enemy stuck in the geometry. Furthermore, the animations transitions are a bit edgy, making some animations sometimes jumps from one frame to another, making the enemy look like its lagging even though it is not. This issue can easily be confusing and distracting for many players, as well as the possibility for comedic reference when an enemy gets stuck in a doorframe or other. Fixing these issues was of course a possibility, but a time consuming one; better spends on other more vital aspects of the game. Instead the enemies are portrayed as a potential threat, and the player is told that they have to crouch and stay in the dark to avoid detection of enemies, thus creating a sort of placebo.

Another reason is the fact that having enemies also means the potential death of the player. While this is great to actually check their continuation desire (if they wish to continue even though they died/failed in the game, they must have a high level of continuation desire) however, risks of demotivation is also present. Further I would have to address how they should respawn, if save games should be allowed or they had to restart the entire level if they died; this also poses the risk of getting stuck in the game where a player who is not skilled enough have to give up.

As the AI was stripped from the enemies, there is no cause to use the visibility and noise designs. After all there is nothing to hide from anymore. The code were constructed and functional, however, it was outsourced at a later time because of above mentioned issues with the enemies.

6.4. Computers & Intrusion Method

Computers have several vital roles in the game. Their primary role is being puzzles and narrative devices. However, at each designated checkpoint there is an intrusion computer as well, that uses the in-game intrusion method questionnaire, see Figure 24: Screenshot of computer using the Intrusion Method.

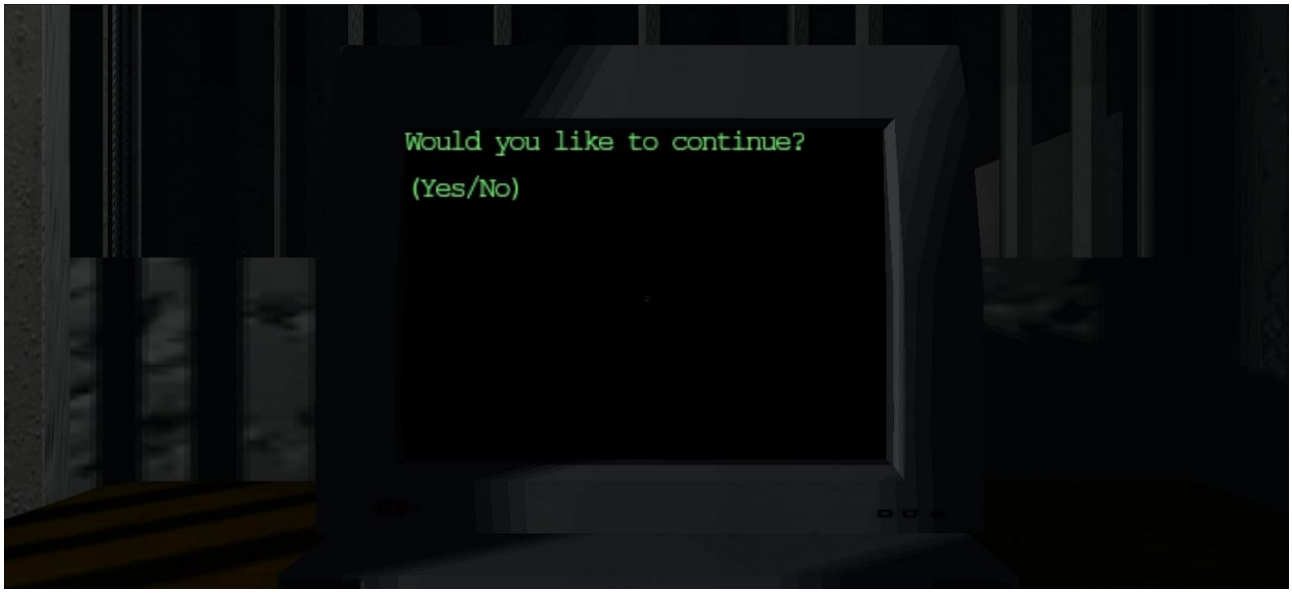

Figure 24: Screenshot of computer using the Intrusion Method

The computer functions as specified in the design. The player has to type in commands in order to access specific menus and functionalities. Whenever a player interacts with a computer it will by default enter the main menu, however, the first time a player interacts with an intrusion computer the computer will prompt the in-game questionnaire instead. If the player does not desire to continue, thus writes *no* to the first question the program will shut down immediately. If they type *yes* the questionnaire continues, once the questionnaire is completed the computer will enter the main menu and function just like any other computer in the game. Every answer from the questionnaire is written to a .txt file.

The computers functions as specified in the design, however, there are few issues related to the implementation. When deleting text the last deleted character will not be updated. This means that when typing something new over the last deleted character it will seem like the computer is using an insert method, when it is actually not. Furthermore, because the text on the screen is composed by a grid of 3D text objects instead of a GUI label. This was done because that a 3D text makes it possible attach the text directly to the virtual computer screen, rather than attaching it to the main camera in the scene.

Another problem with the implementation of the computers is the movement of the main camera. Whenever a player interacts with a computer the main camera will change position from its original one to face the computer and lock into that position for as long as the player uses the computer. Whenever the player leaves the camera is supposed to return to its original locale coordinates. However, at times it does not return properly but gets stuck in some wrong locale coordinates, often making it seem like the player can peak through walls. What exactly causes this particular problem is unknown, and has therefore not been resolved.

Some computers are password protected, which means that no commands or menus can be accessed before the player either guesses the password or hacks the computer. The hacking has been implemented as per the design. However, a small error sometimes occurs when the same integer is present twice in the code. It will return to the player that it is not placed correctly even though it is, however it is still possible to complete the hacking sequence.

6.5. Versions

In the test methodology I planned for five different versions of the level to be implemented, however, this meant that I would have to have a very large test sample in order to identify tendencies within each version. Therefore, I only made two different versions, essentially version A and version E as can been seen in Table 6: Relationship between prototype versions A-E and Success Criteria.

As explained in the test method version A contains all the success criteria, though one can are argue that victimizing is more a placebo than an actual implementation. Essentially there is no danger in the game, there is no environmental damage to be taken, or any monsters to chase and hurt you. However, even though there is nothing in the game that can actually hurt you, then sense of victimizing can still be achieved; players are told that they have to avoid monsters to stay safe, and as they have no weapons or means of offense or defence I believe most will feel like powerless observers and victims in the environment none the less. Furthermore, version A contains all the virtual logs and emails that has been written, as well as access to all areas in the game.

Version B is stripped for narrative elements and exploration possibilities, thus the freedom and narrative has been greatly reduced. I have done it so that several doors that grant access to no vital areas (areas where there are no key cards or checkpoints) are locked completely. This way the player will have a very limited level to explore and they will be cut off from the narrative devices (computers) which tell the story. This limitation should provide a less exciting experience, thus the mood to play a horror game should evaporate quicker than in version A.

However, this poses a single elementary problem; the success criterion of victimizing is not addressed in any manner in this way. So unfortunately I will not be fully capable to elaborate on the effect of this specific design principle, unless the limitation of freedom and narrative causes a lesser sense of victimizing as well.

Furthermore, there are two different builds, an online webplayer build, made for online participation. And an ordinary Windows build for controlled testing using the blood pressure monitor. The webplayer build did not allow however, for fullscreen option, so the participants have to use a window mode in the browsers to play the game.

7. Test & Results

Here I will explain differences in the test procedure and display the final results from the test. In total 31 people participated in the test at campus, and 17 participated online, giving me a total of 48 test participants. 29 participants played version A (12 online, 17 in controlled test) while 19 participants played version B (5 online, 14 in controlled test). For a full overview over the raw data gathered please refer to the DVD.

7.1. Test Procedure

As explained in the implementation the test was separated into two parts, a controlled test environment and an uncontrolled (online) one. This was done due to the long time it took to test a single person, thus I could get more participants by making an online version as well.

In the controlled test the participant was seated at a computer in a closed room. The only persons in the room were me, as test conductor, and the participant. As test conductor I would be seated behind a cubicle wall, so that my presence did not disturb the player. The participant was not told they had to play a horror game. I chose not to tell participants that it was a horror experience because then people might anticipate that they had to be scared, and that could heighten their bio-measurements prior to the gaming session. The participant was told they would have a blood pressure meter on their arm during a gaming session. However, before they started playing they would have to read the instructions, see appendix V Prototype Instructions. After they had read the instructions I would take the first bio-measurement, hereafter they would start playing the game, and the room would be darkened. While playing I would take bio-measurements every fourth minute. Whenever they either completed the level, or quit the game they would have to answer a questionnaire which is seen in 4.8 Questionnaire and Intrusion Questions. After they answered the questions I would take their bio-measurements a last time.

The uncontrolled test was conducted online. The player had to read the same instructions online, and play the game in a web browser. This way I have absolutely no control of how the player plays the game, and if they read the instructions at all. Therefore, this data is weighed less than from the controlled test.

7.2. Results

In total 31 people participated (28 male, 3 female) in the controlled test, and 17 people participated in the uncontrolled test (12 male, 5 female).

For the entire sample they had an age range of 19-36 with an average of 24, and a standard deviation of 3,6 years.

The data is separated into quantitative and qualitative data, numerical values and commentaries. Bio-measurements are considered as quantitative data as well.

7.2.1. Quantitative Data

The quantitative data consist of all numerical values in both the data log from the game sessions, the questionnaire, and the bio-measurements. However, the bio-measurements are very consistent across the versions, see Figure 25: Graph of the overall average bio-measurements for both version A and B, and Figure 26: Graph comparing bio-measurements between version A and B. Recall that version A included the entire design framework (Narrative, Freedom, and Victimizing) while version B was a limited version.

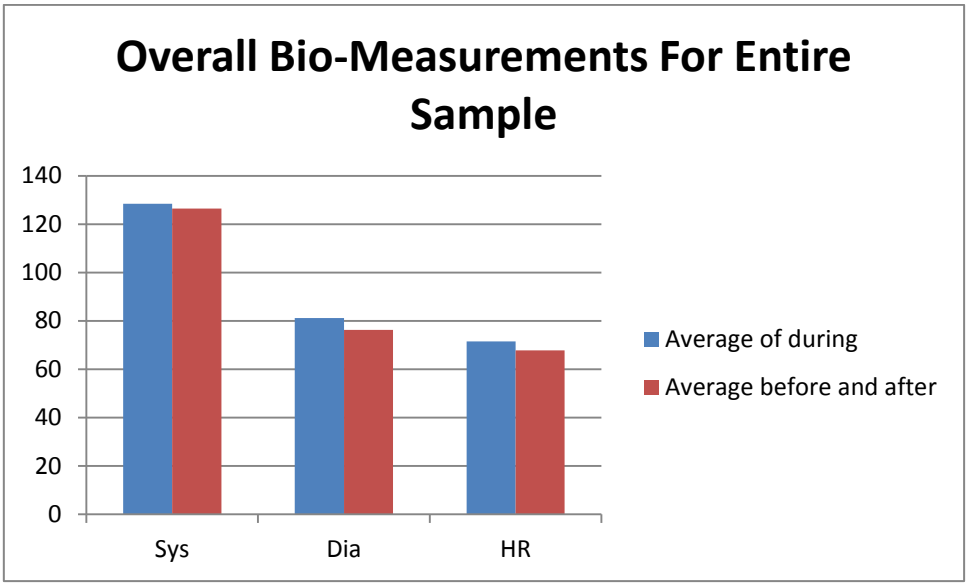

Figure 25: Graph of the overall average bio-measurements for both version A and B

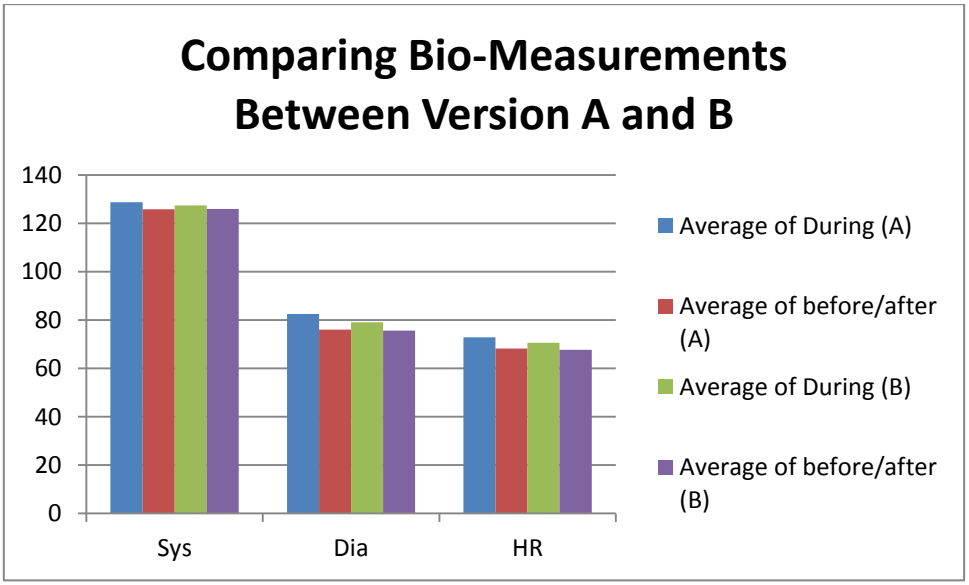

Figure 26: Graph comparing bio-measurements between version A and B

Ladder figures shows that there are little, if any, difference in the bio-measurements between version A and B. However, the bio-measurements do increase during gameplay, compared to the average of the relaxed states (before and after the game experience) which generally indicates the player's involvement in the game.

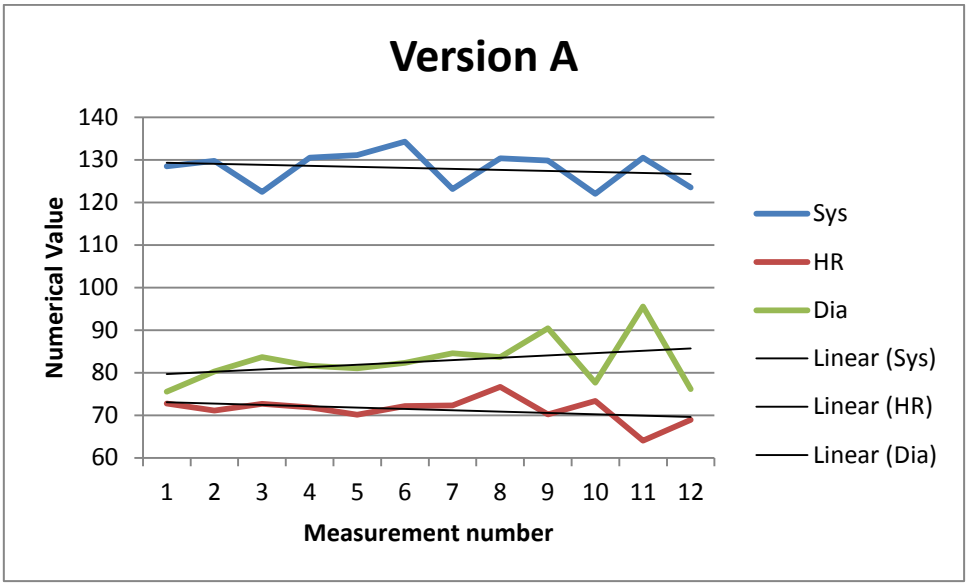

Figure 27: Bio-Measurements continuum of Version A.

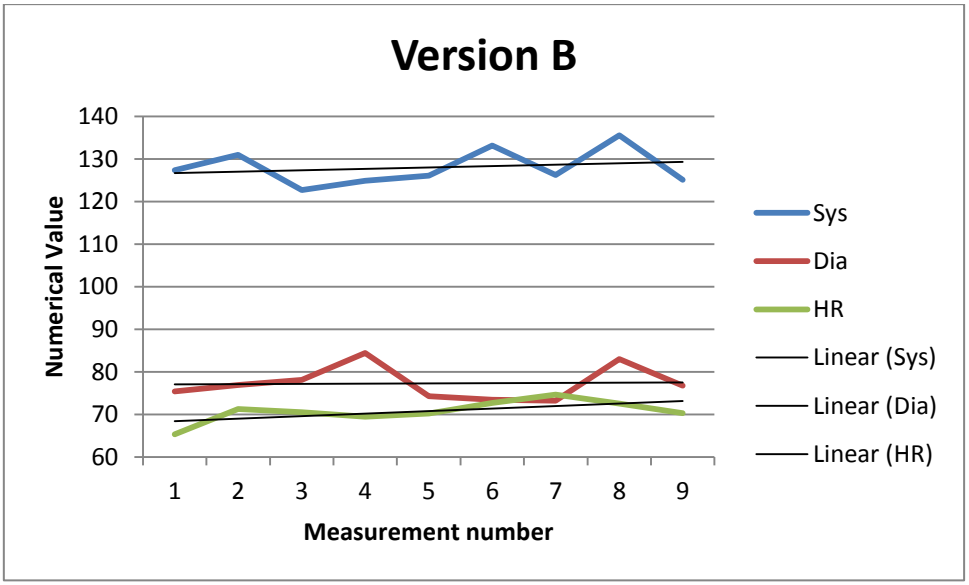

Figure 28: Bio-Measurements continuum of Version B

Figure 27: Bio-Measurements continuum of Version A and Figure 28: Bio-Measurements continuum of Version B shows the average bio-measurements over time of the players, of respectively version A and version B. As it can be seen there is little difference in the continuum. Even though the trend lines differ from each figure the amount of blood being pumped out into the players system is close to the same (a high heart rate generally means a low amount of blood pumped per beat, vice versa.).

To give a better overview of how much the bio-measurement actually increase with I have calculated the percentage difference between the average in the relaxed state and during gameplay.

	Sys	Dia	HR
% increase in version A	+1,9%	+7,0%	+6,0%
% increase in version B	+1,1%	+3,4%	+4%
Standard Deviation of version A	9,8	9,5	6,3
Standard Deviation of version B	10,4	6,5	9,3

Table 8: Bio-measurement table

Table 8: Bio-measurement table shows the percentage increase from the relaxed state to the active (gameplay) state, also it shows the standard deviation of the bio-measurements. It is no surprise that the standard deviation is high, biological signatures are very different from person to person depending on the living conditions, such as smoking and eating habits, which makes it rather pointless to look at the actual numeric value, but more fruitful to look upon the percentage difference instead, which shows a slight increase in all readings, however, version A seems like to have been the most involving experience, if only looking at the bio-measurements.

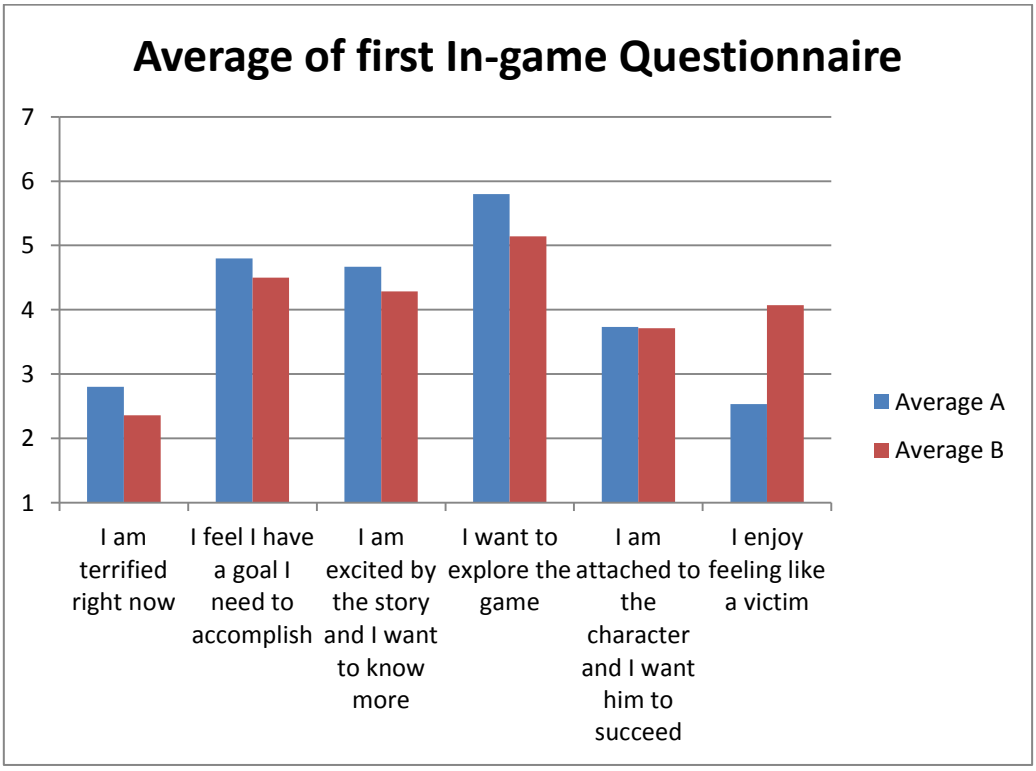

Figure 29: Quantitative data from In-game questionnaire I

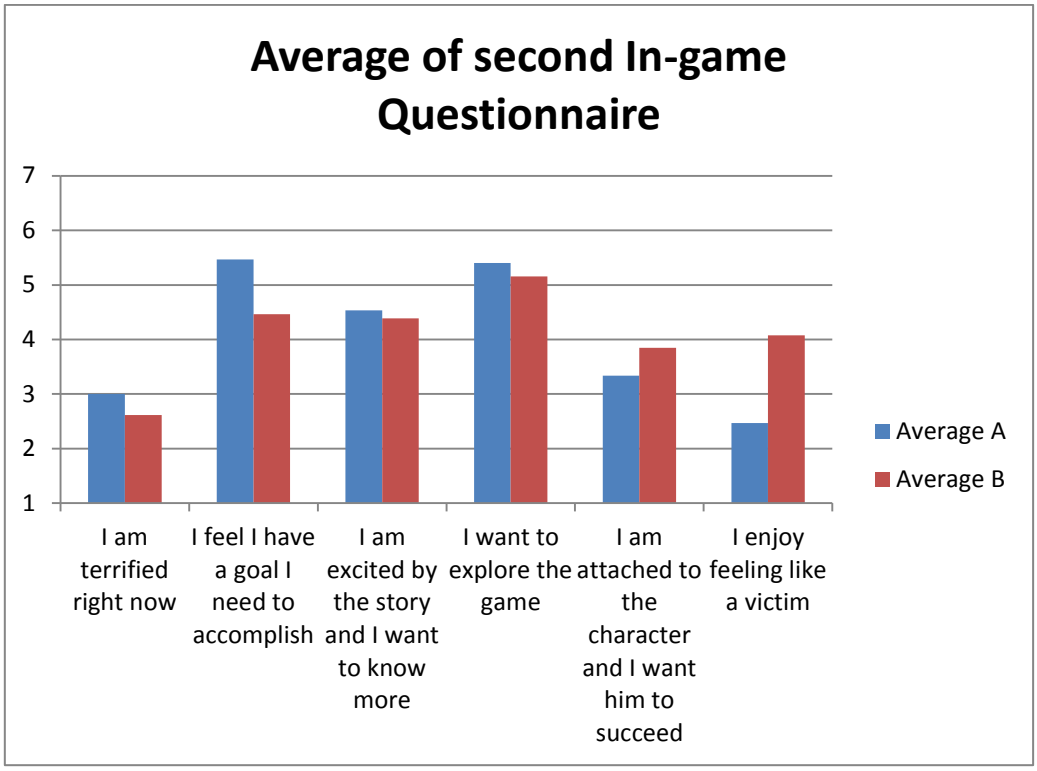

Figure 30: Quantitative data from In-game questionnaire II

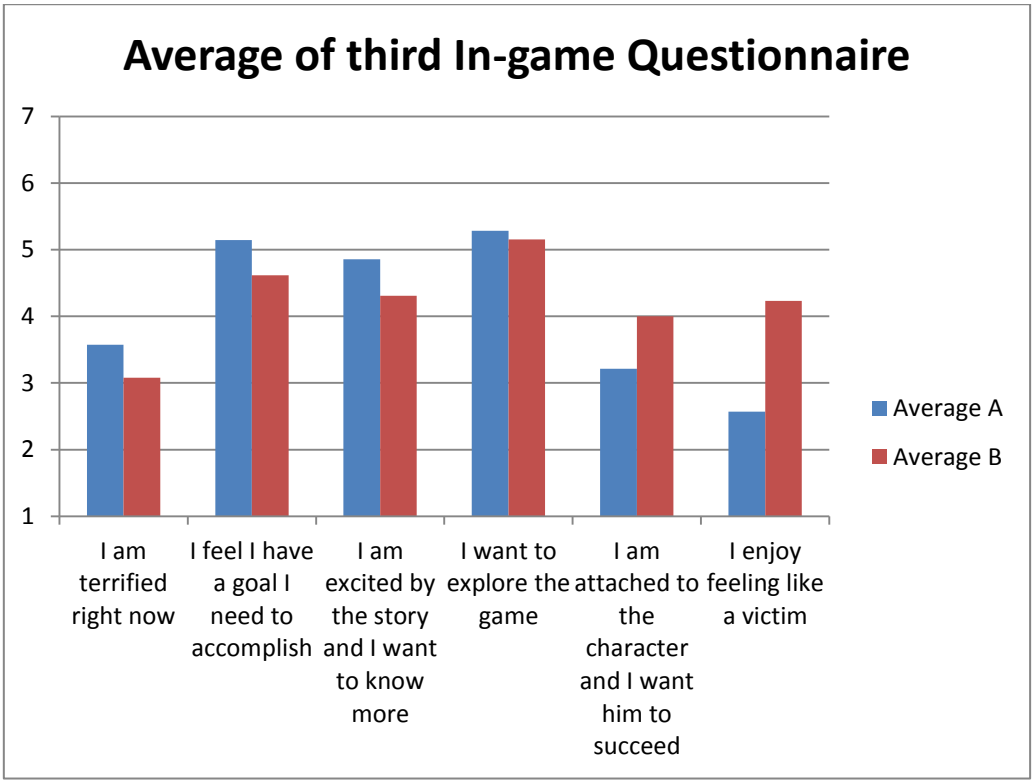

Figure 31: Quantitative data from In-game questionnaire III

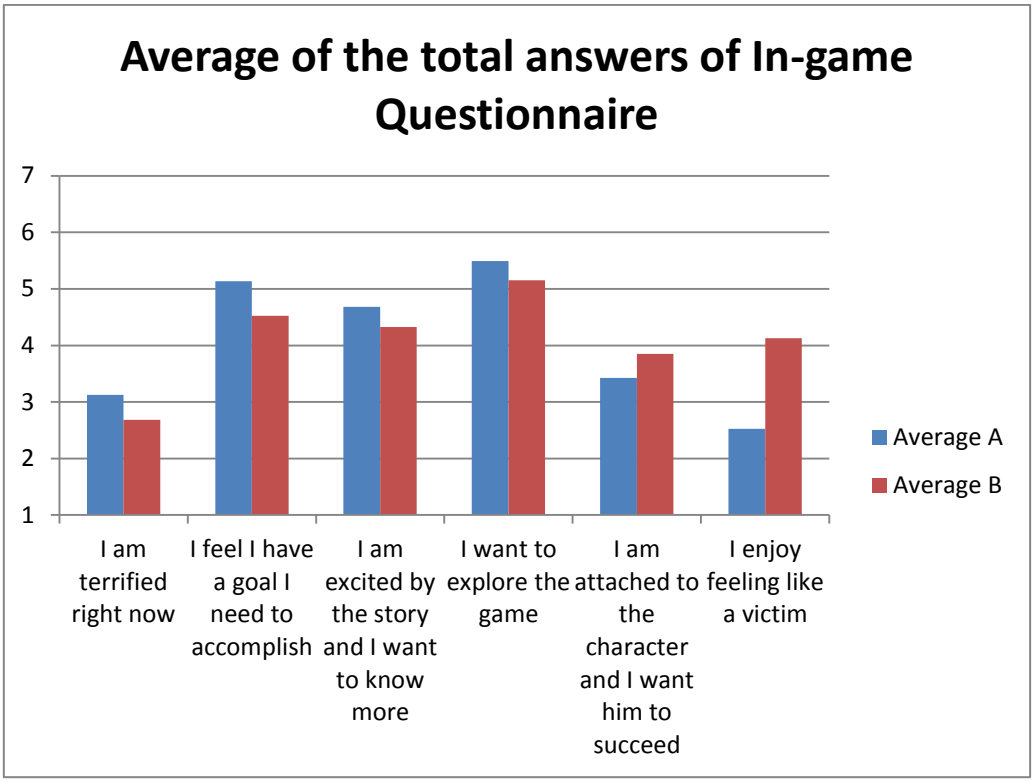

Figure 32: Quantitative data from In-game questionnaire IV

Figure 29: Quantitative data from In-game questionnaire I, Figure 30: Quantitative data from In-game questionnaire II, Figure 31: Quantitative data from In-game questionnaire III, and Figure 32: Quantitative data from In-game questionnaire IV shows the average results from the in-game questionnaires. Here we can see that in very question version A rates higher than B, except for question 5 and 6 (*I am attached to the character and I want him to succeed*, and, *I enjoy feeling like a victim*). Though the difference in version A and B seems little, the standard deviation is noticeable higher in version B than in A, as you can see in Figure 33: Standard Deviation of Quantitative data from In-game questionnaire. This indicates that even though version A only has a slight increase in the outcome, the data is much more consistent and stable than in version B.

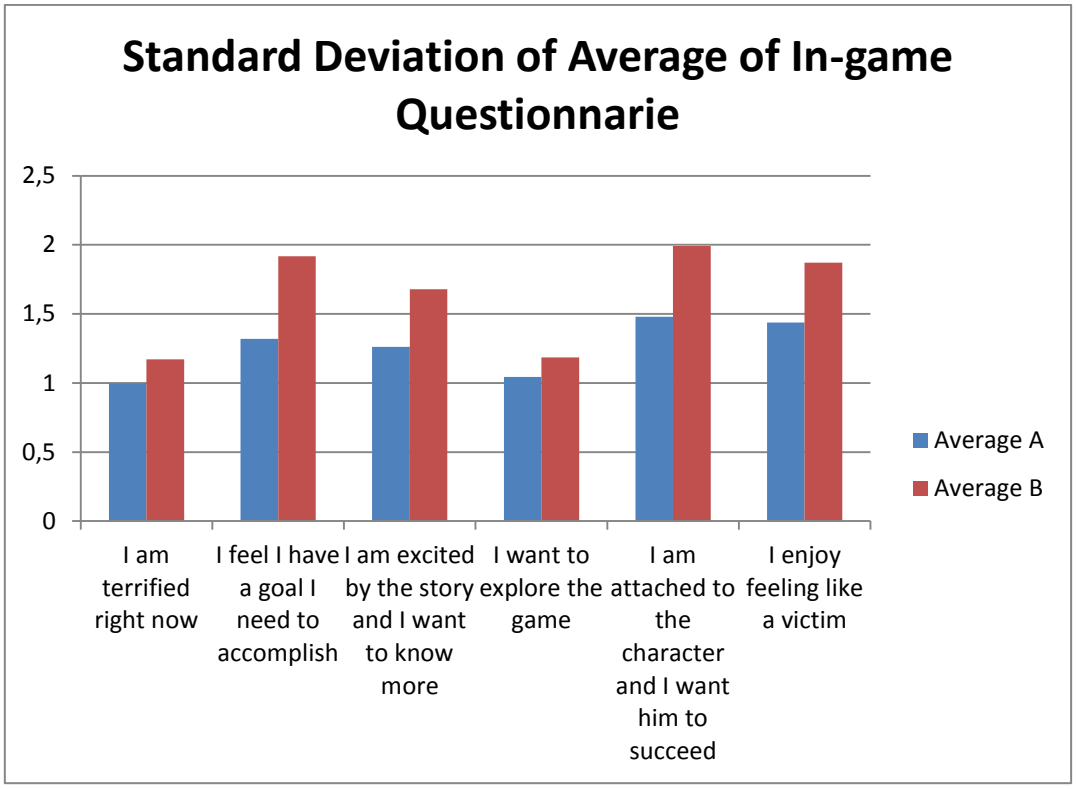

Figure 33: Standard Deviation of Quantitative data from In-game questionnaire

When looking upon the data so far it seems like it favours version A over B in general terms. What are curios is if we look at the data from the questionnaire after the gaming session, see Figure 34: Quantitative data from .

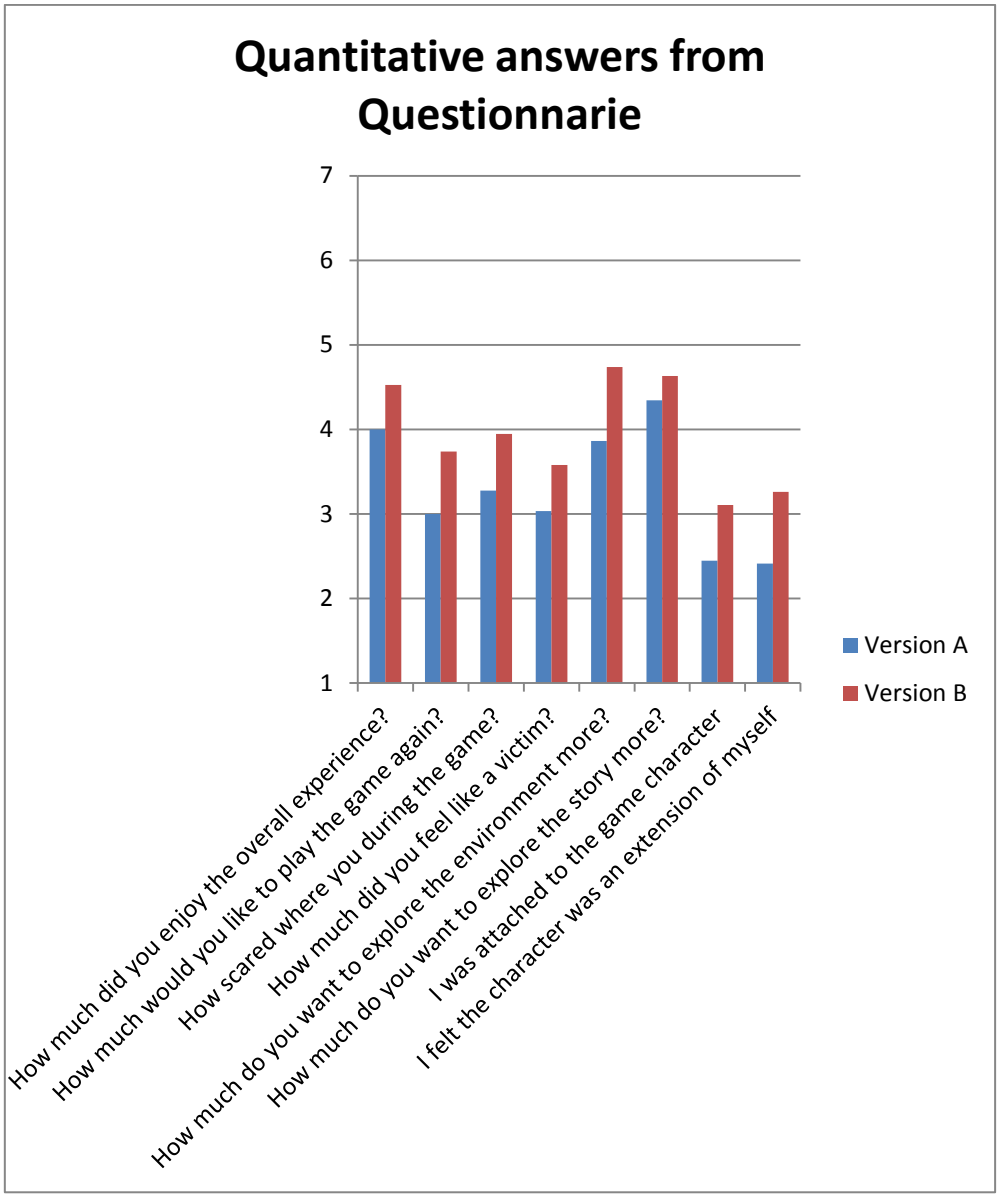

Figure 34: Quantitative data from questionnaire

In Figure 34: Quantitative data from we see that in every question version B has been rated noticeable higher than version A. It is surprising to see the contradiction between the in-game questionnaire and the electronic one. This leads me to look upon the qualitative data instead, and look for tendencies that explain this contradiction, or which points in a joined direction.

7.2.2. Qualitative Data

As the data from the quantitative answers are rather contradictive I will look upon the qualitative data to look for tendencies. However, when looking upon this data it is very similar.

Both version A and B players who finished the game did so primarily because of the story, either because they liked what they found, or they expected to find more at the end. Also they finished it because they wanted to beat the game, or complete the challenge of completing the game.

"I finished the game because I wanted to, because the atmosphere was very good, and I was hoping for some information on the monster and why it was there and whether it was hunting me"

Participant #1

"I was intrigued by finding what would happen. When I saw the information about the little girl, I expected that she would make an appearance, and surely enough, I heard crying in the office. I tried to go through the different booths to find her, but I couldn't. I was kind of frightened by the monster walking around the floor, which is why at the end, I decided to ignore the little girl and just go straight for hte elevator"

Participant #25

However, there were also a few that was obviously tied to the character directly, indicating immersion:

"i finished the game because I felt that I as the character wanted to escape the prison, so I did everything I could to get out"

Participant #14

When asked why they wanted to play the game again there was a slight difference in the tendencies of the answers. Generally the participants who played version A would like to relive the experience, while the participants in version B would like to further investigate the game.

"The game obviously lacks replayability, but it was a thoroughly enjoyable experience, and good experiences are always good to return to"

Participant #1

"I would like to play an updated more story oriented version, which leads me more towards the goal."

Participant #14

Also there was slight difference in the responses when answering why the participants were scared during the game. Version A showed tendency to focus on the audio and events in the game, while version B showed tendency to focus on suspense and the simulated emotions effect.

"Baby cry, and monster sounds comming from all around you"

Participant #5

"Everytime i lost controll of the charactor i was scared because then i couldent run away"

Participant #28

All in all I can say that every participant who finished the game showed signs of engagement, due to their answers about their continuation desire, which tends to wanting to finish the game, or see what happens next. Furthermore, I can say that most participants, whether they finished or did not showed signs of involvement as the game generally scared them, which we can see slightly on their bio-measurements and their self-reported data. Whether or not participants were immersed however is difficult to elaborate on,

as a few participants answered as if they wanted to escape the facility, or they felt they needed to move on, and not that the game character. However, this data makes it difficult to spot immersed players, and distinguish them from the involved players.

8. Discussion

Before I start discussing the results gathered, I would like to address potential sources of error and flaws in the test procedure as well as implementation changed that could have caused a potential bias. An obvious critique to give this experiment is the fact that one of my success criterions, 3.5.6.3 Victimizing, has not actually been tested in a suitable manner. The idea was to exclude the success criteria from level design of version B compared to version A of the implementation. However, due to difficulties in the implementations, and the difficulty of excluded this particular success criterion it was greatly neglected. In fact, the players has, by design, as little options to defend or feel safe in version B as they do in version A. The only difference form version A to version B is that some areas are locked off, thus limiting the exploration of the game world and narrative greatly.

Further I have previously, and repeatedly, stated that continuation desire is depended on the functionality of the game, in essence there should be no bugs in a truly engaging, involving, and immersive experience. However, the prototype suffers from a number of bugs that easily can interfere with the game experience, and therefore also interfere with the conclusion upon the design framework created for this project.

Lastly, for the prototype, there is great difference in making a design framework and using said framework for an implementation. Ideally I would had had some experienced game company produce a prototype based on the framework, or even better a series of games. Such a prototype would most likely be of a better quality of what I can produce myself within my limited experience as a game developer and my limited resources and timespan as a student. Theoretically I see a great deal of potential in my framework, however, whether it is functional or not will only be indicated by the results, as I am only a junior game developer, with rather limited resources.

The bio-measurements have a lot of potential sources of error, such as the amount of smokers, or other living conditions that can interfere with bio-measurements. This is also seen as the starting point of the bio-measurements is rather high in a lot of participants; also there are a number of participants that start out with an irregular heart rate, which can be a result of stress due to their own project hand in.

As a last however rather important source of error there is the nature of the uncontrolled test. Testing people online was a way to get more data, however, I have had absolutely no control of when they played the game, or how they did so (with or without sound or in a darkened or light room). A second problem with the uncontrolled test was that I did not have the data from the intrusion method, ideally they would had sent me a screenshot of their answers, however, only two participants did send the screenshot needed.

How large an effect these sources of error had had on the test is something I can only speculate upon. However, it is important to keep them in mind when reflecting upon the results.

The first thing that comes to mind when looking at the results is the contradictive answers in the quantitative data sets. Figure 29: Quantitative data from In-game questionnaire I - Figure 32: Quantitative data from In-game questionnaire IV shows that version A scored highest in every aspect of the questions, while Figure 34: Quantitative data from questionnaire shows the complete opposite. Why this contradiction exists I cannot say, for there are no data that gives any indication of why this has happened, however I can say that the standard deviation of the in-game questionnaire was lower for all answers than

it was on version B. This resembles some kind of unity in version A compared to version B. This means that the level is experienced more consistent across players than version B had, most probably because of the missing freedom and narrative, which was present in version A.

To recall I had a set of success criteria:

- **Narrative**: An interesting and fulfilling narrative, structured freely, so the player can chose themselves at which level of depth they want to involve themselves into the story and plot.
- **Freedom**: The player should have the freedom, or illusion of such, to decide how they want to investigate the world and how and how much they want to explore the narrative, and potential game mechanics.
- **Victimizing**: The player should feel like a victim in order to ensure the game is truly a horror game, and not an action game.

These three criteria are what the prototype should fulfil in order to contain the entire design framework. Furthermore, these three criteria should provide a strong continuation desire in the player. From the questions concerning these success criteria, together with questions more specific for continuation desire in general I should be able to determine the level of continuation desire in the players. If the majority of the players were immersed in the experience I could be certain that the framework is a success and that future games could gain a lot by using my design principles. However, if the majority quit the game at the first checkpoint I could be certain that the framework did not work at all, or the implementation was so poor that it did not justify the design framework.

The prototype included a personal narrative, which was provided through meaningful virtual journals, mails, and the embedded narrative that was to be found in the game. Looking at the responses from the in-game questionnaire we can see that participants that played version A have a stronger desire to investigate more of the story than the participants in version B. This indicates that by having greater access to the narrative, the importance of that element also increases. However, when we look upon the data from the questionnaire after the gaming session the players in version A shows a smaller interest in getting more story than the participants in version B. This seems contradictive at first glance, however, after further thought I believe this results makes absolutely sense. Participants who played version A had easy access to the story and could get more story than the participants in version B; therefore, when asked after the game is done if they wanted more story the participants in version A perhaps felt that the story provided was sufficient, while the participants in version B had extremely little story to follow, except for the embedded, thus they of course wanted more story after the game was done. While playing the game in version B, you might not think that the story is interesting or important because there is not much to follow, however afterwards the importance of this element reveals itself; especially for re-playability. Concerning the narrative I will state that the prototype fulfilled the requirement and provided an engaging and involving experience. I state that the narrative was at least involving because we can see in Figure 29: Quantitative data from In-game questionnaire I - Figure 32: Quantitative data from In-game questionnaire IV that the players were more scared during the game in version A than in version B, indicating that something caused them to be more scared, and as the only differences was more to explore both in game world and narrative, I am compelled to conclude that the narrative was a success.

Concerning freedom, then the prototype offers this in two ways; freedom to explore the narrative, and freedom to explore the game world. There are in total three rooms the player has to enter in order to retrieve key cards to progress through the game. Any other room than these three are rooms that are included for the sake of exploration and narrative freedom. In version A all rooms can be accessed, while in version B only the important ones can be accessed. Again if we look at the data collected we see that while playing the game, the participants in version A scores higher on the scale when answering if they want to explore the game world compared to participants in version B. Furthermore, we see the same thing as before that in the questionnaire after the gaming session that participants in version B would have liked more to explore more than version A players. This success criterion is also deemed successful because of the ladder argument.

When looking at victimizing the player I believe that the game actually fulfil the requirement. The player has no way of feeling secure in the game. However, the participants in version B feels more like a victim than the players in version A. This might be because in version B a lot of areas are not accessible, thus the player is limited to corridors and a few rooms to move around on. This loss of control of the situation might enhance the sense of fear; to recall fear is an outcome of one feeling they have insufficient resources to overcome some situation. If the player feels like there might appear a monster, and if it does they have no were to run, it is just cause for a greater fear reaction. In that sense the prototype failed, as the sense of victimizing was greater in version B than it was in version A. However, even though the sense is greater the principle has been consider and included in the game design, so even if it is greater felt in version B it does not mean it is not present in version A at all.

All in all I am certain to say that the prototype passed the success criteria in general, however, due to the nature of victimizing and the implementation of this in both versions I will not directly conclude upon this success criterion.

One thing that is puzzling however is a last contradiction in the quantitative data collected. In general the players in version A seem more pleased with their game experience than the players of version B. In game they felt that they wanted to explore more of the world, and the game scared them more. Afterwards in the questionnaire the stated less that they wanted to have more of the different game elements, compared to version B. However, when asked in the questionnaire *"How much did you enjoy the overall experience?"* participants in version B scored higher than version A. This might be tied to the fact that participants in version B felt more like a victim, which might be the most important factor when we focus on horror. After all feeing like a victim is what really makes the difference compared to other genres where you most often play the powerful hero.

9. Conclusion

To begin the conclusion I will remind you about the final problem statement of this project as well:

How does the continuation desire in survival-horror games differ from that of other general genres, and how can this knowledge benefit game designers?

This problem statement is divided into two parts, what is continuation desire in horror games, and how can game designers use that knowledge?

The first part of the problem statement I already answered when I concluded my analysis. Consider Figure 15: Final Continuation Desire Model for General Games and Figure 19: Final Model of Continuation Desire for Horror Games. In horror games there is no competitive involvement, but only the narrative involvement, whether this involvement comes from the actual story or plot, or from the embedded narrative is irrelevant. As long as the narrative is focused on the player and is structured in an open fashion; the player should have the option to choose how deep they want to investigate the narrative. Furthermore, the player's involvement is centred on the triad of narrative, victimizing, and freedom.

Stress hormones, and the so called adrenalin rush is also a big part of horror games, these hormones are often released in relation to fear and anxiety, therefore, a successful horror game is scary, which is something that is rarely desired in other game genres.

Furthermore, horror games is not content with being engaging, if the player is never involved they are not scared and the horror game is from a philosophical point of view never a horror game, but simply just a game.

A last important note in horror games is the difficulty of the game should be related to how scary the game is. Many games base their difficulty on the strength of their enemies or the puzzles of the level design, horror games always has a challenge that should be reflected upon; the game itself. A scary experience is something the player must cope with, and overcoming the game itself becomes a challenge, therefore, the difficulty of enemy encounters should also decrease to avoid the overall challenge of the game becoming too great resulting in frustrated players.

According to the test results, then freedom and narrative element of a horror game enhances the experience of fear and anxiety, while victimizing is tied directly to the immersive experience of the game. If we look at the data again we will see that players in version B scored higher in their attachment to the character in the game, even though they had less story and freedom to explore. This makes me conclude that victimizing plays are vital role in the immersion of the player.

The second part of the problem statement has already been briefly discussed. *How can this knowledge benefit game designers?*

Game designers should apply conventional game design principles, but take into account my model of continuation desire for horror games, Figure 19: Final Model of Continuation Desire for Horror Games, quite seriously and keep in mind that the game should retain the mood to play horror games. Furthermore, the game designer should design for engagement, involvement, and immersion, both separately but also in unity.

I dare I could state the triad of horror games; consisting of narrative, freedom, and victimizing. Furthermore, you can label these three elements directly into the continuation desire model. A high level of freedom has shown to engage the player. They are engaged to investigate and explore more if they have the freedom to do so. If we look at the elements of engagement *(Story, Exploration, Experience, Attachment, Gameplay, Fun, Achievement, Challenge, Difficulty)* we can gather quite a bit of these up under freedom, such as story, exploration, experience, and gameplay. The same sense of freedom we see in narrative involvement where the environment also can become a sub-part of freedom. Thus freedom belongs primarily in engagement, and the designer should ask himself what amount of freedom does my player has, and is it enough?

Narrative is tied to the player's involvement in the game. Without narrative the player is less scared during the game and the game functions less like a horror game. Furthermore, the player needs some degree of freedom and a clever structured narrative can enhance the sense of freedom in the player, thus increasing the engaging part of continuation desire and bring further cause to become involved in the game. Again if we look at the elements of narrative involvement *(Story, Character, Attachment, Fear, Achievement, Victimizing, Environment, Relief, Stress Hormones)* we see again several elements that could be put under narrative, such as story, character, attachment, and environment. The better the narrative, and the better it supports the victimizing part of the triad the greater then sense of fear induced in the player as seen in the test conducted in this project. Hench I claim that designing the narrative structure and writing the story is a focus of involvement.

Victimizing belongs to immersion. It is the last part of the triad and we can see that players in version A scores less when feeling like a victim in the in-game questionnaire, and at the same time they score lower when asked how attached or how much they feel the character as an extension of themselves than the players in version B. This leads me to think that the more the player feels like a victim the more real the situation becomes. It is more realistic to think that you would not be able to fight a demon, thus easier to relate to the character. Therefore the immersion score is higher when the player feels like a victim. Victimizing leads to immersion.

However, it is curios that the players in version B was less engaged and less involved than players in version A (or so it seems) but more immersed, this means that the structure of the continuation desire is not completely correct. Or at least the bridge from one level to another does not belong to a certain threshold but the relation of the triad. When victimizing is dominant we can be almost certain to immerse our players; however the overall involvement and engagement will be less than if the other elements were more apparent.

To finally conclude the project I will answer the problem statement with a single sentence.

The mood to continue playing horror games are split into three parts, engagement, involvement, and immersion. Each level of continuation desire is important for horror games, however, horror games are dominated to at least reach involvement to even be a horror game. Furthermore, horror games should be focused on a triad of horror elements: freedom (designing for engagement), narrative (designing for involvement), and victimizing (designing for immersion). Designers should directly use the triad as the basis of their design and support with conventional game design principles to achieve a successful horror game experience.

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Appendix

I. Focus Group Interviews for Pre-analysis, Notes & Results

Notes #1

Introduction Round

1. Notes: Age 28. Gender: Male. MED9 Student. Play Daily (or almost), primarily: RPG, RTS, and platform games. (Anders)

2. Notes: Age 25. Gender: Male. MED9 Student. Play five days a week for at least 3 hours a day. Prefers RPG, RTS, Horror, Adventure, and what my mood says. (Tim)

3. Notes: Age 20. Gender: Female. MED1 Student. Play games every day. Prefers RPG, Adventure, and Simulations (Camilla)

4. Notes: Age 23. Gender: Male. MED1 Student. I usually play every day, perhaps an hour or two (when I have the time). (Siarhei)

Individual Task

1. Playing *Champion of Neverath* (or something like that) with a friend. Living in a small quarter working a lot, so the playing and bringing a few beers was really a highlight from that time. Neither really knew the game to start with but it was to learn and overcome the challenges.
2. Infuriating wipes on an easy boss in WoW. Second healer began to cry because of my raging. And despite it all, we still failed. Why it stands out is because we were all very skilled and well-geared but no one seemed capable of succeeding that day. Also the hunter laughed his ass off.
3. *Alice Madness Returns*. The controls are really sensitive. Get little details about everything you need doing. One point stuck on a mob fight were you need to remove spawners, kill 5-10 big mobs and get swarmed by small ones. Die and redo chapter.
4. It was *Doom 3* when it just came in shops. So we played it with friends for more than 20 hours. What made it special? New shaders and graphics that nearly made us all shit out pants. Nice sounds (creepy ones). Also a few years of playing *TES: Oblivion* due to its exciting skill development system.

Group Discussion

Trying out new things, and pressing buttons. It's more fun to figure out stuff yourself. It's fun because you don't know what's going to happen, and co-op is motivating. Freedom is great, it doesn't matter if you suck, compared to competitive games. There is a different mindsets whether if you with friends or alone. Tim thinks it is a good idea to sometimes just go into a game without knowing anything about it.

What in a game motivates you to play computer games?

A new game needs to look interesting and fun. Cinematics, previews. The first things that Tim notice is graphics, and options, he likes much customization. Controls are important. Mouse acceleration can become a problem if not working as intended. Obviously they notice controls. They play games due to progression," you can't stop cause you know, something is not finished." (Sairhei). Sairhei likes games that do not end at the main story end, like Skyrim. Anders can relate to that feeling. Play games to relax, and to

escape boring routines in the daily day. Not stress and forget time and space around you. Tim uses it to escape as well, and to interact with something. The feeling of a getting a choice. Playing a game, you can control the story yourself. Camilla likes The Sims because she can kill people and feel godlike from it.

Once you have started a game, what makes you want to play the game extensively? / What elements in the game makes you keep playing a game?

Good story, brilliant gameplay. Seamless controls and no mistakes or bugs in the game. Time played Saint Row 3 not because the story but the content, Tim enjoyed the game because he could just drive around and shoot people. Sairhei likes choices, and how they show in the game. Play the games again with different characters. Watch it like a movie (fallout 3). You can do stuff that you would never do in your real life. It's about progression, just get to the next level. Goals you set yourself, there is always a further game.

What makes you NOT keep playing a game?

NOT playing a game depends on the game type. Losing a game due to you die where you forgot to save. Impossible tasks, too hard. Bad controls or challenges can even beat a good story, and let the user stop playing. Starting over is demotivating. Frustration can lead to anger. Anger can lead to demotivation. Boredom, if the game gets to easy or to boring you stops as well. If you get an option, and it does not allows you to complete the game the way you want its demotivating. If a game is too trivial or typical, if it does not offer something new it will become demotivating.

What makes you want to return to play a game?

If it was interesting the first time, they will most properly return to it. Games that engages the player, getting sucked into a story. "When I am in, I really can't get out and sometimes I just need to get back and relive that experience" Need a good experience that you know you are going to get from the game. Nostalgia. Sometimes you return to beat the game that you couldn't it. If you had fun, you are more likely to return it. If the game continues after it is finished, like fallout. Completing achievements that you didn't get the first time you played it. Explore new stuff. Possibility that you get something more or something new that you didn't the first time can get you to return to a game.

Have you ever experienced to forget time and or events around you while playing?

They had all tried it. They believe it happens when they get connected to the character. "If I feel that I created this character, and feel like I influence on who is and how he acts" Tim. To be able to relate to the character. The pure challenge of the game can get me distances from the real world. The concentration. "It is not important right now, I need to defeat this challenges and nothing else matters right now." When you are involved in the game.

Have you ever been emotionally touched by a game? (How and Why)

Camilla stated that the person she was playing was just so alike to her, she felt so sad for the character. (The character could not escape that world that she could). Sairhei love when a game touches him emotionally. When you get different choices, where some of them will harm people in a virtual world it can be difficult, because you feel that are actually hurting people these people. Emotional bonds are made to

characters, not even only the one you are playing. So the story and characters are the reasons, and the power you have over them.

Have your urge to keep playing a game ever changed during a game experience?

WoW starts out with progression, and then you are changing focus from one game content to another. First gameplay could be the story, and then change into a harder mode to play the game.

Do you do something yourself to immerse yourself in a game?

Sairhei loved Doom3, the graphics and everything; he turned off all the lights to immersive himself, to create a scary atmosphere to play in. When playing horror he turns off lights. Depends on the game (Camilla). If the game is dark, she likes the have lights in the room, because you feel like she is taking the light with her in the game. Using headphones to shut out the world.

How would you describe engagement when playing?

Must be something like, wanted to finish, not want to stop until you finished. If you're going to the toilette you can still be engaged even though you leave. Pause functions are great according Camilla, the others agree, as you can return to the game without breaking your engagement. Suppressing the bodily needs, like hunger, thirst, toilette breaks. You can be engaged in a game, by thinking about it even when not playing it. "I wanna do this, I wanna reach this, I wanna finish this." – Anders.

How would you describe immersion when playing?

When you forget you are part of another world. When the games world is the only thing that matters. You become a part of the game. Camilla experienced flinching at a game because she felt so much a part of it. Breaking the fourth wall. Pulling the player into the game, where you might as well walk around a VR.

How would you distinguish between being engaged and immersed when player a game?

If I am immersed, do not notice the world around me, the screen is my world. If I am engaged I still know I am in the physical world. When you are immersed in the game you can sometimes forget to eat and drink. Actually forgetting if you did it or not. "Sometimes I lose track of time just by being engaged" Anders. The important thing in engagement is beating the game. Immersion is feeling the story, and exploring the world. When you are engaged you want to beat the game, when you immersed you want to play the game. There is difference between engagement and immersion on the same task if you want to do it, or if you feel you have to do it.

Group Task

Figure 35: Group 1 Engagement Task

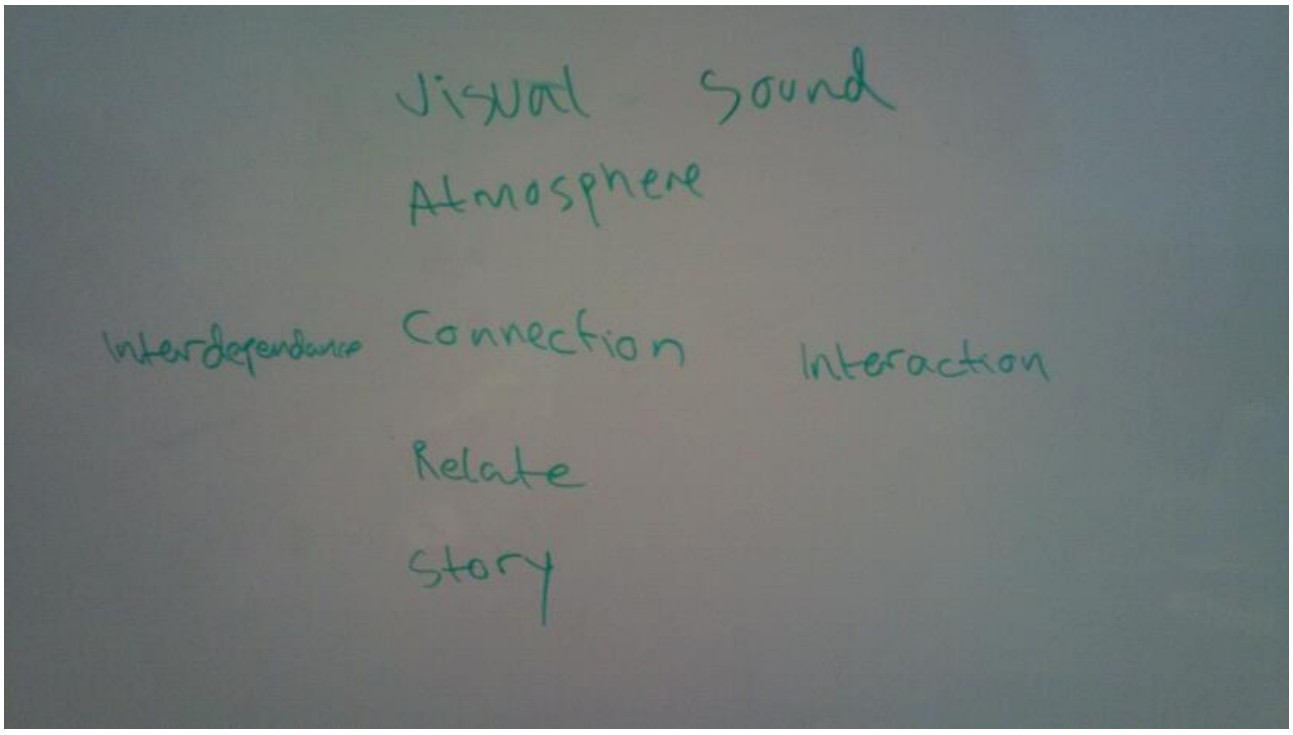


Figure 36: Group 1 Immersion Task

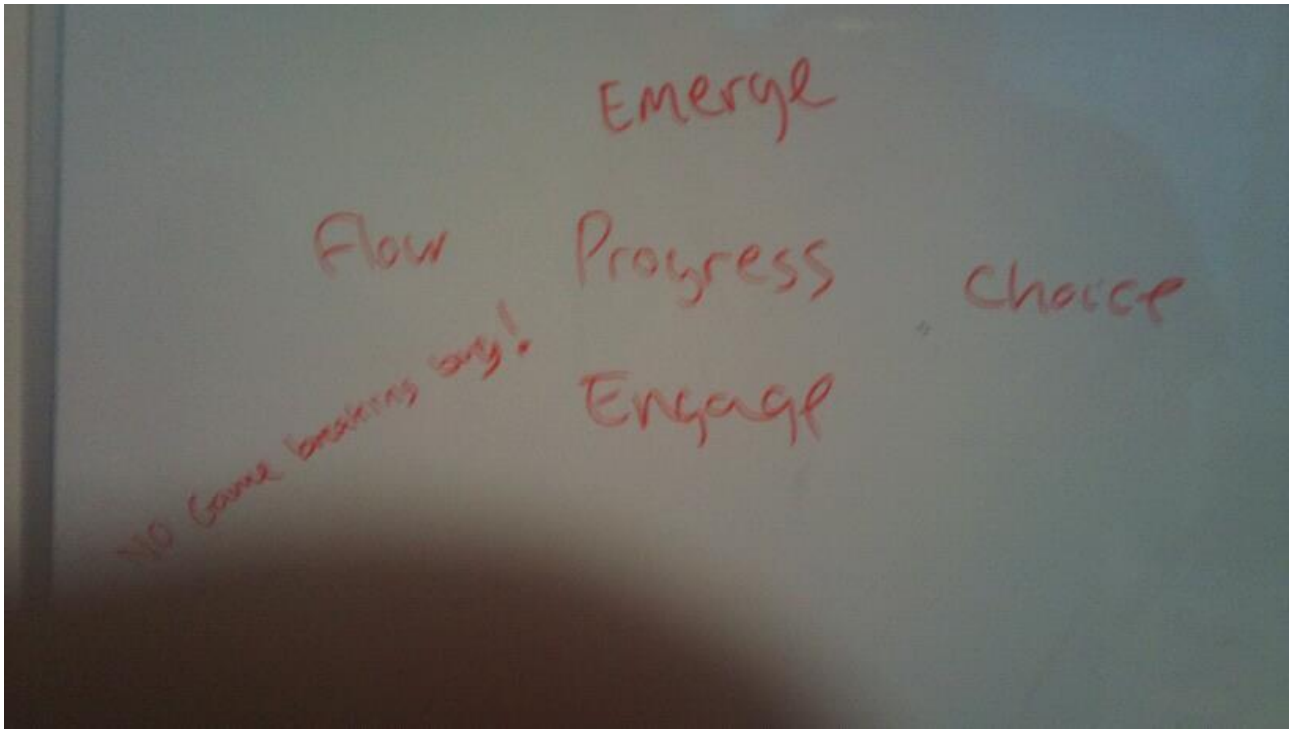


Figure 37: Group 1 Continuation Desire Task

Notes #2

Introduction Round

1. Age 21. Gender: Male. MED1 Student. Play 28 hours per week. Prefers FPS, Counterstrike. (Claes).

2. Age 24. Gender: Male. MED9 Student. Play 20 hours per week. Prefers RPG, FPS, story related games. (Arne)

3. Age 24. Gender: Male. MED9 Student. Play 5-8 hours per week. Prefers FPS (*Quake III*), 3rd person action/adventure, RPG (*Skyrim*), Puzzles (*Portal*). (Henrik)

4. Age 23.Gender: Male. MED9 Student. Play 15-20 hours per week. Prefers RPG, FPS, Driving simulatinos, and MMORPG. (Jannic).

Individual Task

1. In Counter Strike Source clan fight I shout four persons in the head with one AWP shot, and won the fight and the other team was semi-pro.

2. It might be in *Mass Effect 2* but I seem to remember a game of *Age of Empire 2* really well. Though *Farhenheit* did give me some good memories and some with *Next Life*.

3.First time I actually completed the storyline in the original *Pokemon* game. (Blue edition if you must know). Reason: Basically I had invested a lot of time and work into this experience so when finally reaching the end a lot of tension and excitement had built up. Pure and utter joy. And sense of achievement in the completion.

4.*Grand Turismo 3.* Driving a real time Le Mans. The sense of achievement when clearing a raid in *WoW* after weeks of preparations. Things that makes an experience memorable is the sense of feeling I have when achieving something difficult.

Group Discussion

Arne most memorable experience was in portal 2, the ending because of the song. Claes played Counter Strike Souce, in a clan fight – in the last round he made a quadro-kill, the feeling of being invincible. Jannic says that the sense of achievement makes a game memorable. Whether it is a personal or a game based goal that you achieve it does not matter. The sense of achievement is important, everyone agrees. Investing time and emotions in a game, makes it memorable. Endings have to meet your expectations; else it won't be very memorable. A bad ending can destroy the view of the game.

What in a game motivates you to play computer games?

Depends on the game. "When playing a FPS I play it just because I want to kill stuff (…) just killing stuff is amazing. But when playing driving simulations, then it is the realism, that makes me want to play it because I like cars." Jannic. "In games you can experience things that you would not able to experience in real life." Arne. Escaping reality. Magic powers. "I find games that are too easy, very quickly becomes very boring" Henrik stated. Games need some difficulty. Arne likes to test what a game allows you, and trying to beat the rules. When playing a game, they look at the visuals. Claes is the exception, he looks on the mechanics. How the game functions. However, it is still game depended according to Jannic.

Once you have started a game, what makes you want to play the game extensively?

"Being caught up in it, like if it is fun there is a very good reason to continue. If there is a good story there is a reason to learn more." Henrik. The need to explore and uncover the truth of games. Funny game mechanics. Claes thinks it is more about the achievements. The story and the mechanics need to back each other up, and it needs to be catchy. If you need to play a game for a longer period like MMO's you need achievements. Only Claes goes for the achievements, were the other participants' focuses on the story. An exciting story, Henrik wants to know what happens next. "Repetition that can kill a game" Jannic.

What elements in the game makes you keep playing a game?

Fun game mechanics, story and fun gameplay.

What makes you NOT keep playing a game?

Incoherence. "If anything doesn't match, if the sound is poor, if the game mechanics does not back up the visuals, if the visuals are off compared to the story" Jannic. Frustrating episodes getting stuck in the geometry. Bugs. Plot-holes, being forced to do something specific. Repetition. Lack of freedom. You need a sense of freedom to want to continue. Henrik feels that an overwhelming number of choices can be too much, like *Deux Ex*. Arne can relate to that. Unclear guidelines.

What makes you want to return to play a game?

Really fun game mechanics. "Every now and then I will pick up one of the good Spiderman games, where you can swing around" Henrik. Relates to memorable experience, if you had a good experience you want to

return later, Arne. Some of these fun gimmicks some of these games have. ”Occasionally I go back to an old *Need for Speed* game genre because some of the levels have some funny gimmicks…” Jannic. Claes returns to a game due to the sense of achievement. He gets that achievement feeling that gets him hooked.

Have you ever experienced to forget time and or events around you while playing?

All has. As long as the game captures you. “You look out the window, and go oohh its light outside” Henrik. Having fun. “You get caught up in the story” Henrik. You can be caught because it is fun, or when the story is interesting. Or a challenge you can’t complete. Challenges fun and story.

Have you ever been emotionally touched by a game? (How and Why)

“I guess everyone has screamed at their pokemon Gameboy” Claes. Frustration and anger is shared in the group. Happiness when reaching an achievement. Can also be attached to a game due to the storyline. Getting attached to the character or side-characters. “That is very widely seen in *Mass Effect* series”, Claes. Jannic likes to play *Fable* as every decision makes you good or bad; this makes him attached to the character through the story of the game.

Have your urge to keep playing a game ever changed during a game experience?

Yes. If the gameplay changes in the game. In *GTA* you can shift your focus from the story, then start killing. On the first playthrough it is the story and gameplay that keeps you going. Second time it is the achievements. The desire to continue can change due to the gameplay. If your expectations of the game are different from what the game really is, it can be either positive or negative, depending on the game.

Do you do something yourself to immerse yourself in a game?

Put on headphones. Depends on the game. Henrik play horror with sound, it does not work without it. You cant sit in a light room with other people and play a horror game. Henrik turns off a lot of different things in order to put his focus on his game. Jannic never plays with sound in *WoW* as he is talking with people online at the same time. When playing other games he uses sound as it back up the experience. Henrik try to read all the text in the game, see all the cinematic, hear all the conversations – to get the full experience. Using the narrative devices can invest yourself in the game.

How would you describe engagement when playing?

“Keep playing, the factor that makes me plays” Arne. “The way I am playing and not being distracted…” Arne. I feel engaged in a game when I start not noticing the world around me; I am so caught up both emotionally and in the story. “The survival instinct takes over” Henrik. Jannic thinks that’s immersion. When Jannic is engaged he wants to play the game and he finds it interested. But he is not caught up. Arne agrees, “It is not a second reality”.

How would you describe immersion when playing?

“Basically the fact that I get emotionally involved in the game” Henrik. When you are scared as a person as the character in the game is (talking about *Amnesia*). When you are emotionally attached to the game. When you jump when you get shot. You react as when you are there. Arne. When you substitute the real

world, with the virtual one. You forget you have other things to do, and loses track of time. “Being the player in the game, moving around as he does” Claes.

How would you distinguish between being engaged and immersed when player a game?

If you are engaged you are aware that there is a world around you. The game is just so good you just want to keep playing. If you are immersed you start to substitute the real world. When you are engaged you are fully aware that this is a game. When you are immersed you forget the game is a game. Get caught up and act as you would in a real situation because you are emotionally attached.

Group Task

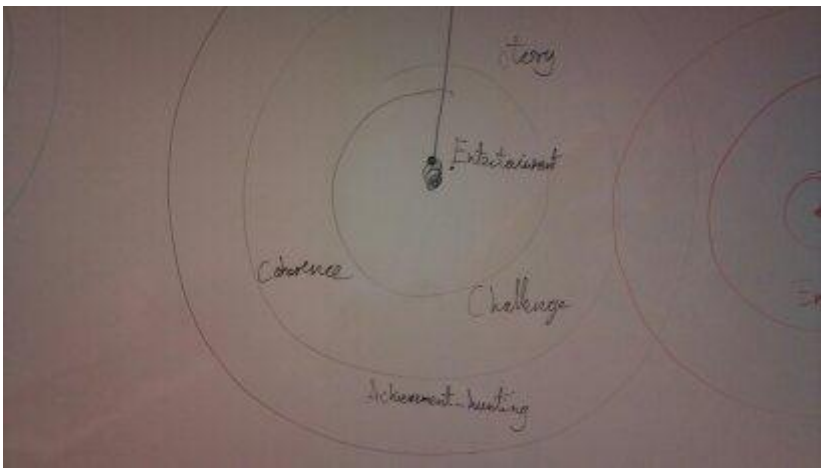


Figure 38: Group 2 Engagement Task

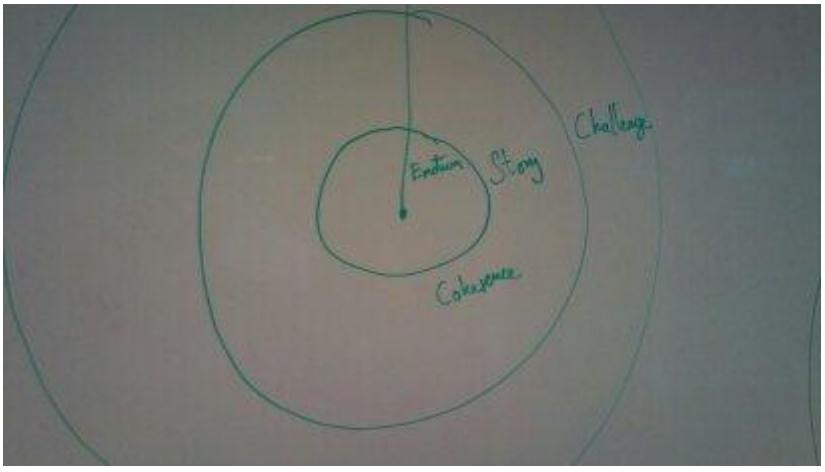


Figure 39: Group 2 Immersion Task

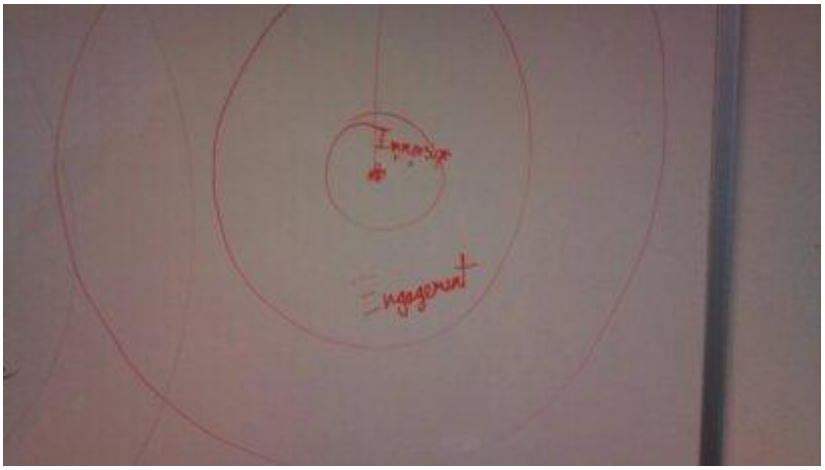


Figure 40: Group 2 Continuation Desire Task

Notes #3

Introduction Round

1. Notes: Age 19. Gender: Male. MED3 Student. Play three hours per day. Prefers mainly shooters. (German)

2. Notes: Age 22. Gender: Female. MED1 Student. Play 21 hours a week, approximately. Prefers MMO-RPG's, RPG. (Liv)

3. Notes: Age 19. Gender: Male. MED1 Student. Play 16 hours per week. Prefers racing games, FPS, RPG. (Petko)

4. Notes: Age 24. Gender: Make. MED9 Student. 3-5 hours per day. Prefers RTS, FPS, MMO, *DotA* Games. (Kim)

Individual Task

1. The day I first Time completed *GTA: San Andreas*. It took me couple of weeks to do it and the day I finished the game was epic.
2. *Mass Effect:* Salarian doctor died in *ME3*. I cried. Mordin Solus. Original end of the game: Depressed! *World of Warcraft*: Raiding, getting a spot on the team, being made an officer in the guild… *WoW* gender-harassment.
3. Having to complete the *Need for Speed* series, at a LAN party with four friends and later compare run times and how many restarts and the winner got a 75cm pizza all for himself as a price.
4. Playing *Counter Strike* at a LAN competing for the 3rd and 4th place at one of the biggest event in Denmark at the time.

Group Discussion

Petko most memorable was playing *Need for Speed series*, where some guy find some joysticks with steering wheels and everything, and they played four people with two screens, and they play three *Need for Speed* games in two days. It was a great social experience. LAN parties are similarities for the group. Kim remember some game sessions where he played for so long that he fell asleep during gameplay (*ToS*), playing the game Co-op. Kim most memorable experience is playing counter strike at a LAN party, one of

the biggest ones in Copenhagen, there were a lot of top teams. The intensity of the competition was very memorable. Because they sat right next to their opposing team, they had problems communication, until they just started shouting across the room; in the end they won the game because they failed the tactical planning. German remembers a game he played a lot, he didn't do his homework and eat and drink, he just spend hours each day playing the same game. He just kept pushing the limit and his personal goals. Liv experienced a game making her cry. "It just touched me emotionally" Liv. It was *Mass Effect 3* where a character died. She had problems continuing the game, because the character died. The personality of the character and the way he was acted, and the way he died caused her to cry and touch her emotionally. She played the entire *Mass Effect* series in 1-2 weeks; she loves the way the games let your character continue from one game to the next. She was extremely disappointed in the ending for the series, because of lack of freedom and it does not add up to the rest of the content of the game. After the company changed the endings, she felt like playing the game again. She also has different experience she remembers from *WoW*, related to raiding in the game.

What in a game motivates you to play computer games?

"Storyline", Petko. "If it is not interesting, you might have nice graphics and nice effects, but if there is no good story you feel you are just wasting your time on it", Petko. It needs a good story. German play games without a story because of the social aspect. If he plays those games alone, he does it just to "kill people, and screw the world", German. Petko argue that you set yourself a goal, and that is why you play. On competitive games like HoN, it is about winning. "For me it really depends on the game, and it is just not one thing, but the collective aspect of it.", Kim. "Like a good story and a good gameplay, but also games that don't have a story but then it becomes the challenge of it, because I want to beat the game or the challenge", Kim. When Kim play competitive games he always plays his best, he wants to win. If he plays story based games it is much more casual play style. Liv agrees with him. Liv plays WoW because of the social aspects. German sometimes uses competitive games, like *Counter Strike*, as small breaks on 10 min. or so, where other games such as *World of Warcraft* he would only play extensively, the others agree to this statement.

Once you have started a game, what makes you want to play the game extensively? / What elements in the game makes you keep playing a game?

"If it gives you a challenge, you will play it, but if it is too difficult you rage quit", German. "You should have the feeling that you should be able to win", Kim. It has to be difficult but within the possibility that you can beat the challenge. Kim thinks it is about the learning curve, you know that you get better at the game. The feeling of progress. The reward should reflect the challenge. Liv have to be emotionally invested in a game to play the game extensively; that can be if the game has some amazing gameplay. "If it is a game that has a great story I will get invested in it", Liv. They all agree that they relax when playing games. "(…) However, sometimes games are not relaxing and not even fun", Liv.

What makes you NOT keep playing a game?

"If the story is shit, or if the challenge is way beyond your level, I'm and not going to play that game", Petko. "There has to be a point to the game, you have to achieve something", Liv. It has to be fun. If you are

not achieving something you get bored. Getting rewarded is important. Repetition can kill a game. Overuse of core mechanics. Everyone agrees that repetition is boring.

What makes you want to return to play a game?

Liv, "if I had a good experience playing the game before". German returns to achieve new things. "Not only completing the missions, but can freedom does a lot, in *GTA*", German. Petko agrees on beating your own scores. Kim returns to *HoN* and *DotA* to get a better score as well.

Have you ever experienced to forget time and or events around you while playing?

"I had such an experience yesterday. The game got such a big grip on me", Petko. There were two girls entering his room, and he never really noticed what they were doing there. German was in a conversation with his parents over Skype while playing, and then forget about the actual conversation and that they were there at all. The group relate this experiences mostly to competitive games, and only briefly discuss more story base games. Kim listened to an hour long sound track while playing, and he had to repeating the track because he forgot to listen to the track, and juts played the game instead.

Have you ever been emotionally touched by a game? (How and Why)

Liv's most memorable experience, which made her cry. German got scared from *F.E.A.R.*. There were some good shock effects scared him a lot in that game. Kim had the exact experience in the same game. Kim has experienced Fear, and Anger. Anger and rage towards the game if something will not work, you get frustrated. Liv," getting frustrated over other players" When somebody is cheating, because it breaks the game. Bugs can be frustrated.

Have your urge to keep playing a game ever changed during a game experience?

Petko, the first five to ten minutes are the most important ones in HoN and DotA you spend this time to assess how you will play the game later, and change your tactics accordingly. German increases his focus of the game if it gets more challenging. Players cheating, sometimes you just play to play to have fun. And then this guy comes into the game and cheats, then the goal changes as you want to beat that one guy, Kim. New goals. The focus of a game can change as put more effort into a game to get higher scores, during the play session.

Do you do something yourself to immerse yourself in a game?

Kim turns of the lights when he wants to get immersed. If the sounds of the game is important for the experience he turns up the volume and makes sure he uses his best settings. He sometimes turns up the sound immensely to get a better experience on some games. Liv, got a really good headset so she can shut other things out. Petko, when it comes to racing games he uses special controls and several monitors to get a better experience. He also uses a real nice sound system, with several speakers. "When I play the game, I really feel like I am inside the game", Petko. German optimizes his options on his computer.

How would you describe engagement when playing?

Motivation to play. To relax both body and mind. You can be someone that you are not in real life. You can be someone better in a game than you are in real life. “You can be a loser in real-life, but in the game you can be a hero, and everyone knows you”. Puzzle games and logical games appeals to some people. Something that challenges you mentally, “You have to think outside the box.”. Escapism. Kim, “For me it could be the challenge.” Flow. “You need to be in flow”, Kim. You need progress; it makes you want to continue playing the game. “Feeling of accomplishment”, Liv. Sense of Reward. “If you take a game like WoW, you get rewarded right away” Liv. The anticipation to get a reward. “A little ego boost”, Petko. “The engagement of the game is what motivates you; it is what gets you hooked” Kim. It wants you to get more.

How would you describe immersion when playing?

Is much like reading a book. “I forget time, I forget to eat, I am so focused on this thing I’m doing that I forget things around me”, German. You keep going and experience something new that keeps you want to coninue. “When you are really into something, you really forget everything else”, Kim. “You are aware of the world around, but you don’t care about it, because your focus is only on the game.”, Liv. “If you enter that state you shut out other things, than the game. Then I will say you are immersed.”, Kim. The others agree. “When you stop playing from an immersive experiences you realize that you are tired and your eyes hurt, but you didn’t notice that until you stopped playing”, Liv.

How would you distinguish between being engaged and immersed when player a game?

Being engaged just means you are participating, you know the game is there and you are just having fun with it. If you are immersed, that’s when you start to ignore other things. Petko, “if I become immersed I will probably ignore everything else. I think you can be immersed without being engaged”. I not really engaged in it, Im just there, Liv. The engagement aspect of it is more the cause and the tools that a game contains. It’s the thing that makes you want to play the game. A game can be immersive, without being engaged in it. Kim, “engagement elements is the thing is what gets you hooked, which makes you want to continue. Where the immersive part of it, is the state that you’re in”

Group Task

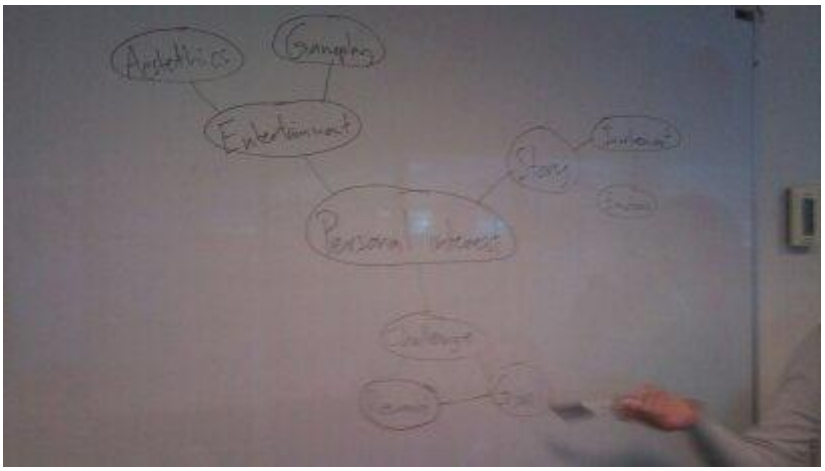


Figure 41: Group 3 Engagement Task

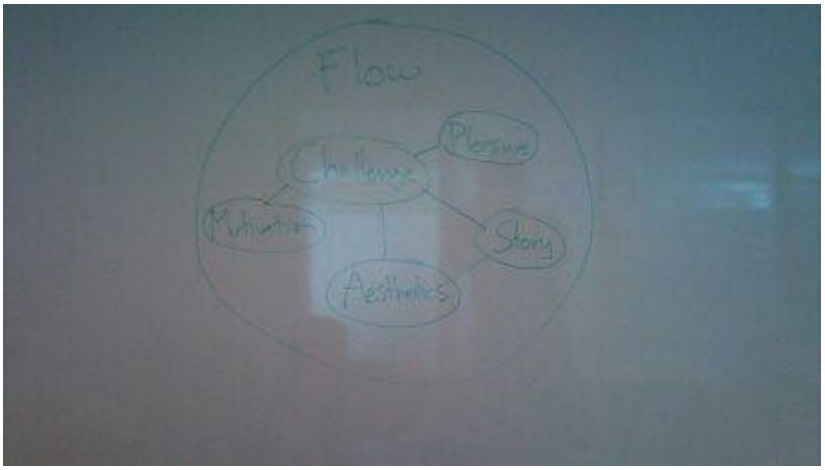


Figure 42: Group 3 Immersion Task

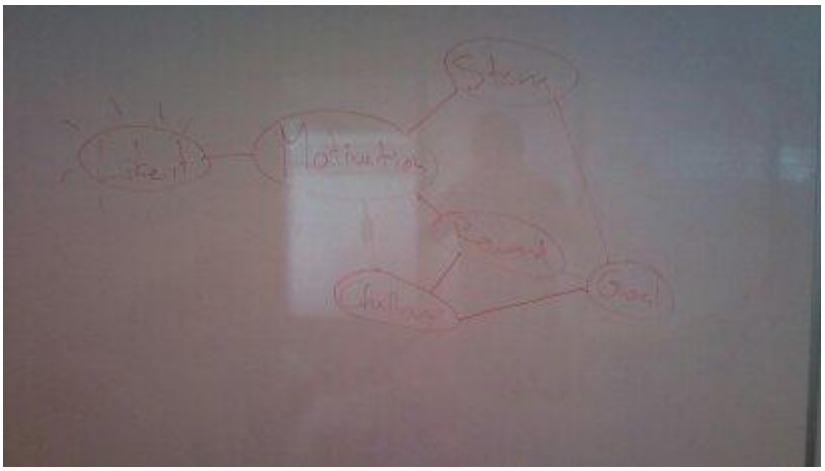


Figure 43: Group 3 Continuation Desire Task

Note Summations & Word Clouds

What in a game motivates you to play computer games?

Interest Fun Cinematic Previews Graphics Options Customization Controls Controls Controls Progression Relax Escapism Escapism Relax Choices Story

Game-Dependent Fun Realism Experience Escapism Escapism Challenge Difficulty Visuals Mechanics Game-Dependent

Story Interest Story Social Escapism Goals Game-Dependent Story Gameplay Challenge Social Breaks

Figure 44: Word Cloud #1

Once you have started a game, what makes you want to play the game extensively? / What elements in the game makes you keep playing a game?

Story Gameplay Controls Content Fun Choices Replay-ability Progression Goals

Fun Story Exploration Fun Mechanics Achievements Story Mechanics Coherence Achievements Story Story Fun Mechanics Story Gameplay

Challenge Difficulty Difficulty Challenge Learning-Curve Progression Progression Reward Challenge Emotions Investment Gameplay Story Investment Relax

Figure 45: Word Cloud #2

What makes you NOT keep playing a game?

Losing Starting-Over Difficulty Controls Challenges Starting-Over Anger Frustration Difficulty Novelty

Incoherence Frustration Bugs Story Choices Repetition Freedom Freedom Choices Unclearity

Story Flow Achievement Fun Rewards Repetition Repetition

Figure 46: Word Cloud #3

What makes you want to return to play a game?

Interest Engagement Story Relive-Experience Relive-Experience Nostalgia Challenge Fun Achievements Exploration New-Experience

Fun Mechanics Mechanics Relive-Experience Relive-Experience Fun Achievement

Relive-Experience Achievement Freedom Scores Scores

Have you ever experienced to forget time and or events around you while playing?

Involvement Character Character Influence Character Relate Challenge Concentration Challenge Involvement

Fun Story Fun Story Interest Challenge Challenge Fun Story

Competitive-Gameplay

Figure 47: Word Cloud #4

Have you ever been emotionally touched by a game? (How and Why)

Sadness Character Choices Attachment Character Side-Characters Story

Frustration Anger Happiness Achievement Story Characters Side-Characters Attachment Attachment Character Story

Sadness Fear Story Mechanics Fear Anger Rage Frustration Cheating Bugs

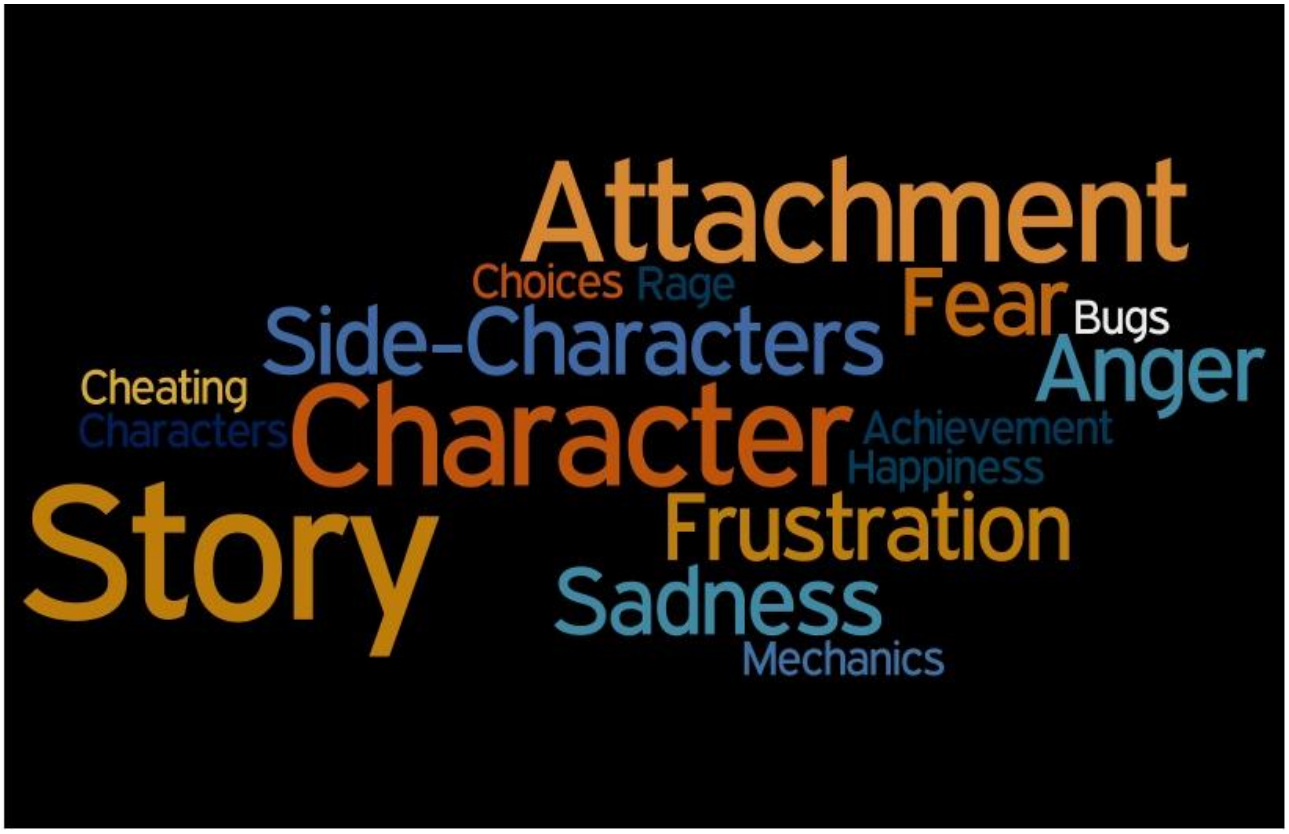


Figure 48: Word Cloud #5

Do you do something yourself to immerse yourself in a game?

Game-Dependent Lights Headphones

Game-Dependent Headphones Sound Light Isolation Isolation Sound Exploration Investment

Lights Sounds Headphones Isolation Special-Controls Several-Monitors Optimization

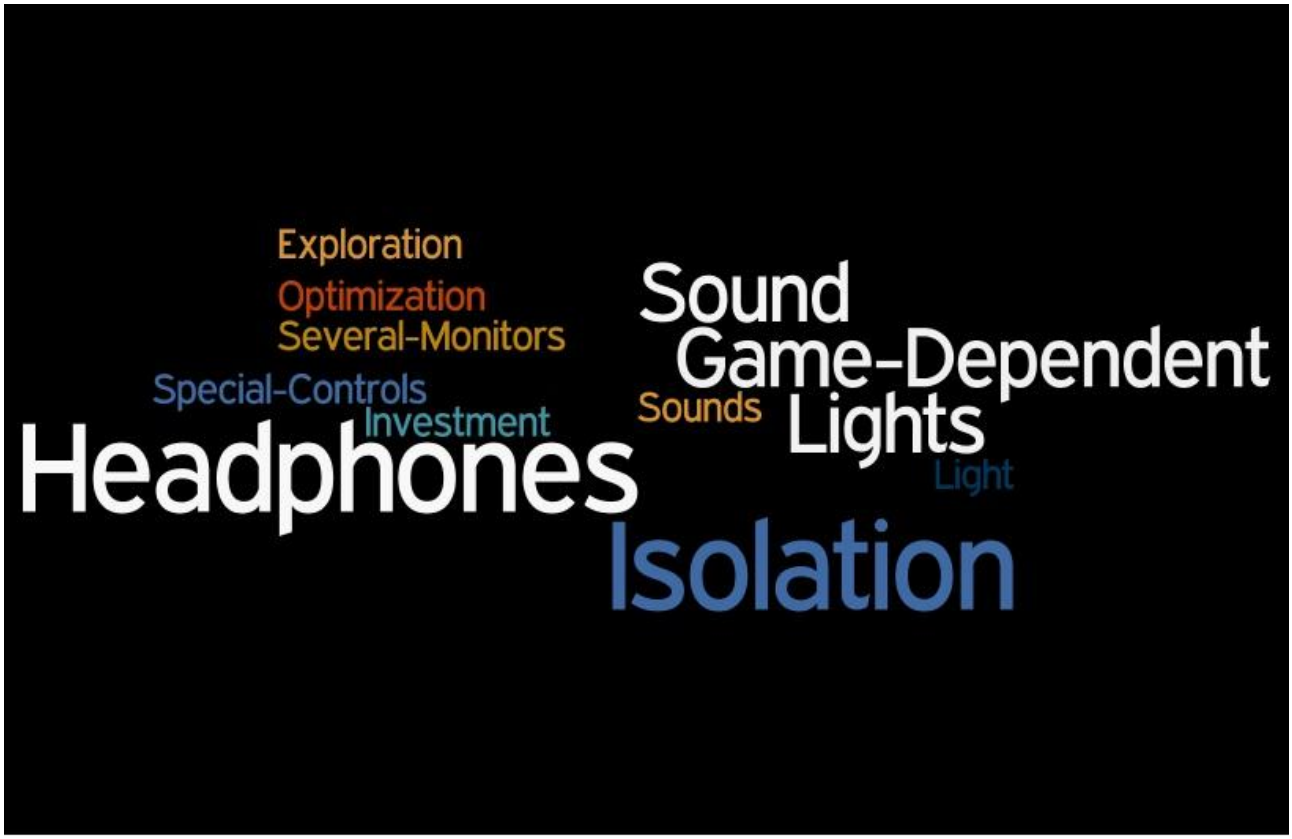


Figure 49: Word Cloud #6

How would you describe engagement when playing?

Need-To-Finish Re-Engagement Re-Engagement Suppressing-Bodily-Needs Need-To-Finish

Forget-The-Real-World Emotions Story Interest

Motivation Relax Being-Someone-Else Escapism Appeal Challenge Escapism Challenge Flow Progress Continuation-Desire Accomplishment Reward Reward Motivation Continuation-Desire

Figure 50: Word Cloud #7

How would you describe immersion when playing?

Forget-The-Real-World Part-Of-The-Game Part-Of-The-Game Part-Of-The-Game

Emotions Involvement Involvement Part-Of-The-Game Emotions Attachment Part-Of-The-Game Substitution Part-Of-The-Game

Forget-The-Real-World Experience Continuation-Desire Forget-The-Real-World Focus Forget-The-Real-World Forgetting-Bodily-Needs

Figure 51: Word Cloud #8

Collective Word Cloud of Answers and Statements

Figure 52: Word Cloud #9

Group Task – Engagement

Challenge Personal-Investment Goal Fun Reward

Entertainment Story Challenge Coherence Achievement

Personal-Interest Entertainment Aesthetics Gameplay Story Emotion Involvement Challenge Reward Achievement

Group Task – Immersion

Connection Interaction Relate Story Interdependence Atmosphere Visual Sound

Emotion Story Coherence Challenge

Flow Challenge Motivation Story Aesthetics Pleasure

Group Task – Continuation Desire

Progress Choice Engage Immerse Flow No-Bugs

Immersion Engagement

Motivation Reward Goal Challenge Like-It Story

II. Focus Group Interview for Analysis, Notes.

Individual

Note down your age, time spend on horror per week, and fav. Game.

1. Age: 24, play 1-2 hours per week. Favorite game is *Amnesia – The Dark Decent*, because it is very effective and primarily focuses on actual fear rather than cheap jump-scares and that is awesome.
2. Age: 26, play: "Don't really play anymore but a few years back I was playing *Amnesia* for some time. Because of the story of it.
3. Age: 19, play 1/month. Favorite game *Doom III*, because: Good story that might happen in a few decades. A lot of scary scenes. Good > Evil, in the end, or is it?
4. Age: 26, play "a couple of hours a week." Favorite game is *Amnesia*, because: It is dark and sinister. The scary part is not the exact monsters, but the threat, the possibility that they are there.

Introduction Task

Introduce yourselves and state your fav. Horror game and why.

Mads' favorite game is *Amnesia* because it is dark and sinister and very well made. Florian sometimes plays *Doom 3*, because it as a good story and it might happen in a few decades, it has a lot of well-made scary scenes. Hans, don't play horror games that much anymore, he played *Amnesia* he liked the story, not so much the scary elements. Hans saw the horror as a part of the challenge, you had to overcome or cope with your fear to beat the game. Henrik does not play regularly, his favorite game is *Amnesia*, he thinks it's very effective which he thinks is awesome. None of the participants play regularly; however, they play horror games in periods instead.

Discussion

Hans thinks being scared is a challenge in itself that goes beyond the screen. Overcoming your fear is one of the things that you need to do to complete a horror game. The others can relate to this, and agrees that fear is a challenge that the game poses.

- **What motivates you to play a horror game?**

"Overcome boundaries, trying to be scared", Mads. "Knowing your limits, also adrenalin", Florian. Being able to overcome fear and finish the game, Florian. "Sense of achievement", Henrik. The sense of achievement can come from overcoming your fear in the game. However, if a game becomes too scary it can cause the player to quit the game. "The motivating for playing a horror game is to become afraid, where in a puzzle game you challenge yourself differently, you do not overcome your fear. In a puzzle game you challenge yourself mentally", Hans. Henrik points out that puzzles can enhance your fear, if a game poses a puzzle with the possibility that you will be attacked while solving it.

- **When playing horror games, what makes you continue?**

"Curiosity. Make some stuff up in my mind", Mads. "If it doesn't challenge me I get bored, so I need to continue at a certain pace", Mads. "Being tied to character", Hans. Hans, both identify himself with the character, and putting himself in his position, and he is also feeling sorry for the character, and afraid that the character may die. Henrik plays *Clive Barkers: Undying*, playing because of the gameplay, "it's a lot of

fun, the story is not all that amazing, but the game mechanics are awesome", Henrik. "Wanting to know the whole story", Florian. Progression. You have to walk it through, exploration.

- **What makes you play a horror game extensively?**

"I usually get bored", Mads. Mads did not play a horror game for extensively long. Neither did any of the other participants. Only in some rare situations did they play for several hours in a row. "If the story is exciting, I really want to continue", Henrik. The horror moments.

- **What makes you NOT want to keep playing?**

"Repetition", Florian. "If it is to damn scary", Henrik. Henrik only played *Silent Hill 2* because it was too scary. He felt to vulnerable and exposed, and the environment and monster was too creepy. If the game is bad, and the graphics are bad. They all agree that if the game is supposed to be scary, but it is not, then they will not continue to play it.

- **Do you get scared while playing horror games?**

They all do. "Depends on the quality on the game", Henrik. "*Dead Space* is ridiculously scary in the start, then you realize it is cheap jump scares, and it is not scary anymore", Henrik. "Amnesia really really works, because it does not focus on jump scares", Henrik. Florian found *Slender* scary because it builds up a lot of suspense.

- **(if so, are you afraid that you will be hurt yourself, or do you fear the character in the game will be hurt?)**

Mads does not think you can put it up like that. "Fear is irrational, I do not fear for the character or for myself, it is just fear",Mads. Hans thinks that if you could walk it through the game in god mode it would not be scary at all. The fact that you need to preserve yourself, and keep the character alive is a part of what makes the game scary. "I do not get attached to the character in games", Mads. However, they were all afraid of dying in the game. "The setting can really make the game scary", Hans. Things that are uncanny, or creepy makes the game scary. Hans find it scary when something is out of place.

- **What causes you to return to a horror game?**

They all agree that they very rarely re-play a game, if they have finished it. If they have not finished I they will return to beat the game.

- **What elements of a horror game do you enjoy the most?**

"The audio side of a horror game is so essential", Henrik. Mads agrees. They all agree that audio is part of what makes it very scary. "In horror games I enjoy to get a chance to relax between the scary parts", Hans. It is a relief. They all dislikes to constantly to be afraid. If you feel fear for a long of time you don't feel fear anymore, you get use to it", Florian. "The kind of fear that isn't the jump scare", Hans.

- **What elements of a horror game do you dislike the most?**

"Jump scares", Mads. "They are too obvious, and cheap tricks", Mads. Henrik agrees with Mads. Florian somewhat disagrees, as he states that if a jump scare catches you off guard, and comes when you least except it, it works for him.

Group Task

Map of Continuation desire on black board.

During the group task they discussed that fear was not part of the continuation desire, but of the motivation. They wanted to be scared, but when the game started and they got hooked, it was no longer the fear that drove them.

Exciting, Audio, Visual

Story, Character, Adrenalin

Testosterone, Sense of Achievement

By *Testosterone* the participants meant that the feeling of being *manly* when they overcome their fear.

III. Electronic Questionnaire

Questionnarie for Horror Games

Hey, I am a master thesis student at AAU-Cph - Medialogy. I need some data on peoples continuation desire in horror games, please fill out this quick quistionnarie. In advance, Thanks and best regards Danny L. Nielsen

* Required

Age * Type in your age

Gender *

- Male
- Female

How much time the spend per week on horror games? *

- Less than 2 hours
- 3-8 hours

- 9-14 hours
- more than 15 hours

Do you know what a Survival Horror Games is? *

- Yes
- No

If yes, Please describe what it is? Describe what a survival horror game is?

Mention up to five horror games you have played before * If you played less than five horror games, then just list those

What motivates you to play a horror game? * Select any element that applies

- Story
- Exploration
- Interaction
- Difficulty
- Novelty
- Game Mechanics
- Progression

- ☐ Sensation of Fear
- ☐ Experience
- ☐ Aesthetics
- ☐ The Character(s)
- ☐ Challenge
- ☐ Strategy
- ☐ Achievement
- ☐ Reward
- ☐ Attachment to the Game
- ☐ Fun
- ☐ Social Aspects
- ☐ Gameplay
- ☐ Others

If 'others' which? Please describe your 'others' choice

What makes you play a horror game extensively? * Select any element that applies

- ☐ Story
- ☐ Exploration
- ☐ Interaction
- ☐ Difficulty
- ☐ Novelty
- ☐ Game Mechanics
- ☐ Progression
- ☐ Sensation of Fear

- ☐ Experience
- ☐ Aesthetics
- ☐ The Character(s)
- ☐ Challenge
- ☐ Strategy
- ☐ Achievement
- ☐ Reward
- ☐ Attachment to the Game
- ☐ Fun
- ☐ Social Aspects
- ☐ Gameplay
- ☐ Others

If 'others' which? Please describe your 'others' choice

When playing a horror game what makes you want to continue playing? * Select any element that applies

- ☐ Story
- ☐ Exploration
- ☐ Interaction
- ☐ Difficulty
- ☐ Novelty
- ☐ Game Mechanics
- ☐ Progression
- ☐ Sensation of Fear
- ☐ Experience

- ☐ Aesthetics
- ☐ The Character(s)
- ☐ Challenge
- ☐ Strategy
- ☐ Achievement
- ☐ Reward
- ☐ Attachment to the Game
- ☐ Fun
- ☐ Social Aspects
- ☐ Gameplay
- ☐ Others

If 'others' which? Please describe your 'others' choice

Do you experience fear when playing horror games? *

- ○ Yes
- ○ No

If yes, why? Briefly describe what makes you afraid

I am afraid I will get hurt myself, when I am playing horror games * How much do you agree with this statement?

	1	2	3	4	5	
I am not afraid that I will be hurt	○	○	○	○	○	I am very afraid that I will be hurt

Please briefly explain your answer Briefly describe what makes you afraid/not afraid

I am afraid that the in-game character will be hurt, when I am playing horror games * How much do you agree with this statement?

	1	2	3	4	5	
I am not afraid that the in-game character will be hurt	○	○	○	○	○	I am very afraid that the in-game character will be hurt

Please briefly explain your answer Briefly describe what makes you afraid/not afraid

I play horror games because I like being scared * How much do you agree with this statement?

1	2	3	4	5

I don't play to be scared ○ ○ ○ ○ ○ I love being scare, that is why I play

What do you enjoy the most in horror games? * Select any element that applies

- ☐ Story
- ☐ Exploration
- ☐ Interaction
- ☐ Difficulty
- ☐ Novelty
- ☐ Game Mechanics
- ☐ Progression
- ☐ Sensation of Fear
- ☐ Experience
- ☐ Aesthetics
- ☐ The Character(s)
- ☐ Challenge
- ☐ Strategy
- ☐ Achievement
- ☐ Reward
- ☐ Attachment to the Game
- ☐ Fun
- ☐ Social Aspects
- ☐ Gameplay
- ☐ Others

If 'others' which? Please describe your 'others' choice

What do you enjoy the least in horror games? * Select any element that applies

- ☐ Story
- ☐ Exploration
- ☐ Interaction
- ☐ Difficulty
- ☐ Novelty
- ☐ Game Mechanics
- ☐ Progression
- ☐ Sensation of Fear
- ☐ Experience
- ☐ Aesthetics
- ☐ The Character(s)
- ☐ Challenge
- ☐ Strategy
- ☐ Achievement
- ☐ Reward
- ☐ Attachment to the Game
- ☐ Fun
- ☐ Social Aspects
- ☐ Gameplay
- ☐ Others

If 'others' which? Please describe your 'others' choice

Is there a specific reason you chose to play a horror game, instead of a different game genre? *

- Yes
- No

If yes, What reason? Describe the reason you chose a horror game i

Comments Other comments of any kind here :)

IV. Game Design

Movement

The player can move forward, backwards, strafe to both sides and turn the view with the mouse, using the same conventions as any other first person video game. Other than that the player can crouch (sneak mode), jump, and sprint.

Ordinary movement is at walk speed. Remember, the player is in no hurry in this game. This will equal to 3.5km/h. (however this will change due to testing.).

Sprinting will be done so at three times the speed of walking. However, the avatar will suffer from fatigue. The fatigue bar is not a visible bar; however the biorhythms in the PDA will increase the heart-rate reading of the avatar the further he runs. The player has a 100 fatigue. For each second running he will lose 10 fatigue points. While not running the avatar will regenerate the fatigue, at a rate of 6.5 fatigue points per second. As the avatar sprints the sound of heavy panting will be played. The panting will continue two seconds after the players stops sprinting. The biorhythms measurement scale can be found under the PDA.

Sneaking will be done at ½ the speed of walking. The player can stay crouched for as long as they so wish. The camera will be lowered to half the ordinary height. Crouching of course also lets the player enter ventilations vents and duck under desks and obstacles etc.

Jumping will allow the player to jump the same height as a standard crate size (approximately one meter into the air, straight up). The jumping follows the real world laws of physics, and the length of the jump is scaled to the move speed of the avatar. (Sprinting makes longer jumps than walking).

All movement produces noise, however only if the player actually moves. (Turning around produces no noise at all). Noise is measured in the distances it can be heard, not in the amplitude of the noise. In essence if a monster is 1 meter away from you it does not matter whether you sprint of sneak, the noise level will be deemed the same. Full details on noise range can be seen in Table 9: Noise Table.

Standing Still	Walking	Sprinting	Sneaking	Jump
0 Meters	10 Meters	25 Meters	4 Meters	25 Meters

Table 9: Noise Table

NOTE: IT is not possible to sneak and spring at the same time! If the player sneaks, then press the sprint button the avatar will stand up and start sprinting.

Flashlight

The flashlight is the only item which follows the player throughout the entire game. The flashlight is used to illuminate dark areas; however, it uses batteries thus making it possible to run out of power for your flashlight. Figure 53: Concept Art - Flashlight, shows the concept art of the flashlight.

Figure 53: Concept Art - Flashlight

To make the movement of the flashlight seem more fluent and less static and unreal the flashlight will not be directly attached to the body of the character. Instead it will slowly align its vector direction to that of the viewport.

The flashlight will have two different light settings; long light and short light. Long light has a range of 15 meters, and consumes 0,5 energy per second. Short light will only have a range of 8 meters, but only consumes 0,3 energy per second. A full battery has a 100 energy points, if the player chooses to exchange the battery the remaining energy points will be wasted and the flashlight will be fully recharged.

When the flashlight comes down on ten pro cent remaining power it will start to flicker heavily, as an indicator that the battery is running low.

The flashlight can be turned on and off by use of designated keyboard button. Whenever the flashlight is turned off, the hand holding it will be dropped down out of view. When it is on the hand will be visible yet again. When exchanging batteries the hand cannot be seen, only a sound of the action is being played.

Nocturnal Vision

Whenever the player is without any light source; that is there is none in the field of the view. Be it the flashlight or an environmental lamp, the player gains night vision. The nocturnal vision takes a few seconds before it activates itself (six seconds). Activation time may change due to testing.

When a light source comes into the view again, the nocturnal vision will end instantly and will have to restart if the player turns away from all light again. Note that the actual light source does not have to be within the clipping plane; only the illuminated area has to be.

The nocturnal vision will simply increase the ambient lighting, on all channels. The nocturnal vision will tint the ambient colour to a bit of a blue colour to indicate that the nocturnal vision is active.

Inventory

The player has an inventory for everything else than the PDA and the flashlight. The inventory consists of 5x4 spaces for items.

The inventory is hidden from view until the player brings up the inventory screen, which shows all items and empty slots in a grid. While the inventory is open the game still proceeds in the background. Each item can be move to any location in the inventory by drag and drop. If the player drops an item upon another, they will swap places. If the two items can be combined they will be so instead, and the new combined item will be located in the spot the item was dropped on.

If the player right clicks on an item a drop down menu will appear with the following options:

- **Use**, which will let the user use the item outside the inventory. When this is pressed the inventory will closed, but the item will remain on the screen and can be used with objects by holding them over an object and press the interact button. If the player right clicks the item will return to the inventory and the game will resume as normal.

If clicking outside the drop down menu, it will close again.

Interacting with Computers

When interacting with a computer the viewport of the player will change so the screen of the computer will cover the entire field of view.

Everything on the computer is text based, there is no mouse-interaction at all, and as with the inventory the game does NOT pause when using a computer, it will continue and you may be discovered by monsters when using a computer.

If the player returns to a computer they already used the computer will be in the same state as when he left it. Every computer will list the possible commands on the screen. Typing in one of these commands either executes the action or enters the sub-menu. All computers have a help function, simply type "help" and an explanation of the computer system will pop-up. The help message reads:

"Type the desired command and press Enter to execute. E.g. DoorControls.exe

To return to the root type Root. To jump up one layer type cd..

For further information on each command type Help <Command>."

If the player types *Help <Command>* a specific help description about the command will be prompted.

The command and file types can be seen in Table 10: Computer command table below.

Command/File Type	Description
<DefaultName>	A command with just a name is a menu command. This will open up for a new list of commands.
<DefaultName>.exe	These are executable commands. When executed they will do the specific task they are assigned for, e.g. unlock.exe will unlock something nearby.
<DefaultName>.txt	This is a simple text file. When executing it, the text file will prompt and the player can read the file. If the length of the text is too long to be on the screen, the text will be divided into several pages. In the bottom there will be a page number. E.g. 1/3 indicating there are 3 pages in total. To jump between the pages type *Next* or *Previous* to go back and forth.

Table 10: Computer command table

Note that some commands and files will have passwords assigned to them. These must be hacked to get access.

Hacking

When the player attempts to hack a computer the player must break a code which varies in length depending on the specific port chosen. The code is a string of numbers, which are hidden for the player. The player can type in the numbers from 0-9. However, the player cannot type more numbers in than the length of the code, e.g. with a code of five numbers, the player can only type in five numbers at the time. It is possible to delete numbers with backspace; however the amount of numbers submitted must still be the same as the length of the code. The player submits a code by pressing *Enter* on the keyboard. When a code has been submitted it will be checker whether it is true or false. This is done per number submitted. If a number is place correctly it will be dyed green, if it is place incorrectly but do exists in the code somewhere else it will be dyed yellow. If it is not in the code at all it will be dyed red. The player will have 10 attempts

to break a code, then the code will change and the player needs to start over. Each line of the 10 attempts will be kept on the screen.

Simulated Emotions

The player will sometimes experience horrific events. When some of these occur the camera will be forced in the direction of the event and the player will gasp. Whenever such an event occurs it will be described in the level design. The camera will start turn as soon as the event starts, the sound however will not play before a moment after.

Event Reactions are always separated into three parts. The incident, the trigger and the focus point.

- **Incident;** the incident is the thing that happens, that could be a monster emerging or the ceiling collapsing.
- **Trigger;** the trigger is the spot where the incident will be triggered. It is typical a zone on the map. If the player enters the zone the incident will occur.
- **Focus Point;** the focus point is where to the camera will turn when the incident has been triggered. It is not necessarily the same point as where the incident occurs, but often it will be.

Whenever something scary has happened the character will start to breathe more heavily and his heart rate will increase. The breath can be heard, together with possible mumbling for up to 15 seconds. The heart rate will decline together with the length of the heavy panting. These durations will be adjusted due to testing.

This concept is derived from a previous project which showed that simulated emotions enhanced the immersive state of the player (Noack, Nielsen, Hansen, & Tranto, 2012).

Combat System

The player has no combat abilities at all. There are no attacks of any kind available for the player. Instead the player is able if he so choses to kill some select enemies using the environment. This will be specified in the level design which enemies are mortal, and how to destroy them. An example of an environmental fatality could be dropping a heavy box on the head of an enemy.

Health

The player has a 100 health points (hp). The health will regenerate by itself overtime. However, the player may be caused to bleed from any attack, and will instead start to bleed. The player can then bandage his wound, and the bleeding will stop, and the regeneration resume.

The regeneration is relative to the amount of health left. The avatar regains by a factor of (10/RemainingHealth) +1 *(Takes 73 seconds to go from 1 to 100 hp)*. Which means that close to death the player will regenerate faster than when he only has taken little damage. The player will only start regenerating 10 seconds after the last time he was hit.

At every time the player suffers damage from enemies or falling from heights there is a chance the player will start bleeding. This stops the regeneration and starts an opposite bleed mechanic. The player will bleed with a factor of 35/HealthLost *(Takes 145 seconds to go from 100 to 0 hp)* which means the player will suffer the most bleeding damage with a high amount health remaining. To stop the bleeding the player

needs to use a bandage, or eventually die from bleeding. There is a 15% chance of being affected by bleed damage on each hit the player suffers.

Fall damage is started from a height of 2½ meters, where the player will suffer 10 points of damage. An interpolation up till five meters where the player die instantly (suffer a 100 damage points). Health can be monitored in the inventory screen as a number ranging from 0-100.

Hiding

The player cannot kill most enemies in the game, instead he will have to hide and stay out of sight. This is done by staying out of sight of the enemies. However, an enemy can also hear, so noise is a factor. Different actions produces different amount of noise, they are listed below from noisiest to most silent (top to bottom). (The noise factor will be found due to testing).

- Sprinting.
- Jumping.
- Walking.
- Interacting with larger objects (crates, lockers).
- Crouching (sneaking).
- Interacting with smaller objects (health packs, batteries, using computers).

A player can use the shadows to hide in. Whenever the player enters a dark area there is a smaller change the enemies will take notice, even when staring right at them. This is relative to the amount of light shining on the player.

A player may also hide inside some lockers and under some desks. This is done by interacting with the object. However, a player should remember to turn off their flashlight when they enter a hiding spot. Otherwise the enemies will be able to see the light from the flashlight.

Noise

There are two factors determining how hidden you are; noise, and visibility. Noise alone will never reveal the player, and each action type has different noise levels which will be listed here. Noise has no amplitude level as such; noise is simply noise within a certain range.

When an enemy is within the range of the generated noise there is a chance, determined on the distance from the generator, that the enemy will notice the source; causing them the investigate. The centre of the source has a 100% chance of being noticed while the end of the range only has a 10% chance of being noticed, per second.

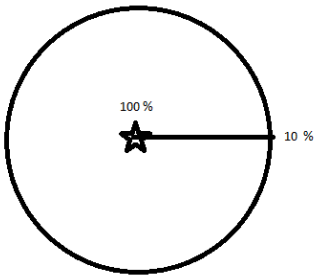


Figure 54: Example of noise generation

The % chance of getting noticed is interpolated between the centre and the edge of the circle. Here is the math:

Min range = x, max range = y, min chance of being heard = i, max chance of being heard = k.

Chance of being heard (j) at z range: $j = ((z-x)/(y-x))*(i-k)+k$

As we already know some of the numbers that gives us:

x = 0, y = ?, i = 10, k = 100

so,

$j = ((z-0)/(y-0))*(10-100)+100 \Rightarrow (z/y)*(-90)+100$

There is a noise check on the enemy for each second of the noise.

Table 11: Extended Noise Table displays the full noise table of the game.

Standing Still	Walking	Sprinting	Sneaking	Jump
0 Meters	10 Meters	25 Meters	4 Meters	25 Meters
Hiding in a Locker (enter/exit)	**Hiding under a desk (enter/exit)**	**Throwing Debris**	**Opening/Closing Doors**	**Interacting With Computers**
10 Meters	5 Meters	15 Meters	12 Meters	8 Meters

Table 11: Extended Noise Table

Any action that is not mentioned in the Noise Table does not create noise!

If a monster notice noise they will investigate the source, see **Error! Reference source not found.** for full etails about enemy behaviour. You will not be discovered based on a sound solely; the enemy needs visibility as well.

Visibility

The second factor determining how hidden the player is visibility. The visibility is determined on the pose of the player, the action, and the light hitting the surface of the player.

When the player is standing still in a fully lit room they will have a visibility factor of 1, which is the maximum visibility. Each movement state has its own multiplier.

```
Visibility = ((lightRange*multiplier) – distanceToLight)/10

If(Visibility > 1){

   Visibility = 1;

}else if(Visibility < 0){

   Visibility = 0;

}
```

Where, lightRange is the max range of the light source, the multiplier is tied to walking, sprinting, and crouching, and distanceToLight is the distance between the player and the light source. Shoot a ray to from the centre of the player to the centre of the light source as well, if the ray hits something between the light and the player, we assume the player is covered in shadows as some object must block the way, and the calculations are disregarded and the visibility is set to 0.

In case of multiple lights we must consider all lights of significance, determined if the player is even within the max range of the light. In case of multiple lights simply extend the calculations to include the extra lights e.g.:

```
Visibility = ((lightRangeA*multiplier) – distanceToLightA)+((lightRangeB*multiplier)-distanceToLightB)/10
```

Remember to shot a ray to each light to check for shadows. If a light is blocked by an object simply treat that part of the equation as a zero.

The visibility is a factor for checking whether an enemy can see you or not. Different from noise there is no chance of being seen, it is simply a matter if the conditions are right or not.

Let us say that an enemy can see 25 meters (NOT YET DETERMINED See **Error! Reference source not found.** or full details on enemies). And the player is within the field of view. The visibility would work as a multiplier to determine how close an enemy needs to get in order to notice the player. The math would look like this:

```
NoticePlayer = false;

If(distanceOfPlayer =< (viewRange*Visibility)){

    NoticePlayer = true;

}
```

The multipliers for player poses can be seen on Table 12: Pose Modifier Table.

Walk	Sprint	Crouch	Jump
1	1,15	0,8	1,15

Table 12: Pose Modifier Table

These values might change due to testing!

This would mean that a player that walks 10 meters from a light source that has a 15 meters radius can be noticed by an enemy with a view range of 25 meters at:

NoticePlayerAtRange = viewRange*Visibility = > 25*(((15*1)-10)/10) = 12,5 meters

If he crouches it will be:

25*(((15*0,8)-10)/10) = 5 meters

While sprinting will give:

25*(((15*1,15)-10)/10) = 18,125 meters

When not moving the value of visibility will be multiplied with 0.9!, however this is done before the value is sat to either 1 or 0 if above.

Thus when standing still the calculation will be:

Visibility = (((lightRange*multiplier) – distanceToLight)/10)*0,9

When finally all these calculations have been made and the enemy is within notice range of the player, they will take notice of the player and start pursuing, again see 8.8 for full details.

Interactive Elements

This section holds all the information for all interactive elements (objects and items) in the game, and a list of which actions are available for each element.

Items

Items are elements that can be picked up by the player, and can be re-accessed by the inventory. Items will glow every five second for ½ a second. This is to indicate that the user can pick them up. Every *Item* will be picked up by using interaction button (Mouse0).

Battery

One of the most common items in the game will be batteries. A fresh battery will replenish your flashlight completely. However, the batteries currently in the flashlight will disappear. When the player uses a battery (whether it is from the inventory or the action wheel) the flashlight will be turned off and put down the screen. There will be played an approximately 5 second long sound of the player changing batteries, after that the flashlight will be turned on as normally again.

Bandages

Bandages are also a rather common item. They will stop bleeding effects, and without a bandage the player will die from bleeding. When using a bandage it will be much similar to use a battery. The player will stop and a sound will be played indicating that he is bandaging his wounds; this will take approximately 3 seconds.

Key Cards

Most doors that are locked throughout the game use key cards to be unlocked. A key card does not have the use option in the action wheel however. There are two types of key cards, security level key cards and personal key cards.

Security key cards is divided into levels (how many is still undecided). A security card of level 1 opens all level 1 doors in the game. A level 2 card will open all level 1 and level 2 doors, etc. This means that if the player early on finds a level 5 door he will have to return at a later time to open the door.

Personal Key Cards are tied to a specific door. This could be Dr. E. Vil's key card for his own personal lab or office. They will open one door, or a set of doors related to the person.

The player has to use a key card in order to open a locked door.

Syringe

The player can carry up to three syringes at all time. A syringe is by default empty. Once in the inventory the player can fill them up with different compounds. The player has to find a bottle of something first; this could be adrenalin or something similar.

Once used the syringe is filled with the compound and is ready to be injected into Miller. Note that when he uses an already filled up syringe he will inject himself, and gain the effect from the compound. Once the player has injected himself with a syringe it is empty and needs to be refilled.

Injectable Compounds

This is a description of all the different compounds that Miller can inject himself with. Each bottle has enough liquid to fill up three syringes. Using this item will cause the inventory to open (if it is not already opened) and the player are able to drag it on top a syringe to fill it up.

Morphine

This is a painkilla! Using morphine will dull pain for the duration of one minute. It will decrease damage taken from enemies by 25%. The player can only inject themselves with morphine every 3 minutes, so he will not overdose. Colour Blue.

Adrenalin

Injecting himself with adrenalin Miller gets an instant adrenalin rush. The effect lasts for 20 seconds and causes the game world as a whole to be slowed down with 10% which means that everything will seem as they are experienced a lot faster. Furthermore Phillip will not fatigue as easily. The fatigue is drained 50% slower than normal. During this effect the player will be able to hear Phillips heartbeat as well. Colour Green.

Viscosity Enhancer

This is a blood thickening drug. It is used normally to prevent thinning of blood and excessive bleeding. When Miller gets injected with this drug the effect of bleeding will be reduced by 50% for the next 1½ minutes. (This is good if you are out of bandages and needs to buy more time to look for some). Colour Red.

Screw-Driver

The screw-driver can simply be picked up, and used as any normal item. However, it is only useful on certain later described objects and special cases.

Objects

Objects are all the elements that can be used by the action wheel, but which the player cannot pick up.

Common Doors

Most doors are just doors. These can open and close, and they open fully as a door in the real world, which means about 150 degrees angle (so so). There are two types of *common doors*, the interactive and the non-interactive ones. The non-interactive is permanently locked and cannot be opened by any means; they simply act as filling out the otherwise emptiness of the hallways. The interactive doors can also be locked by with the possibility of being opened with a key or some sort of event.

Interaction

Default Option; Open/Close which simply opens or closes the door depending on the doors current state.

Alternate Option; Listen: this will turn the camera up close to a listening position (the same as if you should put your ear on the door yourself). While the player is listening to a door all sounds of the world will be turned significantly down (how far down is yet not determined but start with turning it down by 80%). At the same time a low-passed sound of what is beyond the door will be played. There are two types of sound files that can be played when listening to a door: The first is if there is a monster in the room, which the door is connected to. There will be a random selection of several monster low-passed monster growls from the other side of the door to indicate to the player that there is danger beyond the door. The other type of sound is simply a low-passed high-fidelity soundscape that tells something about the environment on the other side. E.g. if there is a boiler room on the other side there should be the sound of steaming pipes, while a laboratory would have the a more subtle sound and maybe some glass falling and tumbling on the floor. (if this is even possible to do of course :P).

If the player moves while listening they will exit listening mode.

Security Door

Security doors are bigger than the average door (this is the big security door we already made) and they are by default always locked. As described in 0 Key Cards security doors have security levels. Which means the player needs the same or higher level of security card in order to open the door. A security door is always accompanied by a small panel on the right of the door, using the key on the panel will unlock the door.

Interaction

Default Option; Open/Close which simply opens or closes the door depending on the doors current state.

Alternate Option; Listen: this will turn the camera up close to a listening position (the same as if you should put your ear on the door yourself). While the player is listening to a door all sounds of the world will be turned significantly down (how far down is yet not determined but start with turning it down by 80%). At the same time a low-passed sound of what is beyond the door will be played. There are two types of sound files that can be played when listening to a door: The first is if there is a monster in the room, which the door is connected to. There will be a random selection of several monster low-passed monster growls from

the other side of the door to indicate to the player that there is danger beyond the door. The other type of sound is simply a low-passed high-fidelity soundscape that tells something about the environment on the other side. E.g. if there is a boiler room on the other side there should be the sound of steaming pipes, while a laboratory would have the a more subtle sound and maybe some glass falling and tumbling on the floor.

If the player moves while listening they will exit listening mode.

Lockers

A Locker is about 2 meters high and half a meter wide, which makes an excellent hiding place for Phillip. A locker has a few "breathing" holes in the in Phillips eye height. There can be items in the bottom of the locker; however this is specified in the level design.

Interaction

Default; Open/Close: This simply opens or closes the locker in the same way as a common door.

Desks

The ordinary office desks have drawers on either side, which creates a hull in which the player can hide under if they so desire. Drawers in the desks are treated as individual objects.

Containers

All containers that being drawers, first aid lockers, ovens, chests, footlockers, etc. all share a single action wheel option, Open/Close.

Ventilation Grids

The grids on ventilation can be removed or looked through from both sides of the ventilation. All ventilation dugs are big enough for the player to crouch through. There are a number of ventilations cutting through the levels that the player can use to avoid enemies and as alternative routes.

Interaction

Default Option; Remove (Requires Screw Driver): The player removes the grid and can now enter the ventilation. The grid will be removed by an animation: The player will look directly at the grid and a sound of the screws getting lose will be played. (The player needs a screw-driver to do this). The girdle will be then be interpolated next to the ventilation hole. It cannot be interacted with again.

Controls

As described earlier this is a first-person controlled game. The player uses mouse and keyboard for controlling the avatar around the game-world. The default scheme can be seen in Table 13: Control Scheme.

Function	Key	Alternative Key
Movement & Actions		
Forward	W	Arrow_Up
Back	S	Arrow_Down
Strafe Left	A	Arrow_Left
Strafe Right	D	Arrow_Right
Crouch	Left_Control	

Jump	Spacebar	
Sprint	Left_Shift	
Interact	Left_Mouse_Button	E
Alternative Interact	Right_Mouse_Button	
Flashlight	F	
Inventory	Tabulator	I
Main Menu	Escape	
	Inventory	
Grab Item	Left_Mouse_Button	
Item Menu	Right_Mouse_Button	
Interact with Item Menu	Left_Mouse_Button	
Close	Tabulator	I or Escape

Table 13: Control Scheme

V. Prototype Instructions

Story

You are Thomas Miller, a captive of the evil Lazarus Corp. You have been held against your will, and been subject to a series of vile experiments in a remote research facility. Suddenly something goes wrong and your cell door unlocks. You now have the possibility to escape the facility by using the elevator that leads to the surface.

Instructions - Controls

This is a first-person controlled game; you control it by using WASD for movement and the mouse to look around. Interact with the environment (doors, computers, and items) by using the left mouse button.

Some doors are locked, most of these doors can be unlocked if you find the corresponding keycard in the current area. There are in total three keycards, and you need all three to finish the game.

You can crouch by pressing ‘C’ to lower your noise level and visibility (Makes it less likely that monsters will notice you).

You also have a flashlight you can activate on ‘F’.

Checkpoints

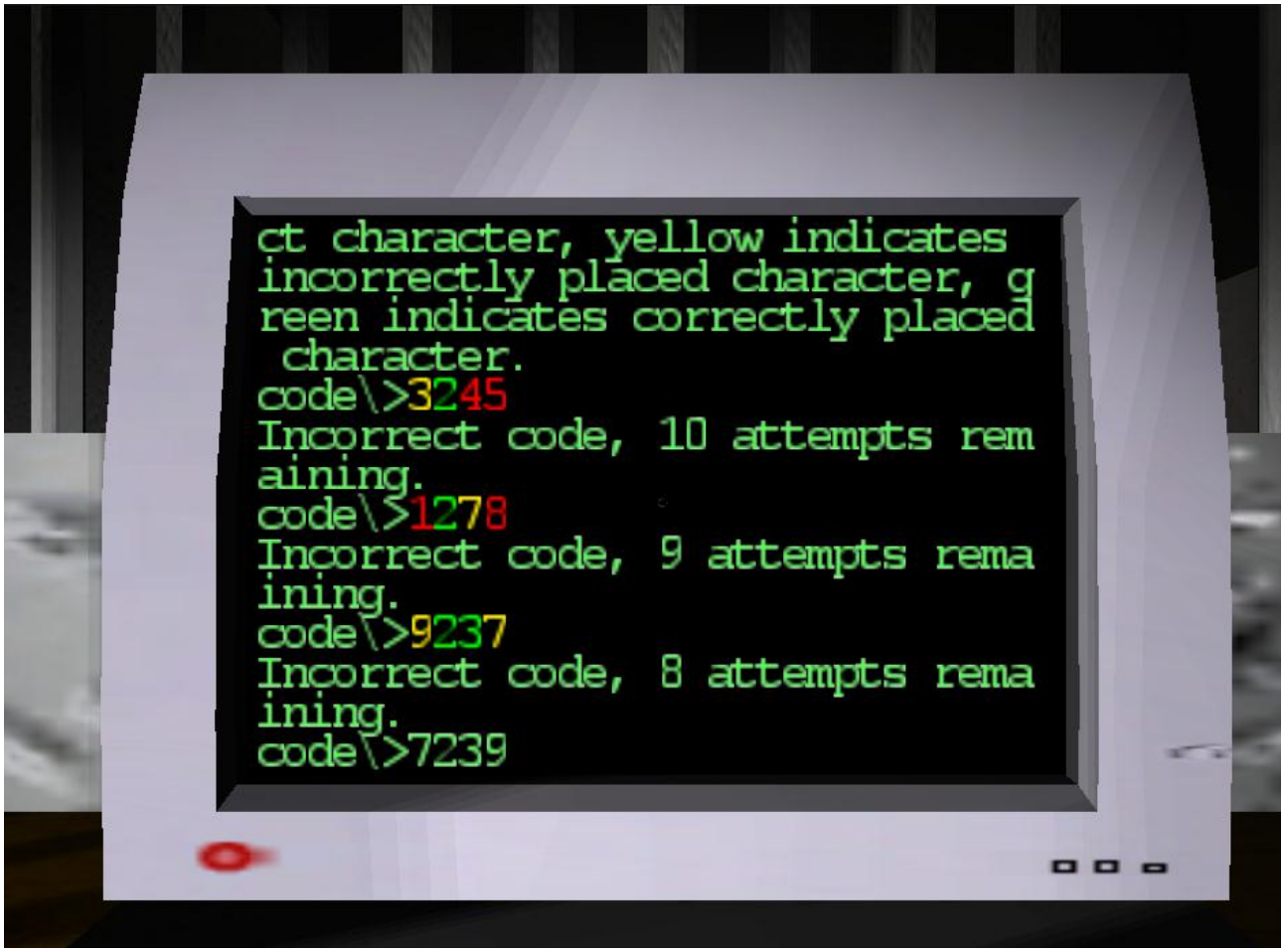
There are three checkpoints in the game. You will have to access these computers to unlock the door in order to proceed. To do so enter the functions ‘Door’ and execute ‘Unlock’.

Computers

Most computers in the game can be interacted with. Computers work as an ordinary command prompt in windows, you type desired commands and it offers some input. You can always type ‘help’ to get a list of all commands on the current computer (some have more than others).

Type ‘exit’ or ‘quit’ to leave the computer again.

Some computers are password protected. If you know the password you can type it in the password menu – if not you can attempt to hack the computer. This is done by guessing a sequence of numbers. If you enter a wrong number it will be returned in red, if it is a correct number but in the wrong spot it will be returned as yellow, if it is correct number and correctly placed it will be returned in green. See the example below:



Be noted that if a number shows up yellow it may also mean that that number is represented in the code several times – try using the same number in several locations at the same time to break the code.

Once you have gained access to a computer, you do not need to hack it again, you will have full access to all menus.

Known Issues

There are few issues and bugs which I am aware of, but have no way or time to correct as of yet. Please ignore these bugs and try to get the best experience possible.

1. On rare occasions the camera gets stuck in a wrong position after interacting with an computer. If this occurs in the first area (before the first checkpoint) please restart the game, else please try and continue with this inconvenience.
2. Sometimes flashlight won't respond properly. Instead it will activate and deactivate it so fast you won't notice. Press the 'F' buttons a few more times, eventually it will do as you desire.
3. Sometimes in hacking you will have the same number in the same sequence several times. The feedback will show that the number is incorrectly placed at both correct locations, until the entire code is completed. This may seem confusing, but most people figure it out quite quickly.
4. Sometimes crouching displays the same error as Flashlight.