

**EMOTIONAL RESPONSE TO STORIES
IN
INTERACTIVE NARRATIVE**

By

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Abstract

The audience enjoys stories more if they present suspense. This is true for both non-interactive and interactive narratives. However, in interactive stories, for example in the context of a video game, suspense perception can be influenced by two factors: the audience's choice and repeated exposition to the same story episode presenting suspense. Currently, there has been little research done on the audience's emotional response to interactive narrative and the purpose of this thesis is to contribute to this area. The dissertation addresses nine research questions: (1) "How does a level of suspense change with repeated encounters?" (2) "How do choices offered to the audience influence their suspense perception?" (3) "Is the level of suspense reported from a distant observer perspective comparable to the degree of suspense experienced by the audience member immersed in the story and considering himself as a story character?" (4) Does a degree of suspense depend on the perspective from which the story is perceived (story character or external observer)? (5) "Does more suspense necessarily lead to the greater story enjoyment in interactive narratives?" (6) "How can one keep suspense high with repeated encounters in the interactive narratives?" (7) "Does greater uncertainty about the story outcome result in the greater degree of suspense?" (8) "Do male and female members of the audience perceive suspense differently in interactive stories?" (9) "Do the age and gaming experience of the audience correlate with the degree of suspense they experience in interactive narratives?"

In order to answer these questions, the dissertation employed two approaches – theoretical analysis and empirical study. The theoretical part of the thesis addressed the questions of the role of suspense in interactive narrative, the process of the audience's involvement in the interactive narrative and its possible impact on suspense perception, as well as how the degree of suspense perceived in the story can be influenced by the interactive mode of the story through manipulating the choice.

For the empirical research, quantitative methodology has been employed and one hundred and forty two participants took part in three experiments where they were asked to read and re-read non-interactive and interactive versions of a story created on the base of James Bond novels. The core data was collected from self-reports and

surveys that the participants were asked to complete during and after the experiments. Additional data came from the participants' comments on their experience during the experiments.

This thesis makes two main contributions to the study of the interactive narrative and narrative-based video games. First, it empirically proves that choice does not reduce the level of perceived suspense in the interactive story as it has been argued by some scholars (i.e. Frome & Smuts, 2004). Second, the results of the research suggest that by manipulating the choice offered to the audience it is possible to keep the level of suspense higher with repeated encounters. In addition, some other findings obtained from the experiments present factors that may influence suspense perception in interactive narrative such as the gender of the audience members, their gaming experience, and level of immersion in the story.

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Chapter 1

Introduction

*“It is the
feeling of suspense that keeps us turning the
pages of a novel until long past our bedtime and
keeps us glued to a television movie when we
know we really should be paying bills or doing
something similarly responsible”*

Carolyn H. Miller in “Digital storytelling: a creator's
guide to interactive entertainment”

In non-interactive stories, putting the audience in the emotional state of suspense often means bringing them more enjoyment in the story (Miller, 2008). It also seems to be true for interactive stories (Klimmt, Rizzo, et al., 2009), which are a core element of many modern video games. Thus, one may assume that in order to be enjoyable for the audience, an interactive story has to present suspense and, more importantly, keep it high enough despite repeated exposure to the same story episode over and over. Various manipulations on the story, which become possible because of its interactive nature, including choices influencing the storyline, can determine the degree of suspense perceived by the audience. By knowing how the audience perceives suspense in interactive narrative and what factors and in which way influence this perception, it is possible to find solutions for keeping the suspense in the story high.

1.1 Suspense in interactive narrative

Despite the high popularity of research in the area of interactive media, there is still a lack of study on specific emotions triggered by interactive stories. The emotional state of suspense in a context of interactive stories was a central topic in several studies (Klimmt, Rizzo, et al., 2009; Vorderer, 2000a). The most recent and relevant to this thesis published study (van Vught, 2010) addresses the issue of suspense perception in video games comparing the occurrences of suspense in film and video games and specifically focusing on different techniques triggering suspense in both mediums. Despite the importance of this study, it is, nevertheless, theoretical and has not been tested empirically. Moreover, the presented theory clearly takes a ludological (or game-oriented) direction and considers game play as the main source of the emotional state of suspense, almost completely rejecting the narrative influence.

The only known empirical study in the area of video games testing suspense perception (Klimmt, Rizzo, et al., 2009) has confirmed that the audience prefers suspenseful video games to those, which lack suspense. However, this study did not take into account such factors as repeated exposure to the same story episode and choice or lack of it.

Since there were many unanswered questions and unexplored paths on how the audience perceive suspense in interactive narrative in a context of a video game, this dissertation aims to contribute to this area.

1.2 Goals of the dissertation

Current research was designed with several goals in mind described below.

The first goal of this dissertation is to study how the emotional state of suspense is perceived in interactive narrative. There are various factors that can influence suspense perception in interactive stories such as ability of the audience to choose a story path, repeated exposure to the same story episode, a perspective (story character or external observer) from which the story is perceived and individual factors of the audience members such as their age, gender, and gaming experience. Thus, the dissertation aims to analyse the role of the above factors in suspense perception.

The second goal of the current research is to analyse and suggest a solution on how to keep suspense high with repeated encounters in interactive stories taking into account the statement that suspenseful stories are more enjoyable than those without

suspense (Brewer & Lichtenstein, 1982; Klimmt, Rizzo, et al., 2009; Knobloch-Westerwick et al., 2009; Madrigal & Bee, 2005).

Finally, this dissertation aims to combine theoretical and empirical approaches in order to test hypotheses and some of the research questions presented below.

1.3 Research questions and hypotheses

Since there has been little research done on suspense perception in interactive narratives, there are still many questions to answer. Some of them are addressed in this dissertation:

1. How does a level of suspense change with repeated encounters?
2. How do choices offered to the audience influence their suspense perception?
3. Is the level of suspense reported from a distant observer perspective comparable to the degree of suspense experienced by the audience member immersed in the story and considering himself as a story character?
4. Does a degree of suspense depend on the perspective from which the story is perceived (story character or external observer)?
5. Does more suspense necessarily lead to the greater story enjoyment in interactive narratives?
6. How can one keep suspense high with repeated encounters in the interactive narratives?
7. Does greater uncertainty about the story outcome result in the greater degree of suspense?
8. Do male and female members of the audience perceive suspense differently in interactive stories?
9. Do the age and gaming experience of the audience correlate with the degree of suspense they experience in interactive narratives?

The above research questions led to the following four hypotheses which were studied theoretically and tested empirically in this dissertation:

Hypothesis 1. Choice offered to the audience in interactive narrative does not result in a reduction in the degree of suspense perceived by the audience.

Hypothesis 2. In interactive narrative, the degree of suspense drops with repeated encounters, especially in those scenes (both non-interactive and interactive) which are presented to the audience the same way over and over.

Hypothesis 3. By manipulating the choice offered to the audience with repeated encounters, it is possible to keep the degree of perceived suspense relatively high.

Hypothesis 4. In interactive narrative, suspense is an important but not essential component of story enjoyment.

1.4 Contributions

This dissertation makes several contributions to the area of interactive narrative studies:

First, through reviewing and analysing literature on both non-interactive and interactive narratives, the dissertation sets up research questions and presents several hypotheses regarding suspense perception in interactive narrative:

Second, through theoretical analysis, current dissertation explores the impact of immersion in interactive narrative on suspense perception.

Third, the dissertation proposes several techniques for manipulating choice in interactive narrative in order to keep the level of suspense high both during the first and consequent exposure to the story.

Finally, this dissertation is one of the few studies empirically exploring perception of suspense in interactive narrative. Findings obtained from the experiments conducted in this thesis explain how the interactive environment of the narrative influences the audience's emotional response to the story.

1.5 Limitations

This thesis is deliberately focused on exploration of the audience response to the interactive narrative. It does not take into account various other factors that can have an impact on suspense perception in a video game such as visual and sound effects, scoring of the players' achievements, or the competitive environment of multi-user domain (MUD) or massively multiplayer online role-playing games (MMORPGs).

All the above factors are important for the suspense generation in video games and should be considered in further studies in this area of research.

1.6 Thesis outline

Chapter 2 presents an analysis of the literature on suspense in fictional narrative and its role in the story. It also describes the role and nature of suspense in an interactive environment.

Chapter 3 introduces different aspects of choice manipulation in the interactive story in order to influence the level of suspense.

Chapter 4 argues that suspense perception may depend on the perspective from which the story is perceived. This chapter introduces possible trends which are experimentally tested later in the thesis.

Chapter 5 presents the methodology employed in the experimental component of the research.

Chapter 6 discusses the analysis of the experiments and presents the conclusions made.

Chapter 7 summarizes all the findings discovered in the experiments and suggests practical applications of the findings in the area of video game design. The chapter also proposes further directions for the research on emotional response to interactive stories.

Chapter 2

Background

Will the innocent prisoner Andy Dufresne, the protagonist of the “The Shawshank Redemption” film, ever be able to escape from Shawshank State Penitentiary? What is going to happen to Jack, the main character in the first-person video game BioShock, finding himself in the dangerous world of the underwater city of Rapture? These unanswered questions put audience members in the state of anticipation, making them wonder about what is going to happen next and motivate them to explore the storyline further searching for the answers — the audience experiences suspense.

Suspense has been well studied as a psychological phenomenon and as a technique for attracting and keeping the audience’s attention in different non-interactive environments such as novel reading or film and sports watching. However, it is still a new topic in the field of interactive narrative and requires detailed exploration, both theoretical and empirical. It is the aim of this thesis to contribute to this area.

The chapter begins with a definition of suspense and description of its nature (Section 2.1.3) in relation to interactive narrative. Next, through examining the existing literature, the chapter turns to the question of the role of suspense in story enjoyment, (Section 2.2) particularly in interactive stories. Following this, the chapter considers various factors which influence suspense creation and perception specifically in the interactive environment. It also analyses related theories and empirical findings and highlights the need for further research, which is addressed in this dissertation (Section 2.3). Finally, the chapter provides a brief summary of the discussion and introduces research presented in the following chapters (Section 2.4).

2.1 *Suspense in Fictional Narrative*

The chapter opened by introducing several suspenseful situations which take place in the world of fictional narrative. However, examples of suspenseful situations can also be found in real life: relatives waiting for the result of a life-threatening surgery performed on a close family member; students desperate to find out if they have passed their final tests are all experiencing suspense. Suspense that occurs as a result of the audience reaction to narrative is often referred to as “narrative suspense” (Rabkin, 1973) and may or may not be perceived differently from “real-life” suspense. Some scholars are convinced that both types of suspense have equal impact on our perception of it (Mikos, 1996, p. 40) whereas others argue that suspense triggered by fictional narrative differs from the one occurring in real life (Smuts, 2008, p. 285). Despite the opposing points of view in relation to this issue, it is out of the scope of the thesis to analyse any difference between narrative and real-life suspense as the study is exploring suspense in interactive narrative. Thus in this chapter and the rest of the thesis, the term *suspense* refers to *narrative suspense*.

2.1.1 Defining story

Since this thesis studies emotional response to stories in interactive narrative, it is important to define the term *story*. *Story* is often seen as a component of the broader category *narrative*. Some scholars use the term *narrative* in regard to verbally narrated texts (Genette, 1988) whereas others refer to *narrative* as any form of story representation (Bal, 1985; Chatman, 1978). By this definition, *narrative* can be a novel, film, picture, video game or any other media product telling a story.

Seymour Chatman (1978) along with some other narrative theorists (Barthes, 1981; Genette, 1988; Ryan, Rigby, & Przybylski, 2006) distinguish between two components of *narrative*: *story* – what is narrated and *discourse* – how it is narrated (Figure 1).

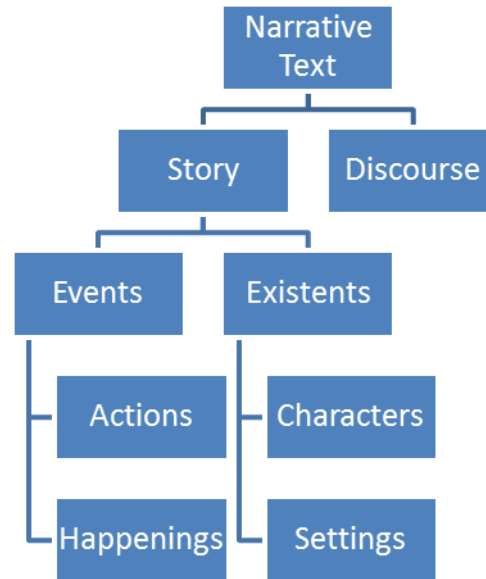


Figure 1 Narrative components (after Chatman (1978)).

Story, according to Chatman, is “the content of the narrative expression” (Chatman, 1978, p. 23), which unfolds in the dimension of time through *events* and in the dimension of space through *existents*. Chatman describes *events* as “changes of state” (Chatman, 1978, p. 44) in the story, which occur either via *actions* taken by story characters or *happenings* externally affecting the story characters. *Existents* are seen as *characters* introduced in the story and *settings* creating a story-world.

The above approach of dividing the narrative into *story* and *discourse* as well as definition of *story* proposed by Chatman, was used in this dissertation. The thesis is focused on studying how the audience emotionally responds to the story component of the interactive narrative. The narrative component of *discourse* is not considered in this dissertation, despite its important role in creating the complete and coherent story presentation within a particular medium, such as a video game. The element of *discourse* is not deemed necessary to retain the scope of this dissertation.

2.1.2 Defining suspense

Clearly, suspense has something to do with our emotions and the way we feel. That is why scholars refer to it as an “emotional state” (Zillmann, 1996, p. 208), “emotional concomitant” (Carroll, 1996, p. 78), “reception phenomenon” (Vorderer, 2000a), or “subcategory of emotions triggered by the state of uncertainty” (Bal, 1997;

Udhir, 2011). However, looking for a definition of the term *suspense* in major reference books on human emotions such as (Izard, 1977; Lewis & Haviland, 1993), leads to disappointment – there is no such a term listed there.

More helpful are English language dictionaries, which define the word *suspense* as a “state of anxiety or uncertainty” (“Collins: Free Online Dictionary,”), a “feeling of excitement or anxiety when you do not know what will happen next” (Bullon, 2006), or “mental uncertainty or the state or character of being undecided or doubtful” (“Merriam-Webster Online Dictionary,”). All these definitions highlight a strong liaison between suspense and uncertainty. Nevertheless, as will be explored in more detail further in this chapter, feeling uncertainty about the outcome is not by itself sufficient for triggering suspense – the outcome has to be important for audience members and interest them. Such importance usually evolves from the audience’s empathy with a story character facing danger. Thus, the question which interests the audience members is whether the character will be able to overcome the danger and how it is going to happen.

Despite all the peril, the audience maintains hope that the character will succeed. However, they are not certain and the balance between hope for the good outcome and fear for the bad one puts them in the emotional state called *suspense*. As Zillmann (1996) describes it, suspense occurs when the audience is expecting something bad to happen to the story character they care about but at the same time they hope that the bad outcome will not follow. Similar definitions of suspense have been proposed by various psychologists, linguists, media designers and producers. It is this model of a balance between hope and fear that will be assumed in this dissertation.

Having defined the term suspense for the purpose of this study, it is important to analyse the nature of this emotional state as it will help to understand the role of suspense in interactive fictional narrative.

2.1.3 Nature of suspense

From the definition of suspense presented above, it is possible to distinguish several conditions which have to be met in order for suspense to occur. First, the outcome of the narrative situation must not be immediate but the audience has to wait for it. Second, the audience must have an interest in the outcome. Third, while waiting for the resolution, the audience has to be in balance between two emotional states: fear of the quite possible bad outcome and hope for the less possible good outcome.

Below, each of these conditions necessary for creating narrative suspense are analysed in more detail.

Anticipation

The word *suspense* itself means putting on hold, postponing, or delaying the outcome. Narrative suspense makes the audience wonder what is going to happen next in the story and it makes them wait. Such anticipation is often seen by scholars as one of the key characteristics of suspense (Leonard, 1996; Prieto-Pablos, 1998; Ryan, 2001; Wulff, 1996). As Mieke Bal (Bal, 1997) describes it, suspense is “the result of the procedures by which the reader or the character is made to ask questions which are only answered later”.

Postponing the outcome increases the audience’s level of uncertainty as it keeps them longer in the emotionally uncomfortable state of balancing between fear and hope developed as a result of imagining the possible outcomes. As Prieto-Pablos (1998) describes this process, the audience members realize that there is an information gap in the story and they experience “emotional anxiety” wanting to fill in that void. They do this in order to get control over the story again and also to test their abilities to predict the outcome themselves before it was presented to them by the author of the story. To make this process of guessing and building up their hypothesis enjoyable for the audience members, the author of the story should provide them with certain hints. As Prieto-Pablos points out, by analysing the information presented earlier in the story, the audience may convince themselves that the bad outcome is almost inevitable, and thus will experience a higher level of suspense. They may also resolve their state of uncertainty and become pretty certain about the particular outcome shifting their interest from “What is going to happen?” to “How is it going to happen?” (Prieto-Pablos, 1998, p. 100) or, using Ryan’s classification of suspense, from “what” suspense to “how” suspense (Ryan, 2001).

Thus, anticipation can be seen as an active cognitive process of mentally recreating the missing parts of the storyline all the way between the beginning of the suspenseful episode and until its resolution, which makes narrative suspense enjoyable. As Wulff describes it: “The experience of suspense does not come from something exciting being shown in a film. Rather, it results from the exploration of possible events from a given situation; it is the result, or concomitant, of the

anticipating activity. It is not what the film shows, but what it discloses, that is the subject of the analysis of suspense” (Wulff, 1996, p. 16).

Interest in the outcome

Another attribute of suspense, supported by many scholars (Carroll, 1996; Prieto-Pablos, 1998; Ryan, 2001; Smuts, 2008; Yanal, 1996), is the importance of the outcome of a suspenseful situation to the audience. In other words, in order for suspense to take place, the audience members have to care about the result of the suspenseful episode or the whole story as such. Typically, they do so by identifying with a story character, usually the protagonist. Thus, whatever bad is happening to the character makes the audience worry for him or her.

Of course, the degree to which audience members care about the outcome may differ from person to person; however, it is possible to create a suspenseful situation where most of the audience will care about the certain outcome. As Carroll argues, this can be achieved by making the audience consider what is “morally right” in the story (Carroll, 1996). This idea will be considered in more detail in the following section, which will ponder the context of creating suspense through balancing positive and negative reactions in a certain narrative situation.

In non-interactive narrative, the audience members find themselves in the position of an external observer. Research shows that the stronger their emotional connection with the story character, the higher level of suspense they experience (Comisky & Bryant, 1982). In video games, the roles of a player and story character merge and what is significant to the character becomes important to the player as the story he interacts with is about him. Analysis of such emotional involvement is addressed in more detail in Chapter 3, which examines suspense perception in interactive narrative.

Fear, hope and uncertainty

As it has been mentioned earlier in this chapter, in order for suspense to occur, the audience has to care about the outcome of the particular situation presented in the story. Thus, when creating a suspenseful situation, it is important to provide the audience with information which presents danger and obstacles that the story

character may confront. Giles refers to these situations as “scenes which promise the monstrous, but no monster is visible” (Giles, 1984, p. 42). Such information will allow the audience to visualize all the possible outcomes of the situation and wonder which of them will take place.

Following the definition proposed by Prieto-Pablos (1998), the outcome can be either “desirable” or “undesirable” referring to what “should be” and what “should not be”, which is seen as the audience’s preferences triggered by the ideological values presented in the narrative. Carroll (1996) expresses a similar position arguing that in fiction, suspense is closely related to morality; in other words, in order for suspense to arise, the chance for good to overcome evil has to be rather slim.

Note that perception of “morality” in narrative and real life may differ as the audience members immersed in the world of fictional narrative can treat as morally acceptable and correct things which they consider inappropriate and morally wrong in real life. For example, in the first person video game *Grand Theft Auto IV*, the player’s avatar Niko is a criminal; however, the players *a priori* care about him and are ready to commit any further crime in order to survive or avoid imprisonment. Such a shift between value systems in real life and virtual environment of fictional narrative is often referred to as a “suspension of values” (Prieto-Pablos, 1998; Smith, 1995).

A suspenseful situation can present several possible outcomes but stronger suspense is perceived when there are only two “logically opposed outcomes” remaining. One of them is “morally correct but improbable” and the other one is “morally incorrect or evil, but probable” (Carroll, 1996, p. 78). Ryan refers to this situation when there are only two options for the outcome available as the “climax of suspense” (Ryan, 2001): “At the beginning of a story everything can happen and the forking paths into the future are too numerous to contemplate. The future begins to take shape when a problem arises and confronts the hero with a limited number of possible lines of action. When a line is chosen, the spectrum of possible developments is reduced to the dichotomy of one branch leading to success and another ending in failure, a polarization that marks the beginning of the climax in the action” (Ryan, 2001, p. 142).

According to this analysis, in order to create strong suspense, the number of possible outcomes presented to the audience should be limited to two – desirable and undesirable. However, as Leonard (Leonard, 1996, p. 34) points out, suspense may not be as strong if a suspenseful scene presents an obvious contrast between good and bad

and thus makes the possible outcome clearly desirable or undesirable. In support of this claim, he refers to Hitchcock films where villains are often both evil and kind calling for sympathy even though they deserve death for the crimes committed.

The probability of the uncertain outcome is also important for creating suspense. As Carroll argues, suspense occurs when the desirable (morally correct) outcome has less chance of taking place in comparison to the undesirable (morally wrong outcome) (Carroll, 1996). In other words, suspense is stronger if a story character faces danger that seems almost (but not completely) inevitable. For this reason Wulff even refers to dramaturgy of suspense as “dramaturgy of danger” (Wulff, 1996, p. 9).

These theoretical claims have been supported by an empirical study (Comisky & Bryant, 1982) demonstrating that audience members report more suspense if the character’s chances of escaping or surviving are very limited (1/100).

Thus, despite fear of a non-desirable outcome having to be the predominant feeling, it is also important for creating suspense to provide the audience with some hope that the desirable outcome may happen. Griffiths defines the emotional state of hope as “the state of believing a situation to be possible and strongly desiring that situation” (Griffiths, 1997, p. 40).

In well-designed suspenseful situations, the audience can imagine both desirable and non-desirable outcomes. But what keeps their attention and encourages them to explore the story further is uncertainty about which of the outcomes will take place.

Uncertainty is often seen as the necessary condition for suspense (Carroll, 1996; Yanal, 1996). However, there are also other points of view in this relation. For instance, in his “desire-frustration theory of suspense”, Smuts (2008) argues that “the frustration of a strong desire to affect the outcome of an imminent event is necessary and sufficient for suspense”. A similar position is held by Zillmann who points out that suspense is not about uncertainty as such but more about certainty that the undesirable outcome is going to occur (Zillmann, 1996, p. 166).

Both Smuts’ and Zillmann’s theories have a point, which helps to explain the phenomenon known as “paradox of suspense” when the audience report suspense with repeated encounters when the outcome of the story is known and thus, there is no uncertainty anymore. This issue is important for interactive narrative and video games where the audience is frequently exposed to the same episode of the story in order to

succeed and make progress in the game. The paradox of suspense is analysed in detail later in this chapter (Section 2.1.5).

All the above theories on the nature of suspense were based on observation in the environment of non-interactive media. In the interactive environment of the video game, though, suspense may be perceived differently. Such attributes of video games as first person presentation, choice and ability to influence the outcome, repetitive replay and the element of gaming in addition to the narrative component can all create a unique environment for suspense formation and perception. For now, only some of these issues have been addressed in literature. They still require detailed exploration which is presented further in this chapter and are a matter of contribution of the dissertation.

2.1.4 Creating suspense

In fictional narrative, suspense can be created by many different means. It is out of a scope of this dissertation to analyse all the possible techniques for creating this emotional state in the story. However, in order to perceive the aim of the thesis, which is to examine how the audience perceive suspense in interactive stories, it is important to understand basic principles of designing suspense. This thesis deliberately ignores such components of suspense creation as sound and visual effects, which may accompany interactive stories - especially in the context of a video game - and focuses only on the narrative. Note that this is not because the other components are considered unimportant, but the omissions are necessary to manage the scope of the thesis.

Point of view and knowledge manipulation

In non-interactive narrative, suspense is often created by manipulating the audience's knowledge as the audience and story protagonist may or may not share the same information. Such a manipulation greatly depends on the angle from which the story is presented and is referred to in narrative theory as *focalization* (Genette, 1988) or *point of view* (Bal & Boheemen, 2009).

In general terms, the story can be seen from either an internal or external perspective (narrative mode) and thus, narration can be based either on a first- or third-person point of view respectively. It is not necessary for the whole story to be presented from the same point of view from the beginning to the end; focalization may

vary in different episodes in order to manipulate the audience's knowledge and emotional state.

When the story is narrated from the internal perspective, it employs the *subjective* point of view of one of the protagonists and the audience members can only access the information open to them by the story character. This technique is popular in both non-interactive and interactive narratives. By definition, first-person video games present the story through the eyes of the story's protagonist controlled by the player (Figure 2).



Figure 2 First-person perspective in *BioShock* (2008) and third-person perspective in *GTA IV* (2008).

External perspective in the story is created through the third-person narration. Story narration from the external perspective can be created through an *omniscient* or *objective* (Kirsznner & Mandell, 1994) (also known as *behavioural* (Habermas & Diel, 2010)) point of view.

In case of the *omniscient* point of view, the audience access all the information – subjective thoughts and feelings of the characters as well as the objective information as that of the external observer. This is an absolute “god-like” knowledge within the story-world. The omniscient point of view can be limited if the audience has not been provided with the direct access to the thoughts or feelings of select story characters. In video games, the technique of presenting the story through the omniscient point of view is often employed by strategy video games.

If the story is presented via the *objective* point of view, the audience only has the knowledge as that of the external observer and cannot directly access the internal world of the story characters – the audience can only try to do so by observing their actions. This technique is commonly used in role-playing video games where players observe the game-world over the shoulder of their character. This way, the players can see all the physical changes happening to their character when he is fighting, running away, or suffering from injuries. The player can also observe enemies approaching the character from behind (Figure 2).

Sometimes stories also apply a second-person point of view which has been referred to as an “unusual technique” (Kirszner & Mandell, 1994) in non-interactive narrative but is quite common in interactive “choose-your-path” stories (Figure 3).

Choice of BroadSides

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Jones approaches you a short while later. "So that's it then, sir? The bloody Gaul spends hours trying to kill us, does kill a lot of good men, and then after the battle it's all nicey-nicey? His lot murdered Davies, but we're supposed to not care after the battle is over?"

How do you respond?

☒ I explain myself to Jones.

☐ Jones is just a master's mate, and I'm an officer. I tell him to drop it.

☐ How dare one of my ratings question my decisions! I have him flogged for his insubordination.

Next

Figure 3 Second-person perspective in the online interactive story
Choice of BroadSides by Choice of Games.

According to the screenwriting guru Robert McKee, curiosity and concern are two main features that contribute to the story enjoyment and they can appear in the story by means of one of the following techniques: *mystery*, *suspense*, or *dramatic irony* (McKee, 1999). For narratologist Mieke Bal though, all of these three are just forms of the broader term *suspense* (Bal, 1997) as they all occur around the

information either presented to or hidden from the audience and story characters (Figure 4).

Audience	Story character	Effect
-	-	Detective story, riddle
+	-	Threat
-	+	Secret
+	+	No suspense

Figure 4 Known (+) and unknown (-) information and its emotional impact on the audience, according to Mieke Bal (1997).

For the condition when the story characters know more than the audience, McKee employs the term *mystery*. In a mystery, the scenes and events in the backstory are created in detail but hidden from the audience apart from some clues, usually misleading, which makes the audience wonder how the whole picture looks like. This type of suspense can be found in many detective stories. In video games, *Heavy Rain* could be an example of such a closed mystery where the player investigates the case of the mysterious Origami Killer.

Another implementation of the mystery technique can be found in the video game *Half-Life 2*. There is an episode where, before using the teleporting machine on one of the story characters Alyx and the protagonist Gordon, scientists Dr. Kleiner and Barney Calhoun briefly discuss their previous experimental usage of the machine and express their hope that this time the machine will work better than when it was last used towards a cat. “What cat?” – This question from Alyx, repeated several times, remains unanswered. Thus, neither Alyx nor Gordon (the player) knows the backstory about what had happened to the cat. This situation with the intentionally hidden information raises the player’s curiosity, anxiety, and desire to find out the missing backstory as it potentially puts the player’s character in danger creating suspense.

McKee uses the term *suspense* in regard to the situation when the audience and characters both are searching for the same information. In this case, a mixture of curiosity and concern occurs, which influences the resolution of the story. Contrarily to a mystery where it is possible to predict *what* is going to happen but the ways of *how* it happens vary, in suspense, the resolution of the story is unpredictable. Because

of the fact that both the audience and the characters acquire the same knowledge during their progression through the story, the audience most likely will experience the feeling of empathy whereas in a mystery, the emotional feedback is only sympathy.

Dramatic irony, according to McKee, occurs when the audience knows more than the story's protagonist. However, as Smuts (2008) points out, in order to create suspense, it is not enough for the audience just to know more than the story protagonist – the audience has to have the knowledge or information, which, if used by the story's protagonist, could help him to survive. Inability to pass such information to the protagonist whom the audience cares about creates the emotional state of suspense. A similar position is held by Garry Leonard describing this type of suspense as “a situation where the viewer knows something the protagonist does not, and where the viewer watches helplessly while the protagonist's needless apprehension about a harmless situation unwittingly leads him or her into certain danger or death” (Leonard, 1996, p. 24).

Therefore, in non-interactive narrative, suspense occurs when the audience members are given important information which is not available to the story's protagonist – they hold the tool to influence the outcome but have no ability to do so. This is when “fear of the known” (Yanal, 1996) occurs.

In interactive narrative, though, this technique cannot be used as the protagonist and the player share the same information. An exception here would be a third-person video game where the player can observe their character from a distance and thus, might be aware of a danger approaching him or her from behind. In this case, for a moment, the audience does have more information than the story's protagonist. However, unlike in non-interactive stories, in the interactive narrative the audience will share the information with the character trying to solve the problem.

Similarly to non-interactive narrative, in interactive stories with rereading, the audience members are more knowledgeable than the story's protagonist simply because they have read the story before. When rereading, the audience is already familiar with the danger waiting for the story character. With this extra knowledge and experience they can more confidently control their character, and thus, experience less suspense.

On the other hand, the audience's familiarity with the plot and characters can make the story even more suspenseful than it was during the first reading. For

example, in *Heavy Rain*, after the player discovers the identity of the Origami Killer, who acts as a private detective, she may become concerned about the life and wellbeing of some other characters the killer interacts with (Figure 5).



Figure 5 On replay, the scene where “private detective” Scott Shelby (Origami Killer) approaches Lauren Winter, the mother of one of his victims, presents suspense since a player already knows Shelby’s true identity but Lauren does not.

In order to create strong suspense in the story, the storyline should present serious threats to the health or life of the story’s protagonist the audience cares about (Grodal, 2000) or have other high stakes like a high chance of losing something or someone of great importance and value to the story character (Miller, 2008). As Mikos (1996) suggests, one of the most effective ways for creating suspense in the story is employing “collective fears” – the things that most people would naturally be afraid of such as, for example, the fear of darkness or falling from a high building or bridge.

Intensifying suspense

From the perspective of social psychology, the audience members can demonstrate two types of behavioural reaction to a story – volitional, which is predetermined by the genre of the story, and spontaneous, which takes place right at the moment of exposure to the story (Nabi & Krcmar, 2004).

The volitional reaction is determined by different genres of fiction narrative employing different techniques for creating suspense. For example, a horror film usually presents suspense in a more threatening manner than a romantic movie does. When selecting a particular novel, film, or video game to pass their leisure time,

audience members already have some expectations towards what a media product of a particular genre may present and they, to some extent, are ready to respond emotionally. In relation to watching a film, Lothar Mikos (1996) calls such pre-programmed expectation “the viewing contract”. Similarly, in video games, suspense in first-person shooters is created differently from suspense in strategy games – speed, dynamics, and mechanics of reaction usually overtake logical and well-planned problem solving.

However, despite the genre, in both linear and interactive narrative, emotional response to stories in the form of suspense can be intensified through some common techniques. One technique is known as creating “invisible monsters” when the protagonist is secretly observed by someone who remains invisible for the audience. Giles refers to these as “scenes which promise the monsters, but no monster is visible” (Giles, 1984, p. 42). The main reason for hiding “monsters” is to awaken the audience’s imagination. As Mikos describes it, the best monsters only appear in the imagination of the audience – they are not shown, just indicated and presented as opportunities for the imagination to work (Mikos, 1996).

Another technique for creating suspense is a “ticking clock”, which sets up a situation when the story character has to perform a certain task within a limited time frame. Implementation of this technique can be found in both non-interactive and interactive stories. Various TV reality shows as well as some children’s fairy tales, such as *Cinderella* or *The Nutcracker*, employ the “ticking clock” for manipulating the audience’s emotions and creating extra tension. In some sport games, a “ticking clock” also increases the level of suspense perceived by the sports viewers. As it has been empirically confirmed by a sports study, game viewers report a higher level of suspense if their uncertainty about the outcome of the game is overlapped with limited time left “to turn the tide” (Knobloch-Westerwick et al., 2009).

In many video games, the “ticking clock” technique is not always applied to measure the remaining time: the virtual ticking devise can measure remaining life, health, bullets in the gun, etc. In this case it is more applicable to the gaming rather than the narrative nature of video games; however, as analysed in more detail later in this thesis (Chapter 3), exploration of the story-world and gaming are well-merged and often undistinguished in the video game environment. An example of the merely “narrative” implementation of the “ticking clock” technique in a video game can be seen in the game *Heavy Rain*, where the story is created around the father trying to

save his kidnapped son who is trapped in a drain. The son is going to drown in the rising rain water if not rescued in time. In order to intensify the player's level of suspense, the game presents a water level counting indicator, which the player can refer to.

Thus, as it can be concluded from the analysis presented in this section, suspense in the narrative can be created through various means, and many factors such as the genre of the story and the point of view from which the story is told, as well as the unique plot and character progression, have to be taken into account in order to generate suspense in the story. In interactive narrative, though, there is another important factor that has to be considered in this relation: how suspense survives immediate rereading. If the author successfully employed techniques for generating suspense creating this emotional state during the first exposure to the story, will it still be perceived when the story is reread? This issue is addressed in the following section.

2.1.5 Paradox of suspense

The definition of the term *suspense* and overview of its nature presented earlier in this chapter (Sections 2.1.1 and 2.1.3) leads to the conclusion that uncertainty about the outcome of a dangerous situation created in the story allows the audience to experience suspense. However, it is a known fact that some audience members report suspense with repeated encounters when they already know the story outcome and thus should not experience any uncertainty about it. In literature, such a phenomenon of experiencing suspense on repeated exposure to the narrative is often referred to as *paradox of suspense*.

In order to achieve the goal of this dissertation, which is to discover how suspense is perceived in interactive narrative in the context of a video game, it is important to analyse the phenomenon of re-experiencing suspense. In video games, replaying the same suspenseful episode occurs often, and the replay is usually immediate, taking place right after the player fails a certain task and thus, cannot progress in the game. All these factors can influence the perception of suspense with repeated encounters. At the end of this chapter, several hypotheses on how the replay may affect the audience's perception of suspense in video games are presented. They are primarily based on the analysis of the literature below.

The two dominant points of view on the paradox of suspense are summed up by Christy Uidhir (2011) in his claim that either there is no suspense with repeated

encounters or that uncertainty is not a necessary factor for creating suspense. However, there is another opinion supported by some scholars that both uncertainty and suspense can survive with repeated encounters. Below, each of these three points of view is presented in more detail.

View 1: There is no suspense with repeated encounters

Robert Yanal's theory argues that there is no suspense with repeated encounters and those audience members who report suspense on rereading a novel or re-watching a film simply misinterpret their emotions. For Yanal, suspense can only arise under the state of uncertainty; thus, with repeated encounters, the audience may experience "concern" or "anxiety" but not suspense as there is no uncertainty left (Yanal, 1996, p. 153). This is especially correct for "true repeaters" (as Yanal calls them) who remember all the details from the story they read or watched the first time and thus cannot experience uncertainty and suspense when they do it again. Even if "true repeaters" do report suspense with repeated encounters, their emotional state is closer to anticipating the resolution they enjoyed the first time rather than actual suspense.

Yanal admits, though, that the rest of the audience, which do not fall into the category of "true repeaters", may experience suspense on rereading if they do not remember all the details from the story. This also holds true if they forgot the order of the events or the outcome, which may happen if they read the novel or watched the film a long time ago. "Any bits missing from the reader's or viewer's memory are uncertainties capable of generating suspense" (Yanal, 1996).

Following Yanal's theory in the context of video game replaying, it is possible to suggest that all players will have "true repeater" experience as replay usually happens immediately after the player fails and it is unlikely that she may forget some of the information she has just been exposed to. According to this theory, it would be possible to conclude that video game players do not experience suspense on replay. The exception would be a game played a long time ago so that the players have forgotten some information, which can contribute to recreating their emotional state of uncertainty on replay and thus let them re-experience suspense.

In relation to interactive narrative in the context of a video game, it is important to research if suspense can survive immediately repeating the narrative. This is one of the tasks of this dissertation. However, Yanal's theory is hard to accept as it fails to

explain why the misinterpretation of emotions or emotional states applies to suspense only. If other emotions can also be misinterpreted, then it would be possible to doubt experiencing of both concern and anxiety, mentioned by Yunal as the substitute emotions for suspense as well. It is also not clear why one should trust reported suspense on the first exposure to the story but doubt it a second time. This concern has found support in the philosophical study of Christy Uidhir: “It is a fact of the matter that many different emotions have different feels (for example, anger feels different than guilt, suspense feels different than fear), and placing an epistemic constraint on suspense is not itself sufficient to call into doubt the phenomenal reports of repeaters” (Uidhir, 2011, p. 165).

View 2: Uncertainty is not necessary for suspense

Harold Skulsky is one of the scholars who attempted to solve the paradox of suspense by denying uncertainty as an unnecessary condition for suspense. He argues that when the audience members experience repeated exposure to the narrative, they may feel suspense, but not because of the uncertainty about the story direction or its outcome. Their uncertainty is the same as that of the story character – the character is uncertain and so are the audience members sympathizing with him or her (Comisky & Bryant, 1982; Skulsky, 1980, p. 13).

Even though it is possible to suggest that there can be a connection between the depth of immersion in the story through sympathizing with the character and the level of experienced suspense on repeated exposure to the narrative¹, Skulsky, nevertheless, does not point directly at this relationship. Instead, he links the emotional state of uncertainty to story enjoyment rather than suspense. Additionally, he does not provide enough argument regarding how empathy with a story character influences the level of suspense with repeated encounters.

Aaron Smuts is another scholar who believes that suspense does not require uncertainty. In his desire-frustration theory mentioned earlier in this chapter, he suggests that frustration of the audience’s strong desire to witness a particular outcome

¹ An empirical study found that those readers who reported stronger emotional connection with a story character also reported higher level of suspense. The study, though, did not test this relation on rereading the story.

of the presented situation creates suspense. Smuts explains the possibility of experiencing suspense on consequent reading by the audience's desire to get the certain outcome, which was not satisfied first time:

"To generate suspense, a story must create and then frustrate audience desire. But to remain suspenseful on repeated readings or viewings, a narrative must accomplish a far more difficult task: It must be able to repeatedly arouse audience desire. Accordingly, we might say that diminishing suspense is most often a failure of the narrative to make us want; and recidivist suspense is most often our failure to get what we want from the narrative when we want it" (Smuts, 2008, p. 286).

Thus, when exposed to the same story repeatedly, the audience members can re-experience suspense if their desire to experience the story in a certain way was frustrated. Such a desire occurs as the result of the audience's sympathy with a story character. For example, the audience would strongly prefer the character not to suffer but the story presents him encountering different obstacles. As the story is constructed a certain way, the audience's desire will always be unsatisfied. Thus, there will also be the possibility for suspense to recur.

A similar position has been presented by Juan Prieto-Pablos, who argues that experiencing suspense upon repeated exposure to the narrative is possible due to the audience's desire to witness a certain outcome in the story. No matter whether such a desire was fulfilled on the first exposure to the narrative or not, the audience will still want to get this satisfaction with repeated encounters. "In this type of situation, repetition is not significantly different from our first encounter: we will still want Hamlet not to die, regardless of the times we may have seen or read the play" (Prieto-Pablos, 1998: 109). Each time the audience members reread the novel or re-watch the film, they desire the outcome of the dangerous situation to unfold the way which is morally right and beneficial to the character they care about. Prieto-Pablos admits that such a situation is paradoxical as the audience members are aware that the same novel or film is not going to change no matter how many times they re-read or re-watch it.

The theories of Smuts and Prieto-Pablos may have a different interpretation in the context of interactive narrative where the outcome of a suspenseful episode is influenced by the audience members, and may vary with repeated encounters depending on their choice.

Another possible resolution of the paradox of suspense, according to Prieto-Pablos (1998), could be the fact that when a suspenseful situation arises during the first exposure to the story, the audience responds to it by searching for clues in the story, trying to predict the way the desirable outcome can occur. On subsequent exposure to the narrative, the audience may still report suspense if they do not remember all the clues and details they gleaned from the story the first time. This explanation of suspense reoccurrence is similar to that of Yanal's presented earlier in this subchapter, and, as it was argued in relation to Yanal's theory, it requires further empirical exploration in relation to interactive narrative where the frequent and immediate replay means that the audience is highly unlikely to forget what has just happened in the story.

View 3: Repeated uncertainty

Richard Gerrig is among the scholars arguing that both suspense and uncertainty can survive the repeated encounters. He claims that the audience members do know what is going to happen in the story, but this knowledge does not prevent them from feeling suspense with repeated encounters. Repeaters temporarily forget what they know and thus experience "momentary uncertainty" (Gerrig, 1997). According to Gerrig, this is due to the fact that human memory is constantly in the state of "expectation of uniqueness", which means, in relation to the narrative exposition, it expects something different to happen each time the story is experienced. Gerrig calls this process "anomalous suspense" and describes it as "an emergent property of ordinary memory processes" (Gerrig, 1997, p. 172).

Where Gerrig's idea is based on the subconscious processing of information, Noël Carroll grounds his theory on assuming that the audience consciously chooses to feel uncertainty and suspense. For Carroll, it is possible to experience suspense with repeated encounters due to the fact that, for the sake of being entertained, the audience can imagine that the outcome of the narrative situation is still uncertain even though they do know what is going to happen. As Carroll describes it, "The paradox of suspense disappears once we recall that emotions may be generated in the basis of thoughts, rather than only on the basis of beliefs" (Carroll, 1996, p. 81).

Kendall Walton (1990) also considers imagination to be the key factor for creating suspense on repeated exposure to the narrative. He argues that the audience members play "games of make-believe" imagining themselves being in the story and

thus temporarily lose their connection with reality and their external knowledge of how the story will unfold.

From the above observation, it is possible to conclude that if the audience does report suspense with repeated exposition to the narrative, it happens either due to their re-experiencing uncertainty - which can be either due to various conscious or subconscious processes - or because there are other factors than the uncertainty which contributes to their repeated suspense. Either way, in relation to narrative in video games, it makes sense to test the phenomenon of the paradox of suspense empirically. This is especially important when taking into account that suspense is one of the key elements of story enjoyment. This issue is addressed in detail in the following section.

2.2 Suspense and Story Enjoyment

Media theorists encourage writers to include suspense in their stories in order to make them more enjoyable for the audience (for example, McKee, 1999; Miller, 2008). Empirical studies keep confirming that this advice makes sense: the audience enjoys suspense (Brewer & Lichtenstein, 1982; Klimmt, Rizzo, et al., 2009; Knobloch-Westerwick et al., 2009; Madrigal & Bee, 2005). In the area of interactive narrative, there has been little research done on the role of suspense in video games and its perception by players. However, it is reasonable to assume that, as in non-interactive environments, interactive stories benefit from suspense. By manipulating suspense in video games, it is possible to increase the players' enjoyment.

In order to develop further hypotheses on how suspense is perceived in interactive narrative and its role in creating enjoyment, it is important to first analyse how it is perceived in non-interactive media.

2.2.1 Pleasure of suspense

A common definition of *enjoyment* presented in the literature is a pleasurable emotional response to stimuli provided by the media (Vorderer, Klimmt, & Ritterfeld, 2004). Suspense, on the other hand, is created around “terrors of uncertainty” (Gristi, 1989) and this emotional state does not appear to correlate well with pleasurable experiences. Some scholars even refer to suspense as “a state of fearful apprehension” (Tan & Ditleweg, 1996) or “a rather stressful mode of entertainment” (Roth & Vorderer, 2009). This situation raises the question of why suspense, which is related to unpleasant feelings of fear and uncertainty, also brings the audience enjoyment?

A possible answer to this question has been proposed by Dolf Zillmann (1996). Zillman argues that the audience finds pleasure not in a suspenseful episode itself, but in its positive resolution. The more satisfaction the resolution provides, the more enjoyment the audience experience.

A similar position is held by Lothar Mikos (1996) who also claims that when exposed to a film, the audience members always hope for a “happy ending”, even though their watching experience may bring them mostly negative emotions. This allows the audience to experience what Mikos calls “pleasurable fear or the thrill”² and is especially true if the audience has reason to expect a desirable outcome from the suspenseful situation. For example, this may be due to their previous experience with films of a similar nature, which end in a good way.

The latest findings in readers’ psychology also support the idea that knowing the story’s outcome in advance does not ruin enjoyment but instead contributes to it. The empirical study (Leavitt & Christenfeld, 2011) has found that readers strongly prefer “spoiled” stories (i.e., stories where they were already told by other readers how and what is going to happen) to the stories they are completely unfamiliar with. The researchers explain their findings by speculating that the spoilers can help the readers to accept and enjoy the story by simplifying and structuring the storyline. This allows them not to worry about the story ending, but to focus their primary attention on the story development.

Even though the desirable outcome of a suspenseful episode can contribute to the audience’s enjoyment, some scholars (Vorderer & Knobloch, 2000) do not accept it as the only reason why the audience enjoys narrative suspense. They argue that it is unlikely that the audience would agree to follow a long storyline in a movie or novel just for the sake of a “happy ending”, which may not even happen.

For Vorderer and Knobloch, entertainment does not necessarily mean amusement; in order to be understood and accepted by the audience, fictional narrative has to apply the laws and principles of real life, which is represented by a

²Despite the fact that suspenseful stories are often enjoyable, it would not be correct, following Mikos, to refer to the negative emotions of fear and thrill accompanying such stories as “pleasurable”. In fact, they still remain negative emotions. As Skulsky [113] points out, when transported to the world of fictional narrative, we experience the same emotions that we would experience in reality if a similar situation occurred. Thus, our fear in the story world is not “pseudo-fear” or “quasi-fear” but fear as such.

broad spectrum of feelings and emotions including unpleasant ones. Fictional stories can also be enjoyable due to the fact that they let the audience experience new feelings, which they have not experienced in real life. In this case, both the development of a suspenseful situation and its satisfactory resolution brings the audience enjoyment. As Gerry Leonard describes it:

“We willingly go through the experience of suspense, in viewing a film or reading a text, in order to confirm, yet again, that we, along with the protagonist, can survive the terrifying glimpses of chaos that can be seen when the natural order (on which the structure of our identity depends) somehow gets exposed as not innate or natural. Furthermore, for the viewing subject, there is curious sense of relief, when viewing something legitimately terrifying in the film or story, brought on by seeing one’s nameless fears given a concrete representation”
(Leonard, 1996, p. 33).

2.2.2 Perception of suspense

While different narrative techniques analysed earlier in this chapter (Section 2.1.4) aim to produce a high level of suspense in the story, it may not be perceived as such due to individual differences of the audience members. As the film theorist Dennis Giles points out, “Meaning does not lie in the film but is the result of a “cooperative enterprise” between the producers/exhibitors of the movie and those who choose to receive it” (Giles, 1984, p. 38).

The main theories on media gratification explain the audience enjoyment by deep immersion in the narrative world (Green, Brock, & Kaufman, 2004), strong disposition towards the story character (Nabi & Kremer, 2004; Raney, 2003; Vorderer, 2000a), or flow when the audience enjoys a specific activity “for its own sake” (Csikszentmihalyi, 1990). All these theories reflect a subjective attitude toward the media product, which may differ between the audience members. While some audience members find the story or its particular episode extremely threatening, others do not experience any strong emotions towards it.

Even though there has been no complex study on suspense perception to date, based on the results of the existing empirical studies, it is possible to identify several factors that may correlate with the level of perceived suspense and experienced enjoyment by the audience.

Individual factors

Psychologist Nico Frijda describes emotions as “subjective experiences” (Frijda, 1998) and the emotional state of suspense is one of them. Unique life experience and memories of the audience members are among the factors that influence the level of perceived suspense in the particular story.

According to psychologists Gerald Cupchik and Stephen Kemp, media perception is a two-step process: first, the audience member has to accept the fictional world of narrative as the real one; second, he has to “personalize” the story by applying his own memories and life experience relevant to the story. Such personalization of the story has to be balanced – if the audience member is unable to link the story and his personal life, the story will be boring to him. By contrast, if the connection is too strong, the audience member may experience what the scholars call “underdistancing” and will try to avoid the story, which is too “personally relevant” (Cupchik, 2000, p. 260).

Personalization of the story can occur in the forms of “self-recognition” and “wish-fulfilment” (Hayakawa, 1964), which means that the story mirrors the audience member’s life or reflects her wishes and desires, which has not been or even could not be satisfied in real life.

This theory has been supported by some other researchers, who have argued that aesthetic and narrative feelings generated by a story evoke in readers a very personal metaphor which allows them to modify the way they perceive themselves (Miall & Kuiken, 2002).

The importance of inner personalization by individual audience members has been also observed by Lothar Mikos (1996). While watching a film, the audience members produce “emotion as situative qualities of experience” that reflects their personal life experience. Audience members can experience various emotions, not because the character they are empathising with experiences them, but because the story triggers some relevant memories from personal history. Therefore, according to Mikos, it is important to treat emotions not as interpersonal responses to stimuli generated by the story but rather as an individual reaction framed by each person’s unique life experience.

The personality of audience members can also determine their overall enjoyment of the media product as well how they perceive suspense in it. For example, in the context of video games, multiplayer game scholar

Richard Bartle (1997) distinguishes between four types of players based on their preferences in multiplayer online games: killer, socialiser, achiever, and explorer. “Killers” enjoy using weapons and other tools in the game in order to cause distress to other game characters. For them, playing video games is similar to other recreational activities such as shooting or hunting. “Socialisers” primarily enjoy interacting with other players and they consider video games similar to other forms of entertainment like watching a film or attending a concert. “Achievers” enjoy setting up goals within the game and achieving them as they would similarly do in other games such as chess or tennis. “Explorers” enjoy discovering and employing new features, which the virtual world provides them with. For these personalities, playing video games is a pastime similar to reading or cooking. In relation to suspense perception in video games, one could argue it is possible to assume that “killers” more likely will obtain greater suspense from the mechanics of game play rather than from its narrative component as the “explorers” do.

The current emotional state of the audience members may also correlate with the intensity of experienced narrative suspense. According to the mood management theory, people seek entertainment in order to obtain control over their environment and to place themselves in a positive mood (Bryant & Zillmann, 1984). One of the experimental studies on media perception has confirmed that film viewers with high levels of fear prefer films with lower levels of victimization and more justice (Wakshlag, Vial, & Tamborini, 1983); this way the film viewers try to balance their own emotional state. In relation to narrative suspense, this may suggest that a highly suspenseful story may not be enjoyed by the audience members experiencing fear – when exposed to the suspenseful narrative, they may report a high level of suspense but lack of overall enjoyment.

In his research on emotional response and suspense perception in interactive television, Peter Vorderer [123] empirically confirmed that preferences toward an interactive or non-interactive mode of narrative presentation is dependent upon the audience’s personal ability to process the information and make choices. Therefore, according to Vorderer, those audience members who can easily process information and welcome choice, which let them direct the story, will experience more empathy and suspense when watching an interactive film. On the other hand, those audience members who find it difficult to process the information and thus do not appreciate

choice experience more empathy and a greater degree of suspense when the film is presented to them in a traditional, non-interactive way.

It is beyond the scope of this dissertation to analyse the correlation between suspense perception and the individual life experience of the audience members, their personality and their current mood state; still, these factors should be considered when interpreting the experimental data in later chapters. However, it should be noted that those are important areas to explore in the context of computer-generated stories where “personalisation” of the stories can be an important contributing factor toward story enjoyment.

Gender and age factors

Various empirical studies confirm that male and female members within an audience respond differently to media entertainment. For example, one film study has found that female viewers tend to enjoy sad movies more than male viewers, whereas male members of the audience enjoy violent films more than females do (Oliver, 1993). An experimental study in the area of video games has also reported that female players tend to dislike the violent content of video games (Hartmann & Klimmt, 2006).

Similar findings have been obtained in sports studies – it has been empirically confirmed that men tend to prefer watching more harsh and dangerous activities in sports whereas women primarily tend to seek aesthetic enjoyment (Sargent, Zillmann, & Weaver, 1998). This finding is consistent with another sport study reporting that for male viewers of sport games, a high level of experienced suspense brings greater enjoyment whereas for female viewers, increasing suspense reduces the enjoyment. This is probably due to the higher level of tension and stress accompanying the emotional state of suspense (Gan et al., 1997).

By observing different hypotheses, media researcher Mary B. Oliver (2000) presents several possible explanations why the gender difference in media perception exists, including biological differences, gender role self-perception, different social representation and promotion of “male-oriented” and “female-oriented” events. However, Oliver admits that the gender difference in the context of media perception is a complex phenomenon that requires further exploration in order to be better understood.

Even though literature does not fully explain *why* the gender difference in suspense perception exists, it is clearly important to analyse if it is an influential factor in suspense perception in the context of video games. Note that in this thesis, for the purpose of examining how the audience perceive suspense in interactive narrative, the gender factor has been taken into account as one of the experimental variables.

Age is another important factor to consider in relation to emotional responses to interactive media: it has been reported that younger people are more attracted to interactive media (Vorderer, 2000b). It is possible that adults apply more control over the process of identification whereas children can allow themselves to engage in the story more deeply.

Social and media factors

Scholars admit that social factors play an important role in media enjoyment (e.g. Denham, 2004). Sharing and discussing his experience with others while watching a film can influence a film viewer's overall enjoyment and, possibly, the level of perceived suspense.

In video games, social factors also influence the overall perception of the game. Various empirical studies have confirmed that multiplayer online games add extra flavour to the player's gaming enjoyment due to communication with other players (Bartle, 1997; Utz, 2000). In relation to suspense perception, it is possible that multiplayer video games create a stronger degree of suspense due to the human-human rather than human-computer interaction which increases the competitive value.

Non-mediated spectatorship (Bryant & Raney, 2000), when audience members attend an event like a theatre performance or sports game, can also differ from mediated spectatorship in terms of suspense perception when the same event is seen through media such as on television or via the Internet.

In video games, the perception of suspense can be influenced by the technical representation of the video game – players accessing the game via mobile phone, personal computer or gaming console will apply different mechanics to interact with the story world. Thus, their emotional response to the game may vary as they may experience different degrees of control, flexibility and convenience due to the various media representations of the same game.

Despite the importance of exploring how social and media factors may influence the player's emotional response in video games, this topic is out of the scope of this

study. This dissertation will explore suspense perception only in the context of computer-mediated, single-player video games.

2.2.3 Does more suspense mean more enjoyment?

Answering this question is important as it would help to define the place of suspense in the overall enjoyment of a media product such as video game. If increasing suspense results in increasing enjoyment, then script writers and video game producers have to ensure the level of suspense in the video game remains high despite different manipulations within that game. In contrast, if reduction in suspense does not reduce the enjoyment, it may not be vital to maintain a high level of suspense in video game all the time – as long as there is some suspense present, the players are going to enjoy it.

As it was analysed earlier in this section and empirically confirmed by various studies (Brewer & Lichtenstein, 1982; Klimmt, Rizzo, et al., 2009; Knobloch-Westerwick et al., 2009; Madrigal & Bee, 2005), suspense contributes to enjoyment and audiences find suspenseful media products more enjoyable than those without suspense. On the other hand, as mentioned before, suspense can be a factor influenced by individual preference and not all audience members may appreciate it due to their personal characteristics: current emotional state, age and so forth.

In relation to interactive narrative in the context of a video game, this question has not been explored yet. Despite the empirical confirmation that suspense contributes to video game enjoyment (Klimmt, Rizzo, et al., 2009), the study did not examine how the perception of suspense changes with repeated encounters. Nor has it looked at how these change, if any, influences the video game enjoyment on replay. The current dissertation aims to answer these questions.

This section has addressed some of the aspects that link suspense with story enjoyment and what it may mean in terms of individual perception of suspense in non-interactive and interactive narrative. However, interactivity itself contributes to differences in the perception of suspense by the audience. The following section analyses what makes the interactive environment different from a non-interactive one and how these differences influence suspense perceptions in the interactive narrative.

2.3 *Suspense in Interactive Environment*

As it was discussed earlier in this chapter, the emotional state of suspense perceived in a story can be influenced by various different factors such as relevance of the story to the individual's life experience, his or her current state of mood, social factors and so forth. Interactivity is yet another factor on which the audience's emotional response to the story can depend.

Interactive stories differ from non-interactive forms of narrative in several ways. The main distinction is the audience's ability to influence the story progression in interactive narrative by their choice – while in a non-interactive story, the audience members are observers following the storyline proposed by the author. In the interactive environment, the audience also becomes story participants making choices and taking actions, which direct the story.

Another important characteristic of the interactive narrative, which distinguishes it from the non-interactive one, is the audience's repeated and usually immediate, exposure to the same episode in order to overcome obstacles and progress through the story. This is especially noticeable in the context of video games.

Therefore, it is possible to assume that in the interactive narrative, the emotional state of suspense experienced by the audience can be influenced by the factors of choice and repeated exposure to the story. As the media scholar Torben Grodal describes it in relation to video games, "Suspense in video games is interwoven with the interactive and repetitive nature of the game" (Grodal, 2000, p. 206).

This section aims to analyse the nature of interactivity, define the term *interactive narrative* and consider how the choice and repeated exposure to the same interactive story may influence the audience's perception of suspense.

2.3.1 **Defining interactive story**

In the area of electronic media, the term *interactivity* is often used in relation to *human-human interaction* mediated by a computer (Bucy, 2004; Jensen, 1999), *human-machine interaction* (Bucy, 2004; Jensen, 1999), and *user-message interaction* (Cho & Leckenby, 1997; Steuer, 1992).

Despite this categorization, the *human-machine interaction* is reasonably considered by some scholars as a metaphorical representation of the *computer-mediated human-human interaction* involving writers, designers, and programmers on

the one hand with end users of a media product on the other hand (Aarseth, 1997; Shedroff, 2005). From this perspective, computer-mediated storytelling can be compared with printed media, film, or theatre performances also connecting the story's author and the audience.

Such a comparison allows some scholars (Lister et al., 2003; Miller, 2008; Porter, 2004) to consider interactivity as a unique feature of a new computer-mediated form of narrative, which does not exist in traditional linear storytelling. For others (Manovich, 2002; Meadows, 2002), interactivity can be found in any form of media where audience members are filling in information gaps in the story by using their imagination, personal knowledge, and experience. It is clear that both perspectives are based on different definitions of the term *interactivity*.

The resolution of this dispute can be found in the theory proposed by the human-computer interaction expert Mark Elsom-Cook comparing *interactivity* with the human activities of thoughts and actions (Elsom-Cook, 2001). A thought is described by the scholar as an internal process, which takes place within the mind, whereas action is an external human behaviour of experiencing objects in the surrounding world. *Interaction* then, according to Elsom-Cook, is a two-way process of exchanging actions; it is always external, which means that one cannot interact with oneself. The ability to react and respond to users' actions is argued to be the key attribute of an interactive system [28, 81, 86]. Thus, any mental response to the story and completing the gaps in it without the story responding back should be treated as the audience's *reaction* to the story rather than *interaction* with it.

According to the definition proposed by the scholars M. Lombard and J. Snyder-Dutch, *interactivity* is "a characteristic of a medium in which the user can influence the form and/ or content of the mediated presentation or experience" (Lombard & Snyder-Dutch, 2001, p. 57). Such a control or influence, however, is restricted by the medium. Janet Murray defines this attribute of interactive media as "procedural", which, in regard to digital storytelling, means that the author creates not only a story but also the list of procedures and rules that restrict how this story will be presented to the reader in response to her actions (Murray, 1997b).

By summing up all the different points of view on *interactivity*, it is possible to define an *interactive story* as a cyclic process of exchanging actions between the audience and computer system presenting the story, which may result in changing of the content, direction and/or design of the story and is controlled and limited by a pre-

programmed set of rules. This definition of *interactive story* is used for the purpose of the dissertation.

2.3.2 Story vs. Game

Some interactive stories, such as the books in the *Choose Your Own Adventure* series, are designed to let the audience experience alternative story paths unfolding as the result of the reader's choice.

In story-based video games or multiple-choice text-based computer games, a story merges with game elements. The main goal of story-reading turns from exploration of alternative paths to achieving a certain outcome: winning the game.

In the presence of the game, the audience makes a choice which often influences not only the direction and final outcome of the story, but also the scoring of the audience's performance. For example, in the text-based, multiple-choice game *Choice of Broadsides* (Strong-Morse, Albano, & Fabulich, 2010), the player's choice is linked to statistics such as *likeability*, *courage*, *intelligence*, *wealth*, and other characteristics of the story's protagonist.

Merging narrative and gaming perspectives within one media product such as a video game or a text-based, multiple-choice game has been a trigger for ludology vs. narratology debates. These deliberations consider whether or not a gaming media product can be treated as a story and analysed by applying narrative theories. From the ludological point of view (Aarseth, 1997; Costikyan, 2000; Eskelinen, 2004), a game is very different from a narrative as it is rule-based. Consequently, it has to be studied as a rule-operated system independent from the narrative. From the narratological perspective, a video game is seen as - and should be analysed as - a form of narrative (Atkins, 2003; Murray, 1997a).

There is also a point of view, which reasonably mediates these two opposite perspectives. This approach argues that a story-based video game presents both the game with its real rules and the story with its fictional context (Bogost, 2009; Juul, 2005), combining realism and idealism in one medium. Thus, both of these dimensions within a video game are important and should be studied as an integrated system.

To manage the scope of this dissertation, it is important to acknowledge that in interactive narrative within the context of a video game, both the game and story are responsible for triggering emotions in the audience. Games can evolve suspense

without being blended with fictional narrative (Knobloch-Westerwick et al., 2009; van Vught, 2010). The emotional state of suspense can also be triggered in the fictional story, which does not present in a game. From this perspective, a story-based video game should be considered neither just as a story nor a game, but rather as a three-dimensional subject: story-game-audience. All three dimensions are equally important as they influence one another.

It is still not clear which component – story or game – is more responsible for generating suspense when these two dimensions merge within an interactive media product such a story-based video game.

Some scholars (Grodal, 2005; van Vught, 2010) argue that since winning or failing the game is strongly linked to the players' gaming skills, experience, and choices taken, the outcome of the game will most likely be treated by the players as their personal achievement or defeat rather than those of the story's protagonist. Therefore, the nature of the emotional response to the narrative will be "game-based" rather than "story-based".

In relation to the emotional state of suspense, which has been referred to as a "fundamental emotion of player experience" (Järvinen, 2007, p. 141), J. Van Vught argues that while playing a story-based video game, the audience can experience two different types of suspense – *direct competitive suspense* and *direct startle suspense*. The emotional state of *direct competitive suspense* is primarily triggered by the player's' gaming experience such as their fear of losing the game and hope for winning it. According to van Vught, the other type of suspense, the *direct startle suspense*, occurs as the reaction to the overall threatening atmosphere presented in a video game (van Vught, 2010).

Van Vught's approach clearly emphasises the gaming rather than the narrative nature of suspense in a video game. However, it would be difficult to make such a clear distinction between the sources of suspense. There are too many factors that should be taken into account, such as the audience's roles as an active participant and a passive observer, the individual ability to immerse in the video game, as well as repeated exposure to the same video game episode. These factors and their potential influence on the emotional state of suspense is analysed below.

2.3.3 Observer vs. Agent

Unlike non-interactive narrative where the audience members are given no choice to influence the storyline, interactive stories allow the audience to become both spectators and agents in taking actions and directing the story. Some scholars even refer to narrative in a context of a video game as “the full agency-dimensions of story experience” (Oliver & Sanders, 2004). As the media scholar Tanya Krzywinska points out in relation to video games, they are “far more intently focused on performance than spectatorship. Here looking, reading, and interpreting the rhetoric and syntax of a game become core to player performance – looking for clues, patterns and, more than this, tying that information into the physical skills required to play a game” (Krzywinska, 2009, p. 276).

Media scholar Torben Grodal (2000) distinguishes between three types of interaction which can occur during the game-play: passive viewing or witnessing, active exploring of the virtual world, and interactivity, which requires players to possess certain skills and actions in order to accomplish a task or/and survive the game. As Grodal points out, interaction involves not only dealing with static obstacles or those which are a matter of circumstances, but also with the obstacles and forces that deliberately confront the player.

There are two different roles players take while playing a video game: that of an observer or an agent (actor). The communication scholar Jonathan Frome proposed a classification of emotional responses to a video game. According to Frome (2007), while playing a single-player video game, a player performs the roles of an *observer-participant* and *actor-participant*. An *observer-participant* does not change the material presented in a video game, but participates in it through the mental proceeding of the presented information – the same way as it takes place in non-interactive media. The player’s emotions in the role of an *observer-participant* are evoked from the passive observation. In contrast, in the role of an *actor-participant* the player influences changes in a video game by her actions; these actions trigger her emotions. Further, based on this classification, Frome suggests that in each of these two roles, players can experience four different types of emotions: *artifact*, *ecological*, *narrative*, and *game*, each of which is a response to the “input” or stimuli in the video game (Figure 6).

Types of Emotions	Audience Roles	
	Observer-participant	Actor-participant
Ecological	Sensory environment	Proprioception
Narrative	Narrative situations	Role-play
Game	Game events	Gameplay
Artifact	Design	Artistry

Figure 6 Inputs to emotions in video games proposed by J. Frome (2007).

Ecological emotions are players' responses to the fictional world in a video game as if it was real. *Narrative* emotions are triggered in players by video game characters and events, whereas *game* emotions are caused by the gaming component of the video game and linked to the experience of winning or losing the game. Finally, *artifact* emotions are those in which the player views a video game as a creation of art. Frome admits that during a course of the actual game play, the player may experience either all or only some of these types of emotions.

Although the proposed classification is a good theoretical tool, and allows distinguishing between emotions triggered by different aspects of a video game, it can be problematic to accept for practical implementation. Often, during the actual game play, the sources of emotions blur and become indistinguishable. For example, losing a battle means not only losing the game, but also termination of the narrative progression. Thus, the suspense experienced in this case can be both narrative and game-based.

The audience's ability to influence events in the interactive story trigger different approaches toward the role of interactivity in triggering emotions, especially the emotional state of suspense.

Approach 1: Suspense is problematic

The ability of audience members to influence events in the interactive story makes some scholars (Frome & Smuts, 2004; Habermas & Diel, 2010; Smuts, 2008) doubt that the emotional state of suspense can be experienced in the interactive environment. They argue that, in order for the audience members to feel suspense, they have to be in the position of "helpless spectators". As Aaron Smuts points out: "The helpless spectator feels suspense, but the breathless agent feels none. The important thing to note is that even when the stakes are high, if we are actively

working toward the realization of a desired outcome, suspense is precluded” (Smuts, 2008, p. 284). Therefore, according to Smuts, the only instances in video games where the audience can experience suspense are those where they are put in the position of helpless observers.

In support of this claim, J. Frome and A. Smuts (2004) refer to the video game *Tom Clancy’s Splinter Cell* (2002) where the protagonist has the ability to hide from his enemies in the shadows of the landscape to avoid detection. However, this argument has been reasonably discounted by van Vught (2010) who argues that in this video game, suspense is higher not because the players are helpless – in fact, they have control over the situation and can make their protagonist visible at any time – but because it is dangerous to act and confront the antagonists which would increase the chances of losing the game; thus, the players have to wait for quite a long time until the danger passes. Such waiting by choice rather than predetermined helplessness of the protagonist contributes to suspense in this video game.

Van Vught categorises suspense perceived in video games as *sympathetic* and *empathetic* (van Vught, 2010). *Sympathetic* suspense takes place when the audience member is observing the character and knows about the danger the character is confronting or going to face whereas the character himself does not have this knowledge. When the audience and the character both share the above information, the audience experiences *empathetic suspense*.

Based on this classification, van Vught argues that in video games, *sympathetic* suspense can occur only in cut-scenes where the player remains a helpless observer and cannot control her character. In order to perceive *empathetic* suspense, the player has to accept the video game world as a real one. This is difficult to do due to game rules, on-screen hints, toolbars, and other elements of usability distracting the player from experiencing “reality”. According to van Vught, *empathetic* suspense is also problematic to experience due to the fact that the player’s character is focusing primarily on actions and does not have consciousness, presenting to the player “an empty shell”.

Approach 2: Suspense is stronger

There is also an opposite point of view presented by Peter Vorderer stating that interactive media can present an even higher degree of suspense than the non-interactive one due to the deeper immersion of the audience in the story (Vorderer,

2000a). Immersiveness is considered by many scholars, both narratologists (Laurel, 2001; Murray, 1997b) and ludologists (Aarseth, 2001; Eskelinen, 2004), to be one of the most important characteristics of video games. As a video game scholar James Newman points it out: “[...] videogames may be characterized by a sense of 'being there', rather than controlling, manipulating or perhaps even 'playing a game'” (Newman, 2004, p. 17).

Approach 3: Suspense is not interactivity dependent

There is also a point of view that an emotional state does not depend on interactivity as such. As a media researcher Lothar Mikos points out in relation to thrill: “Thrill, as [a] general type of experience, does not depend on whether subjects are directly involved in the action or whether they merely participate in it as spectators. The degree and form of the thrill is determined in both cases by the structural conditions of the respective narrative situation” (Mikos, 1996, p. 38). In other words, the emotional response to narrative depends not on the active or passive position of the audience in relation to the narrative, but on the narrative itself and the way it presents the thrilling situation. Despite the fact that Mikos analyses the emotional state of thrill which he defines as “the pleasurable experience of fear” (Mikos, 1996, p. 38), the same principle can be applied to suspense.

Analysing the above approaches, it becomes clear that the way interactivity influences suspense perception has to be empirically tested. This task is one of the goals of this dissertation.

2.3.4 Reading vs. Rereading

There are different reasons why a person decides to re-experience the story he is already familiar with. According to the classification of the rereading experiences proposed by Calinescu (Calinescu, 1993), rereading can be *partial*, *simple*, or *reflective*.

Partial rereading refers to rereading the same story in order to fill in information gaps left from the first reading. *Simple* rereading occurs when the audience reread the story in order to re-experience the pleasure they felt when the story was read for the first time. Finally, the term *reflective* rereading is used to describe the rereading experience when the audience deeply analyses the story in order to discover a hidden meaning it may present or studies how it was created.

The above classification was employed by Alex Mitchell (2012) for his categorisation of the reasons which motivate the audience to re-experience an interactive story. The scholar distinguishes between two main reasons: 1) seeking of variation, i.e., exploring different story-paths or perceiving the story from the perspective of a different story character and 2) searching for closure in the story.

In relation to non-interactive narrative, it has been argued that knowledge changes emotions and the audience may experience slightly different emotions when they are exposed to the story for the second, third or any consequent time (Gerrig, 1993; Yanal, 1996). Yanal provides an example from Alfred Hitchcock's film *Psycho*: when the audience members watch the film for the first time, they experience suspense towards the situation around the protagonist Marion – wondering whether she will be able to escape with the stolen money. Her sudden murder in the shower in the Bates Motel comes as a total surprise. However, on re-watching the film, the audience already knows what is going to happen and thus experience, what Yanal calls, “fear of the known” when Marion is getting undressed to take a shower.

In interactive narrative in the context of a video game, the player's emotional response can change with repeated encounters due to increasing his level of expertise. As Grodal (2000) describes it, while a new situation in a game may trigger fear in a novice, an experienced player may not be scared at all because he already knows what to do in order to succeed.

According to Grodal, experience with video games comes through the three consequential stages: (1) unfamiliarity and challenge, (2) mastery, and (3) automation. When a player reaches the third stage, he is able to perform the tasks offered in the video game automatically. This is when, as Grodal theorises, the player most likely will stop playing as the game becomes boring. The more one plays video games, the more experienced one becomes and the more he is able to subconsciously perform actions, which would otherwise be performed with a conscious focus and attention. Such a cognitive evolving, learning, and growing experience makes the emotional response to a video game a dynamically changing process rather than a fixed state.

As Grodal argues, in video games, surprise during the first exposure to the game may be transformed to “suspense-like coping anticipation” when, on replay, the player will try to deal with the issue that surprised him the first time.

According to Grodal (2003), suspense in a video game has a chance to survive repetitive encounters due to the fact that each of the consequent exposures to the game

presents an uncertainty about the outcome. For example, it is quite possible that before the mastery is achieved, the player may succeed or lose the game by chance.

Following Grodal's theory, it is possible to assume that the degree of suspense in a video game depends on the player's proficiency; as soon as the player achieves the level of mastery and can easily cope with obstacles the game presents, suspense disappears. In other words, the degree of suspense experienced by the audience in a video game depends on uncertainty about their personal abilities as players. Grodal even proposes to substitute the terms *suspense* along with *curiosity* and *surprise* by the term *explorative coping*.

If the level of suspense experienced by the audience in interactive narrative is reversely related to the level of the player's expertise, it is possible to suggest that by keeping the process of mastering harder, it would be possible to prolong the suspense with repeated encounters. One of the proposed techniques (van Vught, 2010) is to manipulate the player's ability to save the game – inability to do so would make the results of the choice irreversible by increasing the stakes and making the emotions stronger.

This technique, however, may cause an opposite effect – if the learning process becomes too hard for the player, his frustration may cause a decreased sense immersion into the video game and so the emotional state of suspense.

So far, the degree of suspense experienced by the audience in interactive narrative in the context of a video game, was linked to the manipulation of the game component of the media product rather than its narrative one.

However, it is possible to manipulate the audience's emotional response through changing the narrative component of a video game. This can be achieved by presenting new or modified story paths on rereading, which would maintain the level of uncertainty and thus, keep the suspense high with repeated encounters. When comparing rereading of a non-interactive story with interactive one, Mitchell suggests that in the interactive environment, there is no such a thing as actual rereading, since the audience is presented with different story-paths or at least the scenes they did not experience when the story was read for the first time (Mitchell, 2012). This approach is analysed in more detail in the Chapter 4 of this dissertation and some of its aspects were also empirically tested and described in the Chapter 6.

From the above analysis, it is possible to conclude that the interactive environment of the narrative impacts the perception of suspense. When the story

meets the game environment, both dimensions become influential factors. The way the emotional state of suspense corresponds with interactivity is a controversial topic. This dissertation aims to find the answer to this question empirically.

2.4 Summary

The phenomenon of the emotional state of suspense has been studied substantially in the area of non-interactive narrative but remains mostly unexplored in the field of interactive storytelling, especially in the context of the video game. The above literature review results in several conclusions.

First, despite a theory stating that the interactive nature of a story and ability of the audience to influence the story progression by their choices lead to a decrease in the degree of suspense (Smuts, 2008), it is also possible that audience members experience stronger suspense when presented with a choice due to their greater involvement in the interactive story.

Second, uncertainty is an important component of suspense and it may vanish with repeated exposure to the story despite the interactive nature of the narrative. However, this can be prevented by manipulating the audience's choice.

Third, suspense significantly contributes to story enjoyment in both non-interactive and interactive stories. However, in the interactive environment, suspense may not be the key factor influencing enjoyment.

Each of the above conclusions evolved into the hypothesis (See Section 1.3) and framed the scope of the research presented in this dissertation.

Chapter 3

Audience Involvement and Suspense Perception

In interactive narrative, where audience members also perform the role of a story character, their perception of the story becomes dual – on the one hand, they remain external observers of the story events, whereas on the other hand, they participate in the story and influence the storyline with their choices. Thus, when asked to measure the degree of suspense they experience while exposed to the interactive narrative, the audience may respond either from the perspective of a story character or external observer.

The results of the pilot study³ of this thesis have supported this expectation. Three of the fourteen participants of the pilot study (randomly selected) were asked to comment on their actions after they had completed reading and rereading the interactive story based on an episode from a James Bond novel. They were also asked to answer questions regarding their reading experience, including their perception of suspense in the story. Two of the three participants – both male – reported that they perceived the story and measured their level of suspense from the perspective of the story's protagonist, James Bond. The other participant (female) reported that she perceived the story as the reader distant from the James Bond character and the degree of suspense she experienced was that of her as an external observer of the story.

These findings have made it clear that in order to measure and compare the audience's perception of suspense in interactive narrative, it is important to take into account from which perspective – external as an observer or internally as a story

³See Section 5.3

character – the perception takes place. For example, if some audience members report a high level of experienced suspense from the perspective of the protagonist and others report exactly the same degree of suspense experienced by them as the audience, are these reports comparable? A similar question arises when the audience is exposed to the story with repeated encounters and validate their perception of suspense from different perspectives each time – even if the degree of reported suspense is the same, is suspense perception during the first and repeated encounters comparable?

The aim of this chapter is to find answers to the above questions by analysing how the audience perceives suspense in interactive narrative.

3.1 Story Immersion

As has been identified earlier in this thesis⁴, immersion in the story is an important factor that influences the level of perceived suspense by the audience members. It is often seen as a measure of emotional and mental effort which the audience members undertake in order to understand the story (Tal-Or & Cohen, 2010). Immersion also allows identifying how much the audience care about the story and how deeply they are taken into it.

Interactive story in the context of a video game can be immersive to the audience members in two dimensions – as a story and as a game. Marie-Laure Ryan refers to these two types of immersion as “narrative immersion” and “ludic immersion” respectively. She defines narrative immersion as “an engagement of the imagination in the mental construction and contemplation of a story-world” whereas ludic immersion is seen as a deep involvement in the activities the player performs (Ryan, 1998, p. 8). According to Ryan, narrative immersion can occur in three forms: *spatial* which is the result of the audience exploration of the story-world, *temporal* which is caused by the audience’s strong desire to find out what is going to happen next in the story, and *emotional* – the audience’s reaction to the characters and story as such. In the above classification, Ryan refers to suspense as a temporal form of immersion. However, it would not be correct to completely separate suspense from

⁴See Section 2.2.2.

other forms of immersion as all of them, to a certain extent, influence the audience's emotional response to the story. The degree of the experienced suspense depends on the knowledge the audience obtain from exploration of the story-world as well on the emotional connection with a story character.

For Ryan, the intensity of the temporal immersion experienced by the audience members depends on the type of suspense – *what*, *how (why)*, *who*, and *metasuspense*. Each of these types of suspense is an emotional response to the questions raised by the story: what is going to happen in the story, how something has happened and who did it. Metasuspense reflects the audience's desire to know how the story, as a complete piece of writing, will finally be created from the various unrelated facts and events currently presented to the audience. The most intense form of suspense in this list is the “what” suspense caused by the audience's desire to find out which of two possible outcomes – desired or undesired – will take place in the particular story episode. In this thesis, experiments have been created around the “what” type of suspense.

Immersion can be described as a gradual process rather than a fixed state. According to Brown and Cairns (2004) who examined how video game players become absorbed in video games, immersion develops in three sequential stages: engagement, engrossment, and total immersion.

During the first stage of *engagement*, the players have to like the game, become familiar with its environment and learn about the ways and tools which then can be used in order to influence the game, proceed in it, and get rewarded for the invested time and effort.

During the stage of *engrossment*, players start investing in the game emotionally. As the scholars describe it: “This investment makes people want to keep playing and can lead to people feeling ‘emotionally drained’ when they stop playing. The game becomes the most important part of the gamers’ attention and their emotions are directly affected by the game” (Brown & Cairns, 2004, p. 129). At this stage, the players pay less attention to their real life surroundings.

The final stage of *total immersion*, *transportation* (Tal-Or & Cohen, 2010), or *flow* (Csikszentmihalyi, 1990) is seen as a state of presence⁵ when the players become emotionally and mentally removed from the real world and thus, perceive the fictional

⁵ The broad term of presence is also often referred to as telepresence, virtual presence, mediated presence, or co-presence.

world as their new reality. When experiencing total immersion, the players become highly concentrated on their goal and tend to lose any sense of real time and physical self-awareness, generating a sense of presence or “being” in the environment of their current task (Busselle & Bilandzic, 2009; Jennett et al., 2008; Lee, 2004). As Biocca (2002) describes this state, “Our awareness of the medium disappears and we are pushed through the medium to sensations that approach direct experience”.

In relation to perception of suspense in interactive narrative, it is possible to put each of the immersion stages proposed by Brown and Cairns (2004) in correspondence with the perspective from which suspense is perceived (Figure 7). Thus, at the stage of engagement, audience members are distant from the story protagonist. They make themselves familiar with the protagonist and may also have some likes or dislikes toward him. However, at this stage, the audience does not sympathise or empathise with the character (further in this chapter, these two emotional states are described in more detail). If asked to evaluate their level of suspense at the stage of engagement, the readers will most likely report it from the position of the outside observer. It is also possible that, because of the lack of emotional connection with the story, they may feel little or no suspense at all.

	Engagement	Engrossment	Transportation
Distant observer			
Sympathising observer			
Story character			

Figure 7 Story immersion and perspective of suspense perception.

At the stage of engrossment, audience members become emotionally involved in the story and part of such involvement is their sympathy towards the protagonist – they start feeling for him. Now, when the audience members have a better

understanding of the protagonist's goals and obstacles, this knowledge can make them worry about the protagonist or want to help him achieve his goals. Even though the audience members become emotionally closer to the protagonist, they still distinguish between themselves and the characters and are aware of their subjective judgement of the protagonist. The degree of suspense perceived at this stage can be higher than during the stage of engagement. However, it will still be perceived from the perspective of the external observer, who, nevertheless, is trying to place herself in the position of the story's protagonist. Thus, it can be argued that in the stage of engrossment, the roles of a reader and story character blur. Such a condition can be referred to as "external bonding" (Oatley, 1999) and it takes place when the audience experiences the emotional state of sympathy toward the character while observing him or her. This links the audience and the character together; however, the audience members remain in the position of external spectators and care about the story from the outside.

At the stage of engrossment, the audience members may also find it difficult to distinguish from which perspective (external or internal) their emotional response to the story takes place. This possibility was taken into account in the experiments described later in this thesis⁶.

The final stage in the process of immersion – transportation – is similar to the one which occurs when people are completely focused on the activity they are currently performing such as work, playing sports, or creating a piece of art. However, in relation to narrative or narrative presence (Busselle & Bilandzic, 2009), transportation is seen as a process which takes place only when people concentrate on the alternative, fictional reality, and is connected to their real lives (Tal-Or & Cohen, 2010). At this stage, the audience members may still not empathise with the character but nevertheless be driven by the story, losing their self-awareness and perception of reality. They become temporarily absorbed within the story. As Green, et. al describes it: "The enjoyment of a transportation experience [thus] does not necessarily lie in the valence of the emotions evoked by a narrative, but in the process of temporarily leaving one's reality behind and emerging from the experience somehow different

⁶See Chapters 5 and 6.

from the person one was before entering the milieu of the narrative” (Green et al., 2004).

In the interactive story within a video game, it is possible for the audience to not reach the final stage of transportation even though they may, in general, perceive the video game as immersive. This leads some researchers to conclude that immersion and transportation are, in fact, two different emotional states, which can exist without each other (Jennett et al., 2008). To support their claim, the scholars present an example of a player performing a boring task in the game; even though she may experience transportation to the virtual world where she is required to perform the task, her experience with the game will not be immersive.

The issue with this position, however, is that immersion is not considered as a gradual process, but rather as a fixed state – the question which the player has to be asked is not whether or not the game is immersive but to what degree it is immersive. One of the indicators of deep immersion could be the perspective of the player’s emotional response to the story – the player considers her emotions as those of the character.

At the stage of transportation, the audience members will most likely report their emotional response to the story from the perspective of the story character, as their connection with the story and character strengthens. In an interactive narrative, it is also possible to expect that if empathy with the story character occurs, the level of perceived suspense at this stage of immersion will be the highest as the audience feels the suspense about his own situation in the story. As Brown and Cairns (2004) have concluded from their empirical study, those video game players who reported absence of transportation while playing a game also reported a lack of empathy toward their character.

3.2 Identification: Bonding with a story character

In order for the audience members to enjoy the story, they have to establish an emotional connection with the story’s protagonist either by sympathising or empathising with him or her. This is usually achieved through finding similarities between the audience members and the character or by the audience’s desire to resemble the character in some way (Cohen, 2001; Klimmt, Hefner, & Vorderer, 2009; Liebes & Katz, 1990).

Whereas sympathy means liking the character and feeling for her, empathy is about sharing feelings with the character and experiencing the same emotions as she does. Deep empathy with a story character may result in different emotional outcomes experienced by audience members mentally or physically (i.e., sadness, fear, crying, laughing). It can even reach the state of parasocial interaction (Nabi & Krcmar, 2004), which may involve discussion of the character's life or even direct talking to the character.

Through empathy, the audience members start identifying themselves with the character and thus become the participants within the story. Such an experience of shifting identities is known as *identification*.

Identification is believed to result in a stronger emotional response to the story and a higher level of story enjoyment. This has been defined as “a mechanism through which audience members experience the reception and interpretation of the text from the inside, as if the events were happening to them” (Cohen, 2001). In relation to suspense, it is possible to suggest that the more audience members identify themselves with a story's protagonist, the higher their level of perceived suspense becomes.

Identification can be influenced by various factors. One factor them is the individual ability of a particular audience member to empathize and emotionally connect to the story. A higher degree of similarity between the character and audience members makes identification easier to take place. Contrarily, poor, non-realistic, or incoherent plotting of the story may prevent identification (Busselle & Bilandzic, 2009; Cohen, 2001; Green et al., 2004).

Previous familiarity with the story character can also contribute to identification. For example, for the purpose of this study, an interactive story centred on the protagonist James Bond was created. This character is known to most of the audience members from novels, films, and some video games. Thus, the name of James Bond evokes in the audience strong associations with the particular character; the audience is already familiar with his personality, intelligence and physical abilities, ambitions, kind of jobs he is usually involved in and so forth. Because of this familiarity, the process of identification with the character may occur faster and be stronger in those audience members who already like him and are curious to experience his new adventure being in his shoes. However, for those who already know James Bond but dislike him, identification will be difficult to establish – their current perception of the character is grounded in their previous knowledge about him. Contrarily, introduction

to a new, unfamiliar story character makes the audience invest their time and effort in getting to know him and finding similarities between themselves and the character; this means it may take time for the audience members to start empathising with the character. Thus, the emotional response to the story will first be that of the external observers. As the story progresses and the audience members have more knowledge about the character, they may start identifying with him and perceive his emotions as their own.

Cohen (2001) identifies four major attributes of identification: 1) empathy, which indicates the emotions the reader shares with the story character; 2) cognitive processing of information, which points out how well the audience members understand the character, her goals and actions; 3) motivation, which defines if and to what extent the audience shares the character's goals; 4) the depth of immersion into the story, which is a measure of the degree to which the audience lose their self-awareness.

Even though transportation into the story does not necessarily lead to the audience's identification with the story character, these two processes may highly influence each other. On one hand, when the audience members are transported into the story, they have more chance to identify with the character. On the other hand, experiencing empathy towards the character allows the audience to easily accept the alternative fictional reality of the story and thus be transported into it. Some scholars consider transportation as a "prerequisite for identification" with story characters (Green et al., 2004).

Researchers have been arguing that the audience members who are totally immersed in the story treat fictional characters as real people (Green et al., 2004). One recent neurological study has provided an explanation for this phenomenon (Abraham, von Cramon, & Schubotz, 2008). While exploring how the human brain distinguishes between fictional and real information, the researchers have discovered that, in fact, different parts of the brain are involved in processing fictional and reality-based information. Information about real people activates the same regions of the brain that participate in processing information about ourselves. Thus, if the information is coded in the human brain as "self-relevant", it becomes perceived as real rather than fictional. This process of switching identities, according to the researchers, has a higher chance to occur if the information about the protagonist or other story character the audience cares about is "personally significant" to the audience members. This

finding can probably explain the process of immersion in the narrative world. At some stage of this process, the audience members lose their self-awareness and adopt a character's identity, goals, emotions, and his way of thinking.

The nature of interactive narrative can contribute highly to the process of making the story-events "personally significant". Being the character of the story and performing the actions which influence the storyline make the readers experience their personal importance in the story. The following section analyses how an interactive environment influences the process of identification with a story character and contributes to the audience's perception of suspense.

3.3 Story Involvement on Rereading

The process of identification with the protagonist in video games is not consistent through the story and may vary between audience members. For example, as Klimmt et al. (2009) points out, when a character dies, the players lose identification with him or her and their self awareness increases. In this case, they would consider their actions as players not to be sufficient to keep the character alive. On replay, the players' identification with the character may become strong again.

Thus, if the readers of interactive narrative are asked to indicate the degree of suspense they are experiencing in the middle of the story, they may report higher levels of suspense and suspense perception from the position of the protagonist. However, when the protagonist dies, the audience may still experience suspense but, this time, from the position of the external observer. This feeling of suspense may be a trigger for rereading the story.

Rereading the interactive story also means that the audience have already spent some time observing the character and performing his role. Thus, even if at the beginning of this exploration (during the first exposition to the story), the audience's level of suspense was presented from the position of an external observer; with repeated encounters it can be reported as the character's perspective. Additionally, a player can report suspense from the position of the external observer of the story during both their first and second exposure to the story. In this case, it means that he or she finds it difficult to empathise with the character and become totally immersed in the story by performing the character's role. As it can be seen from the theoretical observation presented earlier in this chapter, reasons for that can vary.

For the purpose of this thesis, experiments were created to allow the participants to experience the interactive story three times. They were also asked to confirm their willingness to reread the story. The aim of the question was to support the idea that those members of the audience who are deeply immersed in the story and empathise with the protagonist will be more interested in subsequent rereading of the story.

3.4 Story Involvement and Interactivity

To illustrate the difference between the perception of suspense in non-interactive and interactive media, Vorderer (2000b) employs an example with the audience watching a movie where the protagonist is trying to cut the right wire to prevent a bomb explosion. The audience feels sympathy toward the protagonist and through this emotional state, he or she also feels suspense. If the audience members were offered the opportunity to choose themselves which wire to cut, the researcher is convinced, they would feel even stronger suspense because their choice of the wire determines the outcome of this potentially dangerous situation. The fact that the story becomes interactive puts the audience in the position where they feel responsible for the outcome.

According to Keith Oatley (1999), bonding with a fictional story occurs when the audience members are invested in it with their emotions, memories, and thoughts. In interactive narrative, the audience's actions should be added to this list. The more possibilities the audience members are given to explore and influence the story world, the more attached to it they become. As Kwan M. Lee (2004) points it out, a virtual environment evokes in people three levels of behaviour: *perception*, *manipulation*, and *interaction*. Perception allows the person to identify and judge the objects in the virtual world. Manipulation allows operation with the objects, which increases the degree of the audience's involvement in the virtual environment. If the manipulation clearly has a consequence and results in changes, the audience members become involved in interaction with the virtual objects, which is the highest level of experience.

In relation to interactive narrative, this observation leads to the conclusion that the audience members are more immersed in the story if they contribute to it with their actions and choices. These choices must also have clear consequences or at least be perceived that way by the audience.

There is, however, an opposite point of view argued by M.-L. Ryan, that suspense is “resistant to interactivity”. The scholar argues that suspense is difficult to maintain in the interactive environment due to the fact that suspense requires uncertainty about the outcome of the particular situation. They must be presented with at least two possible resolutions and have a desire to find out which one is actually taking place. If the audience has the freedom to achieve a certain outcome of their actions, there is no uncertainty about it any longer; thus, there is no suspense: “When the players can determine the path through their choice of actions, the uncertainty is lost. And if the system generates an accidental event to prevent the player from fully controlling the outcome of the story, the effect will be surprise rather than suspense” (Ryan, 1998, p. 10).

But Ryan’s argument assumes that the consequences of a choice are always certain, which need not be the case at all. For example, people experience suspense in real life even though they take action, because unexpected events interfere with a person’s choices. A chosen path does not necessarily lead to the desired result – there is a difference between how the choice is perceived by the person who makes it and what its real outcome is. For example, for a person trying to escape from an unfamiliar building in order to avoid fire, any door might be perceived as an exit, but only a few of them are real exits. This situation is interactive – the person is searching for the exit and must decide which door to open, and there is a high degree of suspense – it may not be possible to find the exit in time. It is exactly the same in interactive narrative. In fact, video game designers can deliberately design the game world to ensure uncertainty, even after actions have been chosen⁷.

The lost uncertainty presented by Ryan is therefore an illusion; making a story interactive does not, in itself, remove the possibility of suspense.

The interactive nature of a story may not be a desirable feature for some audience members and make prevent them from bonding with the story and experience emotions from the position of the story character. One of the possible reasons for that is that experiencing the interactive story in the context of a video game is a more complex task than, for example, watching a film or reading a novel. It requires the audience to apply previous knowledge and certain competence and skills

⁷The problem of manipulating the audience’s choice in the story in order to maintain higher level of suspense have been addressed in Chapter 4 of this dissertation.

in order to succeed in the game and move ahead in the story. In many video games, the chance of failing is high. Thus, the interactive environment requires the audience's concentration, attention, and careful observation of their current situation in the game, which some audience members may not enjoy.

This has been proven by an experiment conducted in the area of interactive television (Vorderer, 2000a). The film viewers participating in the experiment were divided into three groups. The first group was simply watching a film. The second group was asked to choose one of the three possible endings for the film. The third group of participants could choose the direction of the story path three times while watching the film. Among the questions which the participants were asked during and after the experimental study, was a question related to their perception of suspense. One result of the study was that the participants in all three groups experienced the same level of suspense, but the interactivity was more enjoyable for those participants who had a higher level of education and/or faster reaction on making decisions. Those who were less educated or needed more time to make their decisions tended to prefer the traditional, non-interactive way of viewing films. The results of the study suggest that there are two possible responses to interactivity which correlates to the audience's level of education and general cognitive abilities.

The findings of the study also support the idea that interactivity and suspense do not interfere within the story. However, this result requires testing in the area of interactive narrative in the context of a video game. Although viewers of the interactive television show were able to contribute to the story by their choices, they however, did not perform the role of the protagonist in the story, which might influence their perception of interactivity and emotional response.

It has also been empirically proven that interactivity increases the audience's identification with story characters (Hefner, Klimmt, & Vorderer, 2007; Klimmt, Hefner, et al., 2009). In an interactive narrative in the context of a video game, identification takes place when the players temporarily perceive themselves as game characters. This effect is especially noticeable in first-person video games where players totally identify themselves with the characters they play (Klimmt, Hefner, et al., 2009). The reason why first-person video games are so immersive can be found in the theoretical approach proposed by Oatley (1999), which indicates that narrator's (focalizer's) point of view influences level of identification. Thus, the narrative presented from the point of view of the third person, puts the audience in the position

of spectators, whereas the first-person narrative allows the audience to experience identification with a story character. Unsurprisingly, first-person video games have been reported to be the most immersive type of video games (Brown & Cairns, 2004).

This approach goes along with a theory of virtual experience (Lee, 2004), which suggests that the users are presented in the virtual world in the form of a virtual self, which can occur via a physical mode when the players can actually see their virtual physical representation or via a psychological mode when the users become aware of their virtual identity because of the reaction or response they experience towards themselves in the virtual environment.

In non-interactive media, even if the audience members identify themselves with a story character, care about his goal and share his attitude, beliefs, and expectations, their identification is “passive” (Green et al., 2004) as they are led by the author of the story. In contrast, interactive media allows the audience members to become the story character themselves and contribute to the story via their choices.

Another difference between the audience’s identification with the character in non-interactive and interactive narrative can be seen in different levels of freedom experienced by the audience in each of these two environments (Cohen, 2001; Klimmt, Hefner, et al., 2009). In a non-interactive story, the audience members can only observe the character and her transformation through the story, whereas in interactive narrative through a video game, their character becomes a mixture of the predefined characteristics as well as the attributes which can be influenced and modified by the players – so called “player-affected attributes”. Thus, unlike non-interactive media, identification with a character in video games becomes an active process and often provides the audience with the freedom to customize the character’s attributes. This helps the audience to more easily identify with the character whose role they perform and consequently report their emotional state from the character’s position.

In the context of a video game, it is also important to take into account that both narrative and gaming components contribute to the emotional response to the narrative. In relation to suspense, it has been argued by the researcher Jasper van Vught (2010) that in video games, this emotional state can be experienced primarily due to the gaming, not the narrative involvement of the audience members – their desire to win the game and fear to lose it. Thus, the researcher concludes, in video games, suspense is of a different nature than in film – it is a *direct competitive*

suspense, which is primarily triggered by the player's gaming experience (i.e., fear of losing the game and hope for winning) and *direct startle suspense* felt as the reaction to the overall threatening atmosphere is presented in a video game.

Even though van Vught does not focus on the perspective from which the players would report their emotional state of suspense, from his theoretical observation it is possible to assume that most of the time they would remain distant observers rather than characters due to their inability to empathise with the character. Despite the rather coherent reasoning presented by van Vught, it is, nevertheless, problematic to accept his point of view for several reasons.

First, tools, bars, hints, and menus that the scholar considers as obstacles for accepting a video game world as a real one can indeed be distracters at the beginning of the game play as the player becomes familiar with the rules and game design. However, with reasonable user-interface design, these components are unlikely to disturb the player when his experience with the game reaches the level of engrossment⁸. At this stage, they become unnoticeable, similar to any other element of the real world surrounding the player (i.e., a cup of coffee on his desk). From now on, the player is focused on his role and tasks in the new (virtual) reality⁹.

Second, it seems that in his reasoning, the researcher neglects the important factor of imagination which can fill in an "empty shell" and make it feel real, believable and worth empathising with – similar to a child's make-believe game when a tree branch found on the ground can become a magic wand, sword, fishing rope or anything else the child is able to imagine within the context of the game.

Third, van Vught's strong disposition towards "ludic" dimension of video games does not take into account the fact that the game is influenced by the narrative. According to van Vught, "By foregrounding the fact that we are playing a game and that game generally involves winning or losing, the game can trigger suspense without the use of fiction" (van Vught, 2010). It is true that many video games do not require a story in order to hook the player and keep him in suspense (See Figure 8, for

⁸See Section 4.1 for more detail on the stage of engrossment.

⁹ The player can, of course, be distracted and withdraw from the fictional world of the video game by something unexpected happening in his real world (i.e. technical problem with his gaming equipment) or his premature death as a character in the fictional world. However, while playing the game, he will have a lot of possibilities to perceive the fictional world as real.

example). However, those video games that do employ a story rely on it and many players consider a good story to be an important criterion for choosing a new video game to play¹⁰. In terms of generating suspense in a video game, both the game and narrative contribute to this process. By accepting that the player can empathise with the character, it is possible to assume that his emotional state can be melded with that of the character and thus, events that trigger suspense in the story character will also present suspense to the player. Empathy will also mean that actions performed by the player in order to achieve better result in the game will also have narrative sense and importance for him as a story character.

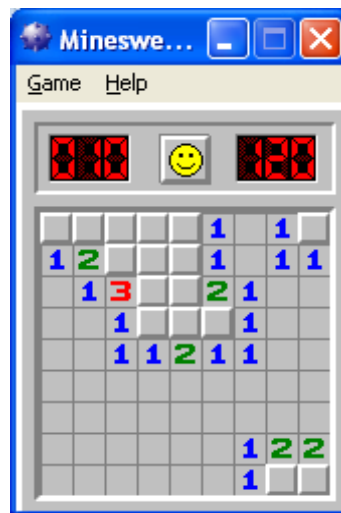


Figure 8 Suspense in *Minesweeper*: where is it safe to click next?

From the above observation, it is possible to conclude that an interactive environment significantly contributes to the audience's involvement in the story – it provides them with the ability to make choices that matter in the story, i.e. influence the storyline or/and contribute to the character's personal transformation. Such an investment creates a liaison between the audience and the story, making them experience stronger emotions while delving deeper into the story. Thus, if the level of total identification has been met, the audience will identify their emotions with those of the character they are playing.

¹⁰This conclusion is based on the results of the experiments conducted for the purpose of this dissertation. See Chapter 6 for more detail.

As it was analysed earlier in this chapter, the process of identification with the character is not consistent through the story exposition and can be strengthened or interrupted by various factors. In this relation, it is important to consider how the process of identification and suspense perception as such changes with repeated encounters. The theoretical exploration of this issue is presented below.

3.5 Summary

The perspective from which the audience perceives the interactive story and emotionally responds to it – external observer or story character – depends on their degree of immersion in the story. Sometimes audience members may find it difficult to define the perspective from which they report their level of suspense as both roles may blur.

It is also possible that the perspective of the emotional response may change with repeated encounters. This indicates that the audience members are getting emotionally closer to or more distant from the character each time they are exposed to the story. This may happen due to various factors such as the degree of similarity between the character and the audience member, his or her personal ability to empathise etc.

Perception of suspense from the position of the story character rather than an external observer may indicate that the audience is more immersed in the story. It is also reasonable to expect that due to this fact they experience a higher level of suspense. Contrarily, if the audience perceives themselves as external observers, their level of experienced suspense in the story may be lower.

Such correlation between the level of experienced suspense and the perspective from which it is reported, makes it possible to treat them as comparable. In fact, the perspective of the emotional response to the story can be considered as one of the factors helping to explain why the same episode in the story may generate a different degree of suspense for different audience members and also vary with repeated encounters for the same person.

The interactive environment on the development of a story in a video game may contribute to the bonding between the story and audience members. However, as it has been confirmed empirically by the study on interactive television (Vorderer, 2000a), not all the audience members enjoy interactive media and those who do not, may never reach the level of empathy towards the story character. Hence, it would not be

correct to argue that interactive stories are necessarily more immersive than non-interactive ones or that all of the audience exposed to the interactive narrative should emotionally respond to the story from the perspective of a character.

This theoretical analysis on the perspective of the emotional response to the interactive story has been put to experimental test and the results are presented later in this thesis.

Chapter 4

Manipulating Choice for More Suspense

Interactive stories are mostly about making choices and deciding for the protagonist what to do and which way to proceed. The choice often influences the direction and outcome of the story. In the context of a video game, this also means winning or losing the game by the player.

In regards to the emotional state of suspense generated by the interactive narrative, as it was discussed earlier in this dissertation (see Section 2.3), it can occur when the audience is facing a cut-scene, i.e. perform the role of observers rather than participants in the story. It can also occur when audience members are actively working towards achieving their goal by making choices and directing the story.

This chapter aims to analyse the role of choice concerning suspense perception in the interactive narrative. It will also present some ideas in regards to how to maintain the level of increased suspense in the story, both when it is read for the first time and when reread, through manipulating the choice offered to the audience.

This theoretical approach was also tested empirically through the set of experiments presented later in the thesis (Chapters 5 and 6).

4.1 Psychological impact

Many scholars and designers working in the field of interactive digital storytelling and video game production [26, 34, 39] argue that the more choices the audience members are given in an interactive story, the better a whole story-based product is perceived. As video game designers F. Dille and J. Platten describe it: “the more choices you give a player, the more addictive the gameplay becomes” [38].

However, various theoretical and empirical studies on choice and decision making (Botti, 2009; Chernev, 2003; Schwartz, 2005) demonstrate that the very process of making a decision, especially when choosing from a large array of possibilities, is a stressful process for those facing the choice. Participants of several experiments who were asked to make a choice in relation to consumer products, could not stay focused on their uncompleted projects, force themselves to take their medicine, or deal with other simple tasks (Vohs, 2008). Interestingly enough, the same study discovered that even fun and enjoyable decision making duties, such as spending several minutes on choosing goods for their gift registry did not help the participants to progress much with additional tasks. Their cognitive functions were exhausted by the choices they had made.

What makes choosing such a stressful experience? From the above observation, it is possible to conclude that the stress is caused by uncertainty about the right decision and inability to predict the result of the choice.

From the literature analysis and discussion on the nature of suspense presented earlier in this dissertation (see Section 2.1.3), uncertainty also occurs as one of the core elements necessary for creating the emotional state of suspense. Thus, it is possible to speculate that by intensifying the degree of uncertainty through the choice and high stakes for the protagonist created by the context of the story, it is possible to generate a higher degree of suspense in interactive narrative than when it is non-interactive.

4.2 Choice making vs. problem solving

In interactive narrative, it is important to distinguish between a choice and challenge or problem solving. Choice, according to a video game design consultant Ernest Adams (2004), does not put the audience members into a situation where they work in order to achieve the goal; it simply lets them decide which way to go even though it might not be easy to make this decision.

As some video game designers argue (Floyd, 2009, 2010), choice is about deciding between things that are of the equal or similar values (i.e., both seem to be good or bad). If an audience member has to choose between several options, each of which has different values, a choice becomes problem solving.

In this relation, it is important to note that the choices offered to the audience have to be only perceived by as those of an equal value; they do not necessarily need

to be equal. The illusion of equality is what makes the process of decision making and the result of it more uncertain.

Another difference between problem solving and choice making is a slightly different mechanism that triggers the player to act. When facing a problem, he tries to find the solution and is usually driven by different types of reasoning such as reducing the risk, saving time or money, increasing his power and so forth. When a choice offers options of the same or similar values, the main motivation for making the choice can simply be the player's curiosity. With choices like these, the story becomes less predictable, and hence, more intriguing and suspenseful.

This dissertation, especially in its experimental portion, is focused on analysing the role of the choice rather than problem solving based on suspense perception in interactive narrative.

4.3 What makes a good choice?

Interactivity is not only about presenting the audience with a certain amount of choices and letting them decide upon the direction of the story. The choice has also to be designed in such a manner as to make the story interesting.

According to Adams (Adams, 2004), any choice offered in a video game has to satisfy four main requirements: 1) it has to have consequences; 2) has to affect multiple changes in the story rather than one; 3) the result of the choice needs to be closer to the choice itself; 4) the connection between the choice and its consequences has to be obvious to the player.

The consequences are important for choices as they provide value, make the story progress in the particular direction and let the player think that her decisions really matter. However, some video games, such as *Gears of War* or *XCOM: Enemy Unknown*, offer the player only an illusion of choice. Another example of the illusion of choice could be found in the interactive drama *Façade* where the player has to choose to be either a male or female friend of an arguing couple. Either way, he/she will be involved in the same conversation and the story will not take into account any characteristic features of the chosen gender. The only consequence of the choice will be the player's male or female name.

Half-Life 2 presents another example of an illusionary choice. At the end of the story, the G-man allows the player's character Gordon to decide if he wants to work for him. The player may decide that accepting the offer means survival while

declining it leads to death; however, the game ends either way: if the player decides to accept the offer, the G-man congratulates him for the “wise decision”; if not, the player finds his character injured but alive and surrounded by hostile creatures.

Contrary to illusionary choices, which bring no visible difference in the outcome, there is also a technique of hidden or unavailable choices where a situation may look like there is no choice offered and the player has only one possible way to act. The choices are there, though well masked. An example of this technique can be found in the action role-playing game *Deus Ex* where it appears impossible to save the protagonist’s brother and there is no way to escape his death. There are several options through which it can be done, but they are well masked and do not seem to be available.

According to Crawford (2005), the most interesting choices in interactive stories are dilemma choices presenting only two options for the player to choose from. An example of the dilemma choice can be seen in the action role-playing game *Fallout 3* where the player has to choose either to kill a baby and free slaves, or let the child survive and the slaves suffer and probably die. As the game moves one of these two directions, it becomes clear that the child’s death does not help the slaves much and that they become freed in time anyway. Choices like this present a hard decision for the player, making him/her be emotionally involved in the story and thus, enjoy it more.

A dilemma moral choice is also the core element of the first-person shooter *BioShock*. At some point, the player has to decide either to save or kill little girls (Little Sisters) in order to get a vital chemical called ADAM, which they carry. If all the girls were killed, the player would get twice as much ADAM as if he saved the sisters. However, later in the game, it becomes clear that the decision to save the girls brings more reward as in this case, the player gets extra ADAM as an unexpected gift together with some other valuable benefits.

The decision in *BioShock* also influences the end of the story bringing the protagonist happiness, survival and a return home if he decided not to kill the girls or risk a global nuclear catastrophe in the case he killed some or all of them.

4.4 Creating suspense via choices

As it was mentioned before, the audience can experience suspense through witnessing a scene or by actively participating in it. This means that the choices are not necessary for creating suspense but they can contribute to increasing the level of suspense through involving the audience in the story and presenting their choices as those that matter and have real consequences.

In cases when the story presents choice options of a different value (or those which seem to be of a different value), the audience may experience less suspense since one option may appear as a ‘right’ choice as it more likely brings the desirable outcome.

Therefore, in order to increase the degree of suspense, the choices presented in the interactive narrative have to be presented as those that cannot be clearly described either as “good”, or “bad”, which means their outcome could not be easily predicted either as desirable or undesirable. This way, they will more likely generate uncertainty and keep the balance between hope and fear, which is vital for suspense.

The number of choice options offered to the audience is also important for creating suspense in the interactive environment. Researchers have empirically confirmed that readers experience a higher degree of suspense in a story if the story deliberately minimizes ways for the protagonist to solve his or her vital problem (Gerrig & Bernardo, 1994).

All of the above factors should be taken into account in order to create stronger suspense in interactive narrative, both when it is read a first time and then reread. However, rereading an interactive story causes extra suspense-related issues that should also be considered; these are addressed in the next section of this paper.

4.5 Maintaining suspense on rereading

When the audience members are exposed to the interactive story, they already know which choices they were offered last time and the sequence of the choices they made. If this reduces the readers’ uncertainty about the outcome, the readers will feel the suspense less strongly when rereading the story than they did the first time. Thus it is vital for maintaining suspense to continue evoking the state of uncertainty by

manipulating the choices offered to the reader during each subsequent reading. Below, we propose some techniques by which this can be achieved.

Note that it is not the case that suspense will necessarily disappear on rereading – there is an effect known in psychology as the paradox of suspense where some readers of traditional media seem to keep experiencing suspense when rereading, even though they already know the exact outcome of the suspenseful episode of the story. However, this effect does not apply to all readers and the level of suspense upon rereading a story is reported to be lower than it was the first time.

Let us consider the situation where readers are offered two options to choose between: (A) and (B). Assume that neither of the choices appears to lead to a clearly good or bad outcome and thus both options present uncertainty. There are a number of different ways that this choice could work on rereading. If on the first reading, readers take one of the choices A or B, but it is followed by narrative with enough further choices, then the user does not strongly associate the final outcome with their initial choice of A or B. On rereading, readers may have slightly different probabilities of the outcome associated with the choice that they took, but will still have considerable uncertainty about the final outcome and the level of suspense will be not very different from the first time (Khrypko & Andreae, 2010).

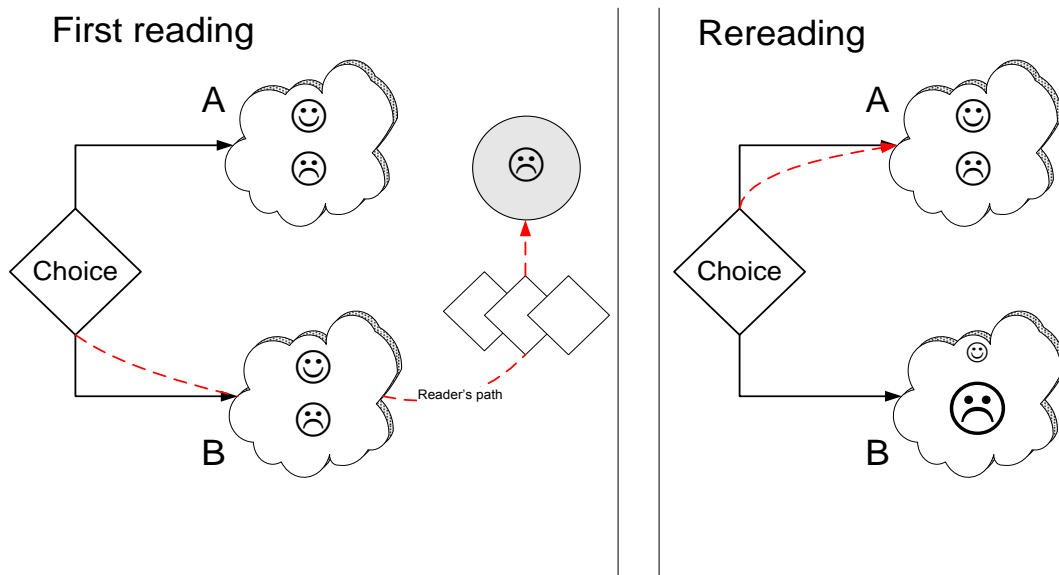


Figure 9 Resolving suspense into an undesirable outcome during the first reading.

Suppose instead that on first reading, readers take choice B and then end up in an undesirable outcome after only few further choices (see Figure 9). They are then

likely to associate B with a bad outcome. When rereading the story, if they are offered the same choice, they will perceive little uncertainty about the B option. However, they will prefer to take the A option anyway, since they believe that B is a “wrong” choice. They will still perceive suspense at this point since the A option has the same level of uncertainty as before. There is no need to change the choice, although it could be removed with little effect since it has become a “forced” choice.

Now suppose that on first reading, readers take choice A and the narrative is resolved to a desirable outcome after only a few further choices (see Figure 10). As a result, the readers may perceive option A to lead to a good outcome. When rereading the story, if they are offered the same choice between A and B, they will have a reduced sense of suspense, because A will be obviously the “right” choice to take, but they will have little perceived uncertainty associated with that choice. Readers who want to maximize suspense may deliberately choose B (even though they believe it to be the “wrong” choice). Although there is more uncertainty associated with that choice, their suspense will be tempered by the knowledge that any bad outcome is simply the result of the wrong choice.

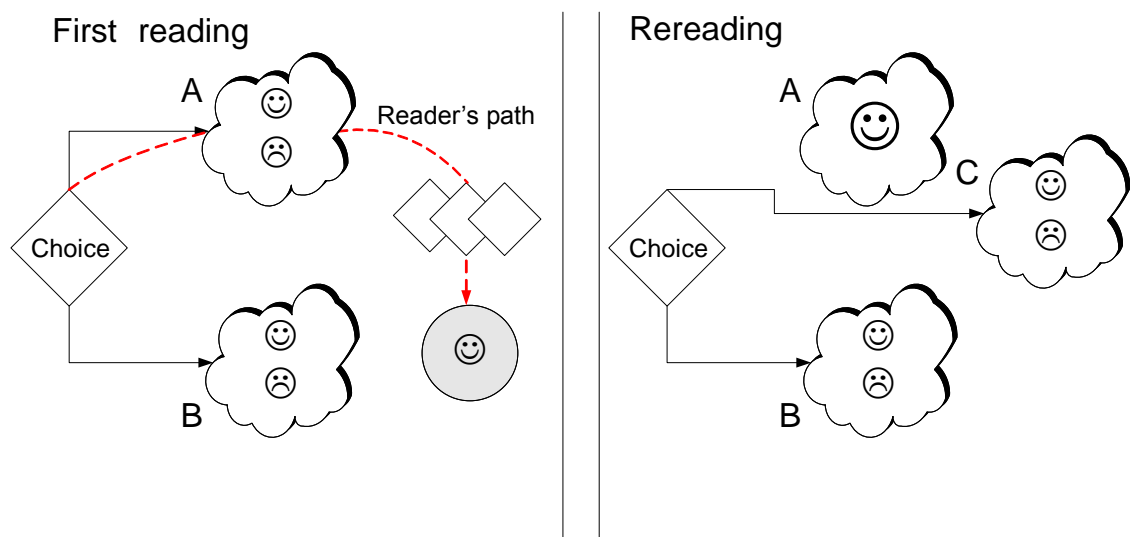


Figure 10 Resolving suspense into a desirable outcome during the first reading.

To maintain suspense on rereading, choices that the readers would now believe to be clearly good should be removed or replaced by new choices presenting a new state of uncertainty (for example, the new choice C in figure 10). Another solution

would be to replace the choices with a cut-scene with a suspenseful situation creating a state of helplessness and letting the reader witness the suspense.

Note that the situations above may arise even if both A and B actually lead to uncertain situations where both good and bad outcomes are possible; the loss of suspense is caused by the reader's perception of certainty about the outcome, not by actual certainty. In this case, it may be possible to replace the form of the choices to make them appear to be different, but lets the choices lead to the same set of possible outcomes as the original A and B. Readers may then still perceive the original suspense and be able to explore other paths through the narrative.

Rereading does not necessarily lead to a reduction in uncertainty; if making the same choices leads to a different outcome on rereading, then readers will increase the level of uncertainty that they associate with the choices. This can be accomplished by having non-deterministic branches in the narrative that the system either chooses at random, or by deliberately choosing a branch that leads to the opposite outcome from what happened on a reader's previous reading. Such techniques can enhance the level of suspense on rereading in a way that would be impossible for a static narrative. This technique can be combined with the cut-scene technique above to force readers to go through the same branch of the narrative that they chose before and discover that it is less predictable than they thought.

4.6 *Summary*

From the above analysis, it is possible to conclude that readers of interactive narrative will still experience a high level of suspense with repeated encounters if the options to choose from present uncertainty about the outcome. In case the outcome is predictable, the choice option should be removed or replaced by a different option presenting uncertainty.

In addition to uncertainty, the choice option should present a high risk for the reader's story character, and the stakes have to be high.

Chapter 5

Experimental Methodology

Previous chapters of this thesis presented a theoretical analysis of several factors such as choice, identification with the story's protagonist and repeated exposure to the story that may influence the audience's perception of suspense in interactive narrative. The analysis raised questions resulting in hypotheses described in detail earlier. These hypotheses were tested empirically and this dissertation presents the findings from the study.

The current chapter aims to explain how the empirical research was constructed as well as present the results obtained from the pilot study, which influenced the further exploration of the topic through the set of experiments.

5.1 Quantitative experimental research

In order to test the hypotheses presented in this thesis, the research employed a quantitative approach exploring relations between independent variables such as the level of story interactivity, a participant's gaming expertise, etc., and the dependent variable – a level of perceived suspense self-reported by the study participants reading the story.

Among the most common methods of quantitative research used in the area of psychological and social studies – experimental, asking questions, and observing – in this thesis, the preference was given to the experimenting method since it would allow studying the phenomenon of suspense in interactive narrative in more detail. This method assumes manipulation of certain aspects of the experimental materials or situations presented to the subjects of the experiment and a following analysis of how this manipulation affects the subjects' responses (Chatman, 1978). The experimenting

method also means that in addition to examining how the variables are related to one another, it is also possible to discover the direction of causality of these relations.

In the case of this research, the manipulation was performed on the story given to the participants in order to test their emotional response to the same story, allowing different degrees of interactivity.

5.2 Research design

This section explains how the story and participants of the experimental study were selected as well as presents the experimental design, data collection and analysis.

5.2.1 Story selection

When choosing the story for the empirical research, several factors were taken into account.

First, since the audience's response to the emotional state of suspense was under examination, it was important for the story to be suspenseful and present suspenseful episodes. This should not only be the researcher's subjective perception of the story but rather its objective characteristics as a story within the espionage, adventure or suspense genres also validated by the publishers and reviewers¹¹. Second, the story had to be easy to manipulate in terms of creating new story-paths and allowing the audience to choose which path to follow. Third, the story's protagonist should preferably be well-known to allow the audience easier and faster identification with him as well as a quicker understanding of the story world and its rules.

The story which satisfied all these requirements and was selected for this study was Ian Fleming's novel "You Only Live Twice" (Chatman, 1978) with the protagonist secret agent James Bond. One of the episodes of the novel was used to create a story with different degrees of interactivity. The experiments' participants were expected to perform the role of the secret agent James Bond searching for important papers in his enemy Blofeld's residence located in an old castle.

The complete script of the story is presented in the Appendix A.

¹¹ In the Book Industry Standards and Communications (BISAC) classification, the chosen novel is classified as Fiction/Espionage (FIC006000 subject category code).

5.2.2 Participants

Participants of the experiments were students and staff members of Victoria University of Wellington who expressed interest in the study and responded to the experiment invitation displayed on notice boards at the University's campuses.

In total, there were 143 participants who took part in the study; however, only 128 of them fully completed the task. Thus, only their responses were considered in the further data analysis.

The participants who completed the experiments were offered the reward of a \$5 (NZD) voucher redeemable in a Wellington coffee shop chain.

Since the research involved human participants, it was designed and conducted the way ensuring its ethical nature:

- The research was approved by Victoria University's Human Ethics Committee based on the detailed description of the experiments.
- Prior to the experiment session, each of the participants was asked to read and agree to the terms and conditions provided in the Information Sheet and Consent Form (Appendix B and C correspondingly).
- The participants were informed that they could withdraw themselves from research participation at any time before the data is analysed (i.e., within ten days after their participation in the experiment).
- During the analysis of the data as well as in the reported results, the identity of the participants remained anonymous.

5.2.3 Experiments

The main purpose of the experiments was to explore how the interactivity and repeated encounters influence the audience's perception of suspense in the story. In order to do so, three experiments were created. In each of the experiments, the story presented to the participants was slightly modified in order to manipulate the participants' interaction with it, allowing them greater or lesser choice.

For each of the experiments, the story consisted of several scenes. During each scene, the participants were asked to report their emotional state of suspense along with some other emotions (Figure 11).

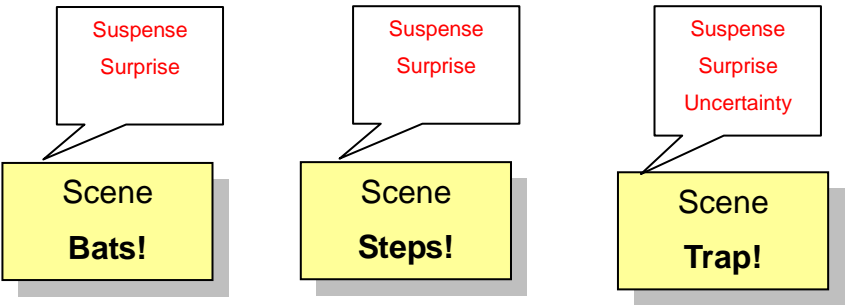


Figure 11 Measuring emotional response to the story in each of the three scenes in the pilot study and experiment with two interactive readings.

The participants were instructed not to spend much time analysing their emotions and feelings caused by the story, but rather to report their first impression. The level of the emotions was measured on a scale from 0 (very low) to 10 (very high) (Figure 12).

The screenshot shows a survey interface for measuring emotional response. At the top, the logo of the University of Wellington is visible. The survey asks participants to rate their levels of three emotions: Fear, Suspense, and Uncertainty. The scale ranges from 0 (Very Low) to 10 (Very High). The interface includes a "Next >>" button and a footer indicating the survey is powered by Qualtrics.

Figure 12 The scale used for measuring emotional response.

Prior to each of the experiments, the participants were instructed that they were performing the role of the protagonist, James Bond, and needed to successfully complete the task assigned to their character. The instruction was presented as follows:

On the next page, you will find an episode from a James Bond story. This time you are the main character in it. You are - James Bond, agent 007!

You have an important mission to complete - find secret papers in Blofeld's office and get away safely. Yes, you guessed it right - Blofeld is the guy who killed your wife and has a nickname "Death Collector". While you are hunting for his papers, he is hunting for you.

Then, three groups of the participants were given the same story episode to read, which, however, allowed each of the groups a different amount of choice to influence the storyline (Figure 13). An example of a choice is presented in Figure 14.

	Experiment 1: Interactive reading	Experiment 2: Non-interactive reading	Experiment 3: Semi-interactive reading
Reading 1	Interactive	Non-interactive	
Reading 2	Interactive	Non-interactive	Interactive
Reading 3	NA	Non-interactive	

Figure 13 Level of interactivity in each of the experiments.

The first group of 59 participants was given a fully interactive story, letting them make several choices during the reading influencing the direction of the story. The participants were asked to read the story twice. Each of the readings resulted in a non-desirable outcome for their protagonist – he failed to succeed with the task. Further in the thesis this experiment will be referred to as *Experiment 1: Interactive story reading*.

The second group of 42 participants was exposed to the same story, but the choice of the particular story-path was already predetermined for them. Thus, the story this group read was not interactive. The participants read the story three times. The outcomes of the first and third readings were undesirable whereas the second reading resulted in the winning outcome – James Bond found the documents he was looking

for. This experiment was created to test three conditions: 1) How does lack of interactivity influence suspense perception in the story? 2) How does the level of suspense perceived in the story change with repeated encounters in the non-interactive environment? 3) How does a desirable outcome influence the level of perceived suspense? Further in this thesis, this experiment will be referred to as *Experiment 2: Non-interactive reading*.

TE WHARE WĀNANGA O TE ŪPOKO O TE IKA A MĀUI
VICTORIA
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As you turned around looking for a place of concealment, you noticed another, much larger door in dark red, peeping out from behind the widely spaced curtains. It is in about fifteen feet far from you.

What are you going to do?

☐ Try to reach the red door and hide behind it

☐ Try to hide behind the nearest tall red curtains

Next >>

Survey Powered By Qualtrics

Figure 14 Example of the choice options presented to the participants in the story.

Finally, the third group of 42 participants was presented with the same story as the second group but during the second reading, they have a chance to choose the storyline and thus it may or may not result in the desirable outcome. The first and the third readings, though, were not interactive and led to the same undesirable outcomes as in Experiment 2. The purpose of manipulating the story this way was to test how the choice – offered during the second reading and withdrawn during the third reading – influenced the level of suspense. Also, the manipulation allowed comparison of the participants' reaction to the choice offered in some scenes with the emotional response to non-interactive representation of the same scenes in Experiment 2. This final experiment was labelled as *Experiment 3: Semi-interactive reading*.

5.2.4 Data collection

All the data for this study, excluding the pilot study, was obtained online since various research comparing psychological experiments conducted online and in the lab found no statistically significant differences in the results acquired through either

of the methods (Birnbaum, 2000; Hewson & Charlton, 2005; Krantz & Dalal, 2000). The online method of data gathering was also chosen due to its higher anonymity, allowing the participants to answer the questions more sincerely (Hessler et al., 2003) which is important for a study examining emotional response.

In order to prevent multiple responses to the questionnaires, which is one of the known concerns about online studies offering reward to their participants (Wright, 2005), all the participants of this study were asked to arrange an appointment with the researcher for collecting their coffee vouchers using their unique university email addresses.

The experiments were conducted via the *Qualtrics*¹² survey tool, which is one of the free research tools provided by the university. Those who expressed their interest in study participation were emailed the URL link to access the experiment materials for one of the three experiments (randomly assigned to them). The experiment materials included the information sheet, consent form, pretest task and actual story along with the questionnaire.

All the questions asked during the study were mandatory to answer. The story and related questions were split into pages and the participants could not navigate back in the story to make a different choice, review or change their answers.

The pilot study was conducted in person in front of the researcher and was followed by discussion of the participants' experience during the experiment. The procedure and outcome of the pilot study are presented in more detail further in this chapter.

5.2.5 Data analysis

The data gathered via the surveying tool Qualtrics was first exported to MS Excel where it was filtered in order to eliminate participants (responses) not suitable for the further statistical analysis. Among the reasons for elimination were the difficulty with understanding the language of the story admitted by the participants of the experiments and dropping out of the experiment.

The resulting set of data was exported to PASW Statistics (SPSS) where the inferential statistical analysis of the data was performed. Since the experiment

¹² Qualtrics (<https://vuw.qualtrics.com>).

participants came across the same reading several times, the within-subject design and repeated measures design were used to analyse the data including the test of normality and parametric tests (t-test, ANOVA).

The data was analysed within each of the experimental groups as well as between the groups. All the discovered trends were documented in the researcher's notes, retested in order to avoid any misinterpretation and then reported in this thesis.

5.3 Pilot study

The pilot study which involved five participants (three of them were male), was used prior to Experiment 1: *Interactive reading*. Since the story was interactive, the participants had a chance to influence the story path with their choices in several scenes.

The story given to the participants of the pilot study consisted of several scenes ([Bats!], [Steps!] etc.) presented in the story-algorithm (Figure 15) and had the following plot. Soon after entering the castle [Beginning], Bond gets surrounded by bats [Bats!] and as he keeps exploring the castle, he reaches the stairs where he has a choice of counting/not counting steps. This choice does not influence the story path and is used here as a distracter to create an illusion of meaningful interactivity. At some point of his journey, Bond hears approaching steps [Steps!]. He has a choice of hiding either behind the nearest curtains [Curtains!] or reaching the room with the red door which is across the room from him. If hiding behind the curtains, Bond then enters a small secret room which looks empty. Thus, he again has a choice of going ahead and exploring the room or leaving it and going to the room behind the red door, which he saw previously. If the choice is to go ahead, Bond gets caught in a trap [Trap!]. Whenever the choice is to go to the red door, Bond enters a dark room behind it and has a choice of using a flashlight he has with him. When the flashlight is used, Bond is discovered and caught by the guard [Guard!]; if his choice is not to use the flashlight, he gets caught in a body trap [Trap!].

The participants of the pilot study were provided with the URL link which led them to the experiment materials and asked to follow the instruction listed there. Their actions were observed by the researcher. After completing the experiments, the participants were asked to comment on their experience.

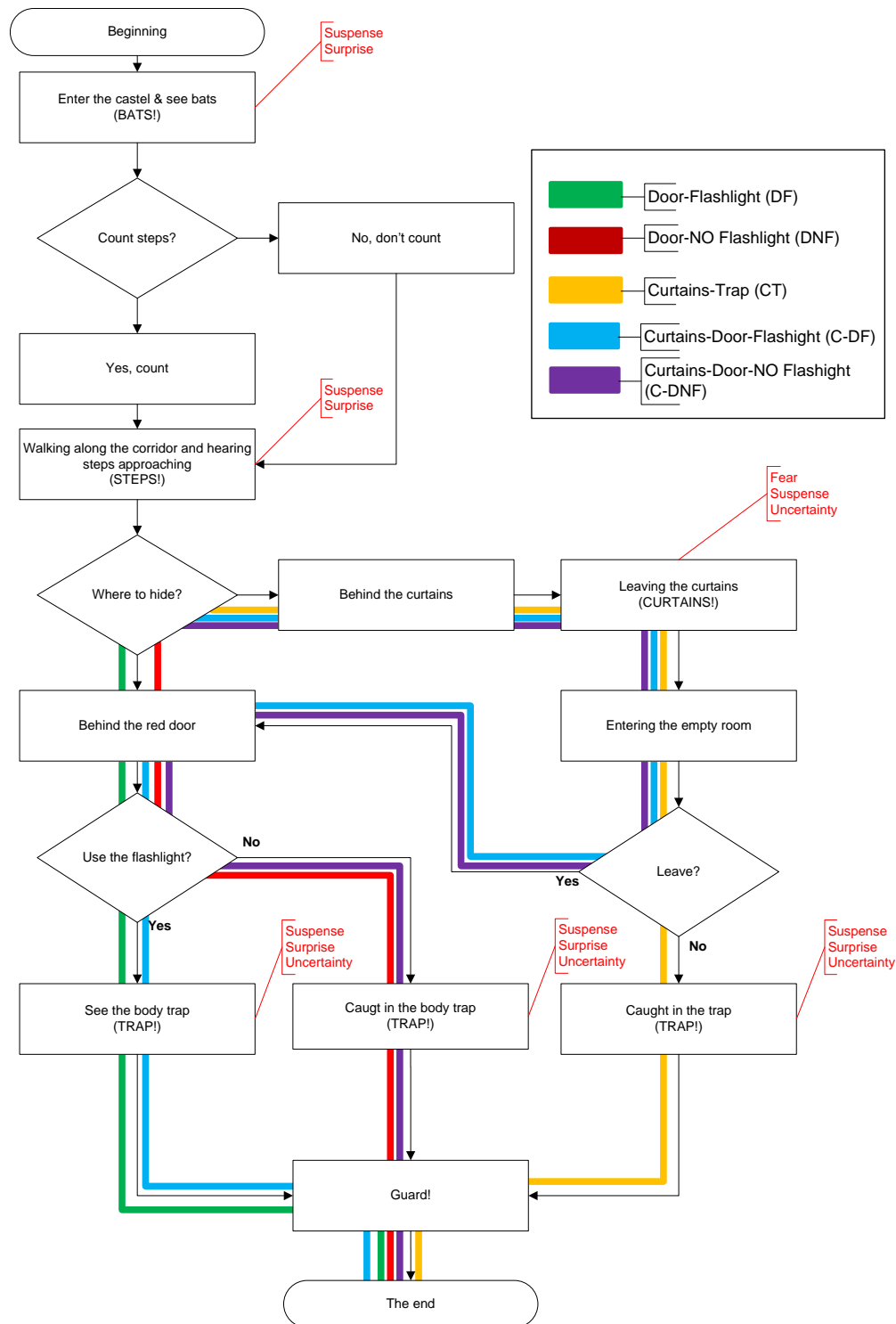


Figure 15 Choosing a story-path in the pilot study and Experiment 1: Interactive reading.

The results obtained from the pilot study allowed to make several conclusions: 1) all the participants agreed that the story presented suspense; 2) the participants experienced suspense during each of the two subsequent readings; 3) the participants followed different paths in the story, taking the advantage of the offered choices.

Discussion with each of the participants after the experiment suggested several changes that were made in the design of the later experiments:

1. The questions regarding personal information from the participants such as gender, age, gaming experience, etc. were moved from the beginning of the experiment to the end as these questions were considered somewhat distracting.
2. The question about the perspective from which the emotional response was measured – Reader’s or Bond’s – was added to the survey.
3. Additional commentary was added at the beginning of the experiment to make it clear to the participants that they will not be able to change their choice or answers once they make them.

Thus, the results of the pilot study confirmed the right choice of the story for the needs of the experiments. It also helped to improve the further presentation of the experiment to the participants.

5.4 Summary

This chapter has explained how the experimental study testing the audience’s suspense perception in interactive narrative was set up. It has justified the choice of the story, selection of the participants as well as briefly described each of the three experiments. The chapter has also explained how the data was collected and analysed. Finally, the pilot study and its results were discussed.

The following chapter is focused on each of the experiments in more detail, examining the obtained data and presenting the findings.

Chapter 6

Testing the Hypotheses

The research questions and hypotheses presented earlier in this thesis evolved from the theoretical analysis of the nature of suspense and how this emotional state is perceived by the audience in interactive narrative, as well as what factors may influence this perception.

Since the phenomenon of suspense in interactive narrative has not received much empirical exploration, one of the aims of this research was to contribute to this area of study. Thus, a set of experiments (described in detail in Chapter 5) was designed and conducted in order to test the following hypotheses:

1. Choice offered to the audience in interactive narrative does not result in reducing the degree of suspense perceived by the audience.
2. In interactive narrative, the degree of suspense drops with repeated encounters, especially in those scenes (both non-interactive and interactive) which are presented to the audience the same way repeatedly.
3. By manipulating the choice offered to the audience with repeated encounters, it is possible to keep the degree of perceived suspense relatively high.
4. In interactive narrative, suspense is an important, but not essential, component of story enjoyment.

The experiments also aimed to test how various individual factors of the audience members such as their gender, age, gaming expertise, and the perspective from which the story is perceived influence the degree of suspense they experienced in the interactive story.

The obtained data was first analysed for each of the experiments separately: interactive, non-interactive, and semi-interactive. Then the results of the analysis were

compared between the experiments to specifically study the role of interactivity in suspense perception. The findings are presented later in this chapter.

6.1 Data distribution and statistical significance of the test results

Prior to applying parametric methods of statistical analysis such as ANOVA and paired samples t-test, all the data used in the analysis was checked to ensure that it met the criterion of normal distribution.

Although, according to the Shapiro-Wilk test, some of the data was not normally distributed, the histograms corresponding to this test did look approximately normal allowing application of the parametric methods of data analysis.

An alpha level of .05 was used in all the statistical tests described below.

6.2 Perception during vs. retrospective perception

In each of the three experiments, the participants were asked to report the degree of suspense they perceived in different scenes while reading the story. In order to validate this data, they were also asked to measure their overall level of suspense perceived in the story after they completed each of the readings.

When the data was analysed, the level of suspense the participants reported during each of the readings – current suspense (S_c) was compared, using a paired-samples t-test, to the final retrospective perception of suspense they reported on completion of the readings – retrospective suspense (S_r).

The test revealed no statistically significant difference between these two variables (Table 1) suggesting that in all the experiments, the degree of suspense was consistent in both measurements (i.e., current and retrospective). This makes the data more reliable for the further analysis.

	Reading1	Reading 2	Reading 3
Experiment 1	<i>Sr1</i> ($M=5.5, SD=2.5$) <i>Sc1</i> ($M=5.2, SD=2.2$) $t(55) = 1.11$ $p = .27$	<i>Sr2</i> ($M=4.2, SD=2.5$) <i>Sc2</i> ($M= 4.2, SD=2.1$) $t(53) = .00$ $p = 1$	
Experiment 2	<i>Sr1</i> ($M=5.9, SD=2.7$) <i>Sc1</i> ($M=5.7, SD=2.5$) $t(34) = .95$ $p = .35$	<i>Sr2</i> ($M = 5.2, SD=2.4$) <i>Sc2</i> ($M = 5.3, SD=2.6$) $t(34) = .69$ $p = .41$	<i>Sr3</i> ($M=3.6, SD=2.7$) <i>Sc3</i> ($M=4.1, SD=2.6$) $t(34) = -1.34$ $p = .19$
Experiment 3	<i>Sr1</i> ($M=5.7, SD=2.5$) <i>Sc1</i> ($M=6.1, SD=2.1$) $t(35) = -1.08$ $p = .29$	<i>Sr2</i> ($M=5.2, SD=2.1$) <i>Sc2</i> ($M=5, SD=2.2$) $t(35) = .36$ $p = .72$	<i>Sr3</i> ($M=3.7, SD=3.3$) <i>Sc3</i> ($M=3.4, SD=2.6$) $t(35) = .51$ $p = .61$

Table 1 Comparison of the degree of suspense reported during and after the experiment (paired samples t-test).

6.3 Experiment 1: Interactive story with two readings

The participants of experiment 1 were 54 students and staff members of Victoria University of Wellington – 21 (39%) of the participants were male; 31 (57%) were 18-21 years old.

The experiment aimed to test the audience's emotional response to the story in the interactive environment.

As for the rest of the experiments in this thesis, the experiment participants were introduced to the story protagonist James Bond, and instructed that they were going to perform his role trying to complete a mission assigned to him. The experiment participants were asked to read the story twice. The possible paths in the story were the same as in the pilot study and are shown in diagramatic form in figure 15.

Two times, during each of the readings, they were offered a choice, which influenced the story line. The first time, in the scene [STEPS], the audience had to decide where Bond should hide after he heard approaching steps:

As you turn around looking for a place of concealment, you noticed another, much larger door in dark red, peeping out from

behind the widely spaced curtains. It is about fifteen feet away from you.

What are you going to do?

(1) Try to reach the red door and hide behind it

(2) Try to hide behind the nearest tall curtains

If the option (1) is chosen, Bond now has another choice of whether or not to use a flashlight behind the red door.

If Bond uses the flashlight, he can see a body trap and avoid it but a moment later he gets caught by the guard (the story path *DF* – Door/ Flashlight). Otherwise, if the flashlight is not used, Bond gets trapped in the body trap and then revealed by the guard (the story path *DNF* – Door/ No flashlight).

If the audience chooses the option (2), Bond first hides behind the curtains and then opens a door leading to a small room, which looks empty. At this stage, the audience is offered another choice – enter the small room or leave it and explore the room behind the red door. If the decision was to enter the small room, Bond immediately gets caught in a body trap and then discovered by the bodyguard (story path *CT* – Curtains/ Trap). Otherwise, the story unfolds in one of the two directions, either *C-DF* (Curtains – Door/ Flashlight) or *C-DNF* (Curtains – Door/ No Flashlight), again determined by the audience's choice.

Thus, the choices made by the experiment participants could lead the story towards one of the three endings, none of which were “winning” – either way, the story's protagonist James Bond got trapped.

Note that in the story paths *CT* and *C-DNF* or *DNF*, the audience members were asked to report their emotional state after their character Bond got trapped but before he was discovered by the guard. As for the story paths *C-DF* or *DF*, the degree of suspense was reported after seeing the body trap and before getting trapped in another trap. This difference between the final scenes [*TRAP*] allowed expecting the scenes with actual trapping to be more suspenseful than the screen where the trap was only seen.

The participants' choice of story path in the two readings was distributed as follows (Figure 16):

Reading 2 Reading 1	CT	C-DNF	C-DF	DNF	DF
CT	–	11	10	4	2
C-DNF	1	–	1	1	–
C-DF	7	–	–	4	–
DNF	8	–	–	–	–
DF	5	1	–	–	1

Figure 16 Experiment 1: Choice of the story-path (number of the participants).

Note that just over half (57%) of the participants changed their first choice on the second reading, and almost all participants changed their second choice – one participant repeated both choices exactly, and one repeated their second choice after changing their first choice.

6.3.1 Suspense perception in different scenes

The audience's emotional response to the story, including the degree of perceived suspense, was measured several times during each of the two readings. The experiment participants were asked to report their degree of suspense in the scenes [BATS], [STEPS], and [TRAP].

As it was mentioned before, the degree of suspense perceived by the audience was measured in the scenes [BATS], [STEPS], and [TRAP]. The first two scenes were non-interactive, and the third one, [TRAP], was a direct result of the choice taken.

It was expected that each of the scenes would generate a different degree of suspense. The scene [BATS] was expected to be the less suspenseful as it did not hold any direct danger to the story's protagonist but rather set up the mood for the episode by presenting the castle, where the story takes place, as a potentially dangerous place to be. This scene was presented to the audience as follows:

You press lightly and the door gives inwards. It is dark inside. You take out the pencil flashlight from the pocket and push the door farther, probing the darkness ahead – nothing but velvety blackness.

You close the door softly behind you, and sweep the beam of your torch around you. A shadow sweeps across the thin beam of light and another and another, and there is a shrill squeaking from all around you. Bats!

[Please rate your level of Suspense/ Surprise].

As the story unfolds, Bond, in his search for the secret papers, moves closer to the residential part of the castle where his chances to be noticed by the enemies are high and thus, he puts himself in a higher danger. This is where the scene [STEPS] occurs:

Suddenly between the tall red curtains you see a small door. Probably it leads to the private apartments. You bend to listen but immediately leap looking for a place of concealment. Steps are approaching!

[Please rate your level of Suspense/ Surprise].

The scene [STEPS] was expected to generate a higher degree of suspense than the scene [BATS] as it presented some real threat – Bond was about to confront the villains.

The scenes [BATS] and [STEPS] were presented to the experiment participants exactly the same way during each of the three readings. However, the final scene of the story episode, [TRAP], was different each time as it depended on the audience's choice. It was expected that the scene [TRAP] would generate more suspense than the other scenes since it presented the greatest danger to the story's protagonist.

In order to analyse how the degree of suspense changes between the scenes within a story episode, the story paths taken by the majority of the experiment participants were grouped and examined (Figure 17).

Reading 2 \ Reading 1	CT	C-DNF	C-DF	DNF	DF
CT	—	11 ●●	10 ●●	4 ●●	2 ●●
C-DNF	1 ●	—	1 ●	1 ●	—
C-DF	7 ●●	—	—	4 ●	—
DNF	8 ●	—	—	—	—
DF	5 ●●	1 ●	—	—	1 ●
Reading 1: ● CT1 ($n = 27$) ● C-DF1 or DF1 ($n = 18$) ● C-DNF1 or DNF1 ($n = 11$)		Readings 1 & 2: ● CT1 followed by C-DNF2 or DNF2 ($n = 15$) ● CT1 followed by C-DF2 or DF2 ($n = 12$) ● C-DF1 or DF1 followed by CT2 ($n = 12$)			

Figure 17 Experiment 1: Grouping the story paths according to the taken choice.

First, the data was analysed for the first reading separately to determine the degree of suspense for each scene when the story is read for the first time. Then, to analyse how the degree of suspense changes not only between the scenes but also with repeated encounters, the data was grouped and examined according to the choice taken by the experiment participants during both the first and second readings.

To compare the degree of suspense experienced by the audience in the scenes [BATS], [STEPS], and [TRAP] a paired-samples t-test was conducted.

The change of the degree of suspense between the scenes was first analysed for the data obtained from all the experiment participants irrespective of their choice of the story path. Therefore, a sample paired t-test was used to compare the degree of suspense the audience reported during the first reading in the scenes [BATS], [STEPS], and [TRAP] (Table 2).

		<i>Bats</i>	<i>Steps</i>	<i>Trap</i>
CT1	Mean	5.3	5.4	5.3
	<i>Std Dev</i>	2.86	2.58	3
C-DNF1 or DNF1	Mean	5.5	5.4	5.6
	<i>Std Dev</i>	1.7	2.16	2.2
C-DF1 or DF1	Mean	4.5	5.7	4.4
	<i>Std Dev</i>	3	2.5	2.3

Table 2 Experiment 1: Suspense perception in different story-paths during the first reading.

The results of the test revealed that there was no statistically significant difference between the mean degrees of suspense reported in the scenes [BATS1]¹³ ($M = 5.1$, $SD = 2.7$) and [STEPS1] ($M = 5.5$, $SD = 2.4$): $t(55) = -1.35$, $p = .181$ or between the scenes [STEPS1] and [TRAP1] ($M = 5.1$, $SD = 2.7$): $t(55) = 1.23$, $p = .223$.

However, during the second reading, the scene [STEPS2] generated a statistically significant greater level of suspense than the scene [BATS2], $t(55) = 3.54$, $p = .001$, and the scene [TRAP2] ($M = 5.6$, $SD = 2.4$) generated statistically significantly more suspense than either of the scenes [BATS2] ($M = 3.1$, $SD = 2.4$): $t(55) = 6.96$, $p < .0010$ and [STEPS2] ($M = 3.9$, $SD = 2.7$): $t(55) = 4.80$, $p < .001$.

These findings suggest that in interactive narrative, all the scenes were perceived as statistically equally suspenseful during the first reading, but during the second reading, there was a difference between the mean degree of suspense generated

¹³ For convenience, in this section the name of the scene is accompanied by the number of the reading when the scene occurred. For example, [BATS1] refers to the scene [BATS] on the first reading.

in different scenes of the story episode: the most suspenseful was the final scene [TRAP2] whereas the scene [BATS2] generated the lowest degree of suspense.

Since in this experiment the audience's choice determined the direction of the storyline, it was important to test whether each of the story paths taken were statistically equally suspenseful. Therefore, the further analysis of a possible change of the degree of suspense between the scenes was performed on each of the most preferred story paths during the first reading: i.e. CT1, C-DF or DNF, and C-DNF or DNF. The results of the analysis are presented below (Figure 18).

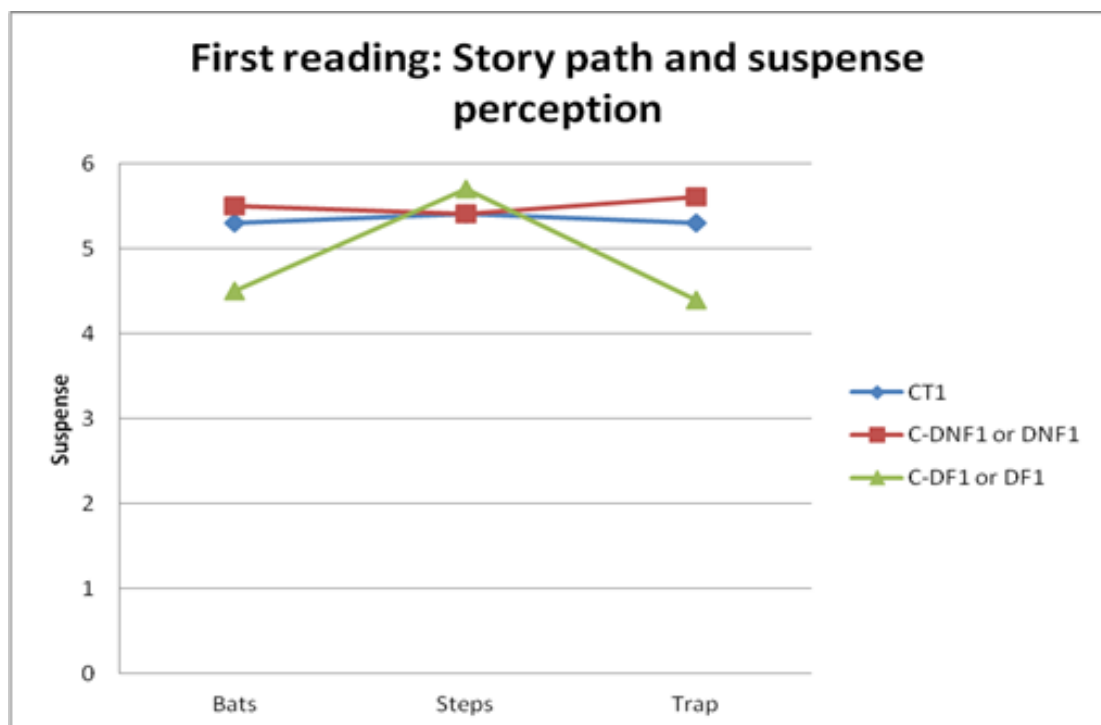


Figure 18 Experiment 1: Change of the degree of suspense between the scenes in different story paths during the first reading.

Story path *CT1*

In this story path, Bond first hides behind the tall curtains in a hallway and then gets trapped in a small room. The results of a paired-samples t-test suggested that there was no statistically significant difference in the mean degree of suspense reported by the audience in the scenes [BATS] ($M = 5.3$, $SD = 2.86$) and [STEPS] ($M = 5.4$, $SD = 2.58$), $t(26) = -.26$, $p = .80$ as well as between the final scene [TRAP] ($M = 5.3$, $SD = 3$) and the scene [STEPS], $t(26) = .22$, $p = .83$. There was also no statistically significant difference found in the level of suspense reported in the scenes [BATS] and [TRAP], $t(26) = .00$, $p = 1$.

These findings demonstrate that that despite the pre-test expectation of the different degree of suspense generated in the different scenes of the story episode, in the story path *CTI*, all the scenes were statistically equally suspenseful.

Story paths *C-DNF1* or *DNF1*

As it was described before, in the scene [*STEPS*], the experiment participants had to decide for their character either to hide behind the curtains or enter the room behind the red door. A step further in the story though, those who had chosen to hide behind the curtains decided to enter the room behind the red door as well. Then, both groups experienced the same ending of the story episode – behind the red door, Bond does not use a flashlight and gets caught in a body trap. Thus, the reason for combining these two story paths, *C-DNF1* and *DNF1* in one test was the final scene [*TRAP*], which was identical for both paths.

According to the results of the paired samples t-test, there was no statistically significant difference in the degree of suspense generated in the scenes [*BATS*] ($M = 5.5$, $SD = 1.7$) and [*STEPS*] ($M = 5.4$, $SD = 2.16$), $t(10) = .17$, $p = .87$ or in the scenes [*STEPS*] ($M = 5.4$, $SD = 2.16$) and [*TRAP*] ($M = 5.6$, $SD = 2.2$), $t(10) = -.26$, $p = .80$. There was also no statistically significant difference in the degree of suspense reported in the scenes [*BATS*] and [*TRAP*], $t(10) = -.14$, $p = .89$.

These findings are similar to those obtained from the analysis of the audience's emotional response in the path *CTI* analyzed above – during the first exposure to the story, all the scenes were perceived as equally suspenseful.

Story paths *C-DF1* or *DF1*

These story paths were similar to the paths *C-DNF1* or *DNF1* described above; however, here the audience chose for Bond to use the flashlight in the room behind the red door. Thus, in the final scene [*TRAP*], Bond saw the body trap.

The results of the paired samples t-test suggested that there was no statistically significant ($p > .05$) difference between the mean degree of suspense reported in the scenes [*BATS*] ($M = 4.5$, $SD = 3$) and [*STEPS*] ($M = 5.7$, $SD = 2.5$), $t(17) = -1.96$, $p = .67$. However, the level of suspense in the final scene [*TRAP*] ($M = 4.4$, $SD = 2.3$) was statistically significantly lower than in the scene [*STEPS*], ($M = 5.7$, $SD = 2.5$), $t(17) = -2.35$, $p = .031$.

These findings may suggest that since the final scene [*TRAP*] in these chosen story paths generated a statistically lower degree of suspense than the previous scene [*STEPS*], the fact of seeing the trap in these story paths was less suspenseful than the actual trapping in the story paths *CTI* or *C-DNF1 (DNF1)* analysed earlier in this section.

To examine how this pattern might change with rereading when the audience were already familiar with some of the scenes (i.e. [*BATS*] and [*STEPS*]), further analysis was performed.

To summarize the findings, the degree of suspense perceived by the audience during the first reading statistically did not differ between the scenes [*BATS*], [*STEPS*], and [*TRAP*] if the last scene presented the actual trapping. However, just seeing the trap in the scene [*TRAP*] generated statistically significantly less suspense than the scene [*STEPS*].

Despite the pre-experiment expectations that the scene [*BATS*] would generate the lowest degree of suspense, this was not confirmed by the data analysis – the scene was statistically as suspenseful as the other scenes of the story episode. Such “equality” in the degree of suspense between the scenes can be explained by the audience’s unfamiliarity with the story path during the first reading – each of the three scenes presented new information.

Therefore, taking into account the above results, it is possible to conclude that in the interactive story, the exposure to the story makes all the scenes equally suspenseful due to all the new information presented in them. With repeated encounters, though, the degree of suspense in different scenes differs; the scenes that are already known to the audience generate less suspense whereas the scenes with new information tend to be more suspenseful.

The current section has analysed the change in the degree of suspense between the scenes of the story. In order to complete the picture about suspense perception in interactive narrative, it was also important to analyse how the degree of suspense in all the scenes changed with rereading. This analysis is presented in the following section.

6.3.2 Suspense perception and rereading

Prior to the experiment, it was expected that the degree of suspense in the story episode would drop with rereading. In order to test this hypothesis, a repeated

measures ANOVA with a Greenhouse-Geisser correction was conducted. The results of the test supported the expectation – there was a statistically significant difference between the mean degree of suspense generated in different scenes ($F(1.8, 98.5) = 13.3, p < .001$) as well as during both reading and rereading ($F(1, 55) = 28, p < .001$). Interaction between the above variables, a scene and reading, was also statistically significant $F(1.7, 95) = 17.2, p < .001$ (Table 3).

		<i>Bats</i>	<i>Steps</i>	<i>Trap</i>
Reading 1	Mean	5.1	5.5	5.1
	<i>Std Dev</i>	2.72	2.44	2.67
Reading 2	Mean	3.1	3.9	5.6
	<i>Std Dev</i>	2.37	2.73	2.39

Table 3 Experiment 1: Change of the degree of suspense between the scenes and readings.

The results of the paired samples t-test comparing means in the degree of suspense reported during the first reading ($M = 5.2, SD = 2.2$) and the second reading ($M = 4.2, SD = 2.1$) also show a statistically significant difference between these two variables $t(55) = 4.9, p < .001$. The first reading generated statistically significantly more suspense than the second reading (Figure 19).

As for the changes of the level of suspense with rereading in the particular scenes, the results of the paired-samples t-test determined that the scene [BATS1] ($M = 5.1, SD = 2.7$) was perceived by the audience as statistically more suspenseful than the scene [BATS2] ($M = 3.1, SD = 2.4$), $t(55) = 6.63, p < .001$. The scene [STEPS1] ($M = 5.5, SD = 2.4$) also generated statistically significantly more suspense than the scene [STEPS2] ($M = 3.9, SD = 2.7$), $t(55) = 5.7, p < .001$. For the scene [TRAP], however, the results of the test determined that there was no statistically significant difference between the mean degree of suspense in the scenes [TRAP1] ($M = 5.1, SD = 2.7$) and [TRAP2] ($M = 5.6, SD = 2.4$), $t(55) = -1.2, p = .235$.

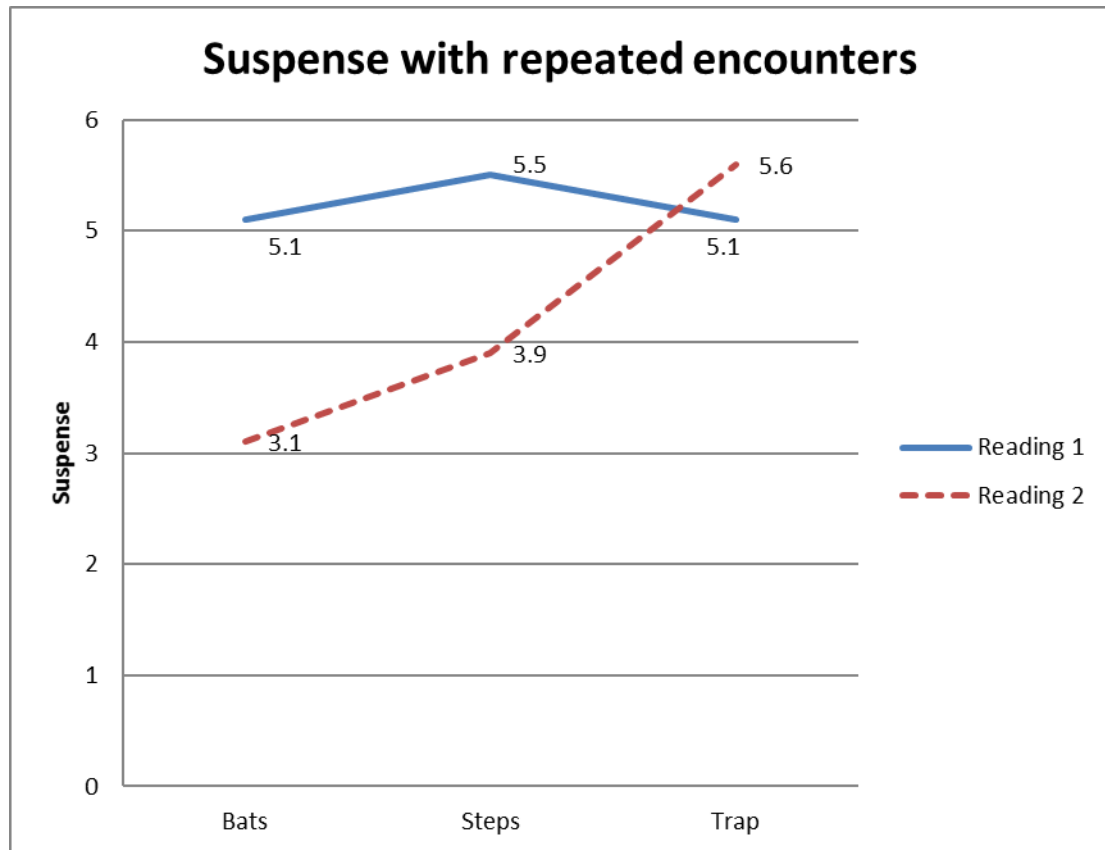


Figure 19 Experiment 1: Degree of suspense changes with rereading.

It is possible, therefore, to conclude that even though the level of suspense in the interactive narrative statistically significantly dropped with rereading in the scenes [BATS] and [STEPS] – those scenes that were presented to the audience the same way during both of the readings – this did not happen in the scene [TRAP]. The degree of suspense in the scene [TRAP] statistically did not change with the repeated encounter as each time it presented to the audience a new story path and a new challenge for the story’s protagonist.

However, since the scenes [TRAP] and story paths that lead to them differed, it was important for the data analysis, before making any strong claim in general, to study how the degree of suspense changed on rereading within a particular story path.

Thus, in addition to the general analysis comparing the mean degree of suspense during each of the interactive readings, a repeated measures ANOVA was also performed on the data obtained from the most popular story paths such as *C-DF1* or *DF1* followed by *CT2*, *CT1* followed by *C-DF2* or *DF2*, and *CT1* followed by *C-DNF2* or *DNF2*. The results of the tests are presented below.

Story paths C-DF1 or DF1 followed by CT2

During the first reading, the story path results in seeing the body trap behind the red door. During rereading, the episode ends with Bond getting trapped in the body trap in the small room.

The results of a repeated measures ANOVA with a Greenhouse-Geisser correction revealed no statistically significant difference in the mean degree of suspense experienced during the first and second readings: $F(1, 11) = .97, p = .345$ (Table 4).

The mean degree of suspense in different scenes was also not statistically significantly different: $F(1.3, 14.2) = 3.37, p = .079$.

However, the interaction between the readings and the degree of suspense generated in different scenes of the story episode was significant: $F(1.7, 18.7) = 4.79, p = .025$.

		<i>Bats</i>	<i>Steps</i>	<i>Trap</i>
Reading 1	Mean	4.5	5.2	4.3
	<i>Std Dev</i>	2.75	2.44	2.23
Reading 2	Mean	3	3.8	5.9
	<i>Std Dev</i>	2.22	2.95	2.78

Table 4 Experiment 1: Change of the degree of suspense between the scenes and readings in the story paths C-DF1 or DF1 followed by CT2.

To analyse how rereading may affect the degree of suspense perceived in the different scenes of the story, a paired samples t-test was conducted.

The results of the test indicated a statistically significant reduction of the level of suspense in the scene [BATS2] ($M = 3, SD = 2.2$) in comparison to the scene [BATS1] ($M = 4.5, SD = 2.7$); $t(11) = -2.5, p = .029$.

However, there was no statistically significant difference found between the mean degree of suspense perceived in the scene [STEPS1] ($M = 5.2, SD = 2.4$) and [STEPS2] ($M = 3.8, SD = 2.9$), $t(11) = 1.6, p = .14$, or between the scenes [TRAP1] ($M = 4.3, SD = 2.2$) and [TRAP2] ($M = 5.9, SD = 2.8$), $t(11) = -1.83, p = .095$ (Figure 20).

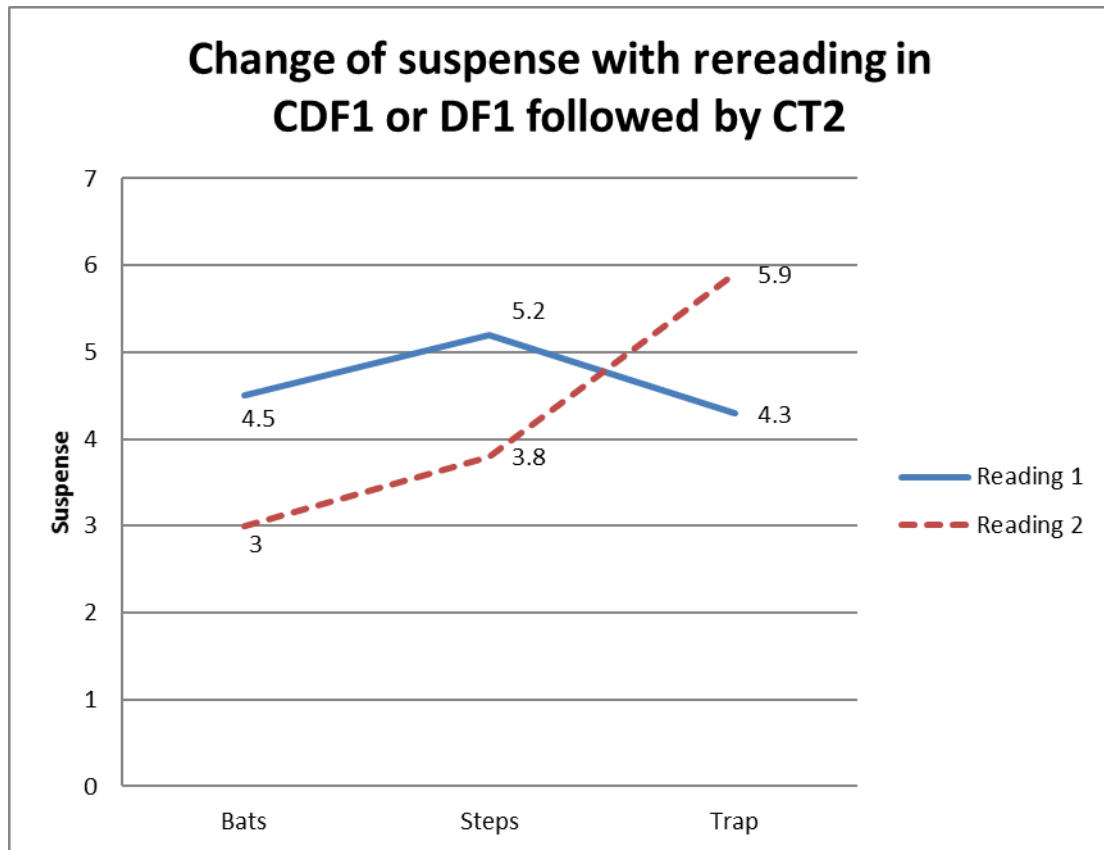


Figure 20 Experiment 1: Suspense and rereading of the story paths CDF1 or DF1 followed by CT2.

These findings confirm the expectations that on rereading, the known information (like in the scene [BATS]) leads to reduction of degree suspense, whereas the new direction of the story path (scene [TRAP]) allows keeping the story as suspenseful as it was during the first reading.

A paired samples t-test was also conducted to analyse how the degree of suspense was changing between the scenes during each of the two story readings. The results of the test revealed no statistically significant ($p > .05$) difference in suspense perception between the scenes during the first reading. However, during the second reading, the final scene [TRAP2] ($M = 5.9$, $SD = 2.8$) was perceived as more suspenseful than the scene [STEPS2] ($M = 3.8$, $SD = 2.9$), $t(11) = 2.36$, $p = .038$ and the scene [BATS2] ($M = 3$, $SD = 2.2$), $t(11) = 3.15$, $p = .009$. There was no statistically significant difference found in the degree of suspense reported in the scenes [BATS2] and [STEPS2].

These findings suggest that despite rereading, the reduction in the degree of suspense in the story occurred only in the scene [BATS]; the other two scenes –

[*STEPS*] and [*TRAP*] – presented statistically no different degree of suspense during both of the readings.

As for the change of the level of suspense between the scenes, during the first reading, all the scenes were perceived as statistically equally suspenseful. However, during rereading, the final scene [*TRAP*] was measured as more suspenseful than the previous scenes [*BATS*] and [*STEPS*].

Story paths CT1 followed by C-DF2 or DF2

In these story paths, during the first reading, Bond hides behind the curtains and then enters the small room where he gets trapped. During the second reading, he explores the room behind the red door using his flashlight and sees a body trap.

The results of repeated measures ANOVA with a Greenhouse-Geisser correction indicated that there was a statistically significant difference in the degree of suspense experienced in different scenes $F(2, 21) = 4.29, p = .029$ as well as between the readings of the story $F(1, 11) = 20.72, p = .001$. However, there was no evidence found that these two variables influenced one another $F(1.5, 16.7) = 2.46, p = .125$ (Table 5).

		<i>Bats</i>	<i>Steps</i>	<i>Trap</i>
Reading 1	Mean	5.6	5.9	5.5
	<i>Std Dev</i>	2.35	2.54	3.66
Reading 2	Mean	2.8	4.3	5.5
	<i>Std Dev</i>	2.67	3.14	2.68

Table 5 Experiment 1: Change of the degree of suspense between the scenes and readings.

A paired samples t-test was employed to examine how the degree of suspense perceived in the story changed with rereading. The results suggested that the scene [*BATS1*] ($M = 5.6, SD = 2.4$) generated a statistically significantly higher level of suspense than the scene [*BATS2*] ($M = 2.8, SD = 2.7$), $t(11) = 3.52, p = .005$. The scene [*STEPS1*] ($M = 5.9, SD = 2.5$) was also perceived as significantly more suspenseful than the scene [*STEPS2*] ($M = 4.3, SD = 3.1$), $t(11) = 2.7, p = .019$. As for the final scene [*TRAP*], there was no statistically significant difference between the

degree of suspense reported in the scene [TRAP1] ($M = 5.5$, $SD = 3.7$) and [TRAP2] ($M = 5.5$, $SD = 2.7$), $t(11) = .000$, $p = 1$ (Figure 21).

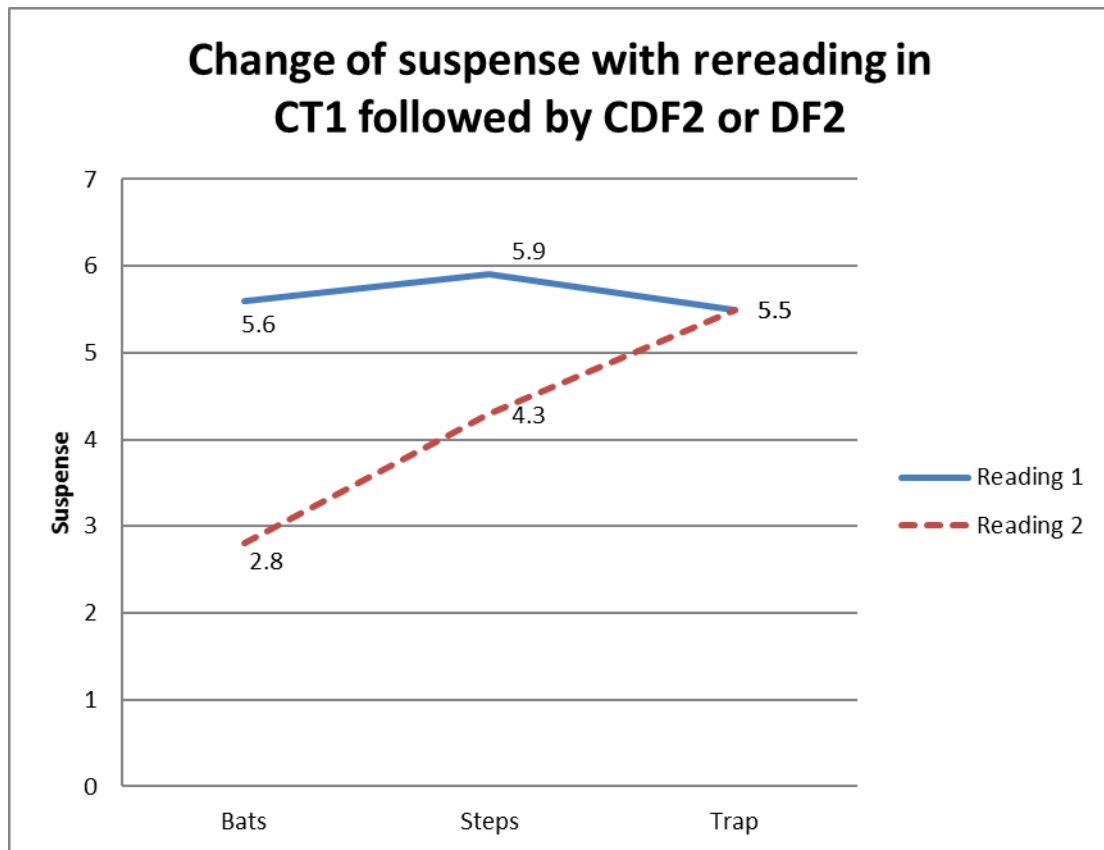


Figure 21 Experiment 1: Suspense and rereading of the story paths
CT1 followed by CDF2 or DF2.

A paired samples t-test was also conducted to analyse how the perception of suspense was changing between the scenes during each of the two readings of the story episode.

Regarding the first reading, the results of the test discovered no statistically significant ($p > .05$) difference between the degree of suspense experienced by the audience in the scenes [BATS1] ($M = 5.6$, $SD = 2.35$), [STEPS1] ($M = 5.9$, $SD = 2.54$), and [TRAP1] ($M = 5.5$, $SD = 3.65$).

As for the second reading, the results of the analysis suggested that there was no statistically significant difference in the level of suspense experienced in the scenes [BATS2] ($M = 2.8$, $SD = 2.7$) and [STEPS2] ($M = 4.3$, $SD = 3.1$), $t(11) = 2.2$, $p = .05$ as well as between the scenes [STEPS2] and [TRAP2] ($M = 5.5$, $SD = 2.7$), $t(11) = -1.62$, $p = .133$. However, the scene [TRAP2] was perceived as statistically significantly more suspenseful in comparison with the scene [BATS2], $t(11) = 2.9$, $p = .015$.

Again, these findings suggest that in the chosen story paths, the degree of suspense tended to drop with rereading in the scenes that were already known to the audience (i.e. [BATS] or [STEPS]). However, the scene that presents a new direction in the story does not become less suspenseful with rereading.

Story path CT1 followed by CDNF2 or DNF2

In these story paths during the first reading, Bond enters the small room and gets caught in a trap. During the second reading, he either directly enters the room behind the red door or does so after visiting the small room first; either way, he does not use his flashlight in the room behind the red door and gets caught in a body trap.

For these story paths, a repeated measures ANOVA with a Greenhouse-Geisser correction revealed a statistically significant difference in the degree of suspense reported in the different scenes of the story episode: $F(1.7, 23) = 4.65, p = .025$ as well as between the story readings $F(1, 14) = 21.3, p < .001$. The interaction between the readings and suspense perception in different scenes of the story episode was also statistically significant: $F(1.5, 21) = 7.84, p = .005$ (Table 6).

		<i>Bats</i>	<i>Steps</i>	<i>Trap/Docs</i>
Reading 1	Mean	5.1	5.1	5.2
	<i>Std Dev</i>	3.27	2.63	2.54
Reading 2	Mean	2.5	2.7	5.1
	<i>Std Dev</i>	2	2	2.1

Table 6 Experiment 1: Change of the degree of suspense between scenes and rereadings for the story paths CT1 followed by CDNF2 or DNF2.

A paired samples t-test used to testing how the degree of suspense changed in each of the scenes with rereading indicated a statistically significant reduction of the degree of suspense in the scenes [BATS] and [STEPS]. Therefore, the scene [BATS1] ($M = 5.1, SD = 3.3$) generated significantly more suspense than the scene [BATS2] ($M = 2.5, SD = 2$), $t(14) = 4.17, p = .001$. The scene [STEPS1] ($M = 5.1, SD = 2.6$) was also perceived as statistically more suspenseful in comparison to the scene [STEPS2] ($M = 2.7, SD = 2$), $t(14) = 5.53, p < .001$. As for the final scene of the story episode, [TRAP], there was no statistically significant difference between the level of

suspense the audience experienced in the scenes [TRAP1] ($M = 5.2$, $SD = 2.5$) and [TRAP2] ($M = 5.1$, $SD = 2.1$), $t(14) = .118$, $p = .908$ (Figure 22).

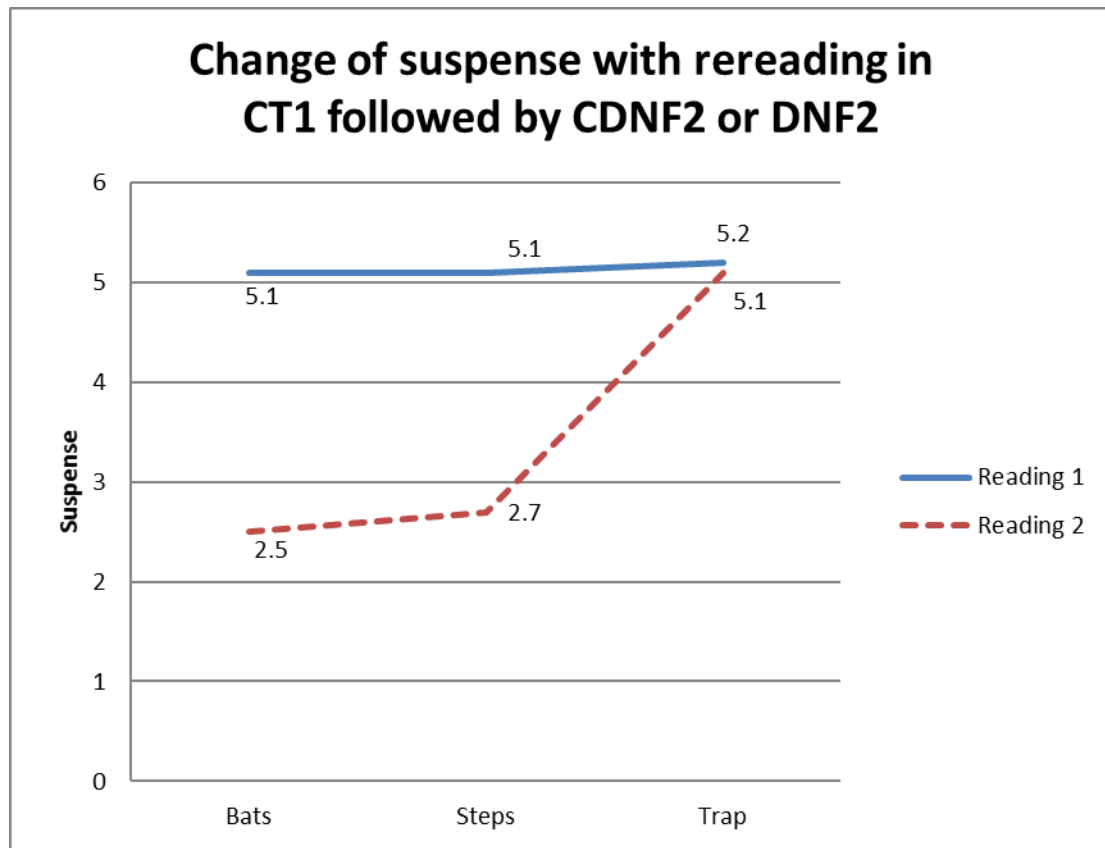


Figure 22 Experiment 1: Suspense and rereading for the story paths CT1 followed by CDN2 or DNF2.

A paired samples t-test was employed in order to analyse how the degree of suspense reported by the experiment participants changed between the scenes during each of the two readings.

The results of the test indicated that during the first reading, all the scenes generated no statistically significant ($p > .05$) difference in the degree of suspense. However, during the second reading, the scene [TRAP2] ($M = 5$, $SD = 2.1$) was perceived as statistically significantly more suspenseful than the scene [STEPS2] ($M = 2.7$, $SD = 2$), $t(14) = 3.67$, $p = .002$ and the scenes [TRAP2] and [BATS2] ($M = 2.5$, $SD = 2$), $t(14) = 4.63$, $p < .001$. There was no statistically significant difference found between the level of suspense generated in the scenes [BATS2] and [STEPS2], $t(14) = -.64$, $p = .53$.

These results support the findings obtained from the analysis of the other story paths presented earlier in this section. During the first reading, all the scenes are

perceived by the audience as equally suspenseful whereas with rereading, the final scene [TRAP] generates either the same or a statistically significantly higher degree of suspense than the other scenes.

Another conclusion that can be made based on the test results, is that with rereading, the degree of suspense tended to drop in the scenes [BATS] and [STEPS], remaining statistically the same in the scene [TRAP].

Thus, the experiment provides evidence for the assumption that in an interactive narrative, an offered choice that provides alterations to the story path, allows keeping the degree of suspense in the story high on rereading. On the other hand, if upon rereading a scene of the story, the episode is presented to the audience exactly the same way as during the first reading, it will be perceived as less suspenseful. Therefore, by manipulating choice and directing the story in a new path on rereading, it is possible to maintain a higher degree of suspense in the story.

But does the greater suspense on rereading guarantee greater enjoyment of the story? After all, keeping the audience in suspense for its own sake does not make much sense – the goal is to make the story enjoyable for the audience. To analyse the role of suspense in story enjoyment, the following tests were performed.

6.3.3 Suspense and enjoyment

After the first reading was completed, the audience members were asked to report the level of enjoyment they experienced while reading the story. To analyse the role of suspense in story enjoyment, this data was compared with the mean level of suspense the audience reported during the first reading. The results of a one-way ANOVA employed for the data analysis showed a statistically significant effect on the level of suspense on the degree of story enjoyment ($F(9, 46) = 6.27, p < .001$). The two variables were also strongly correlated: $r(56) = .63, p < .01$. The experiment participants who perceived the story as more suspenseful also reported enjoying it more (Figure 23).

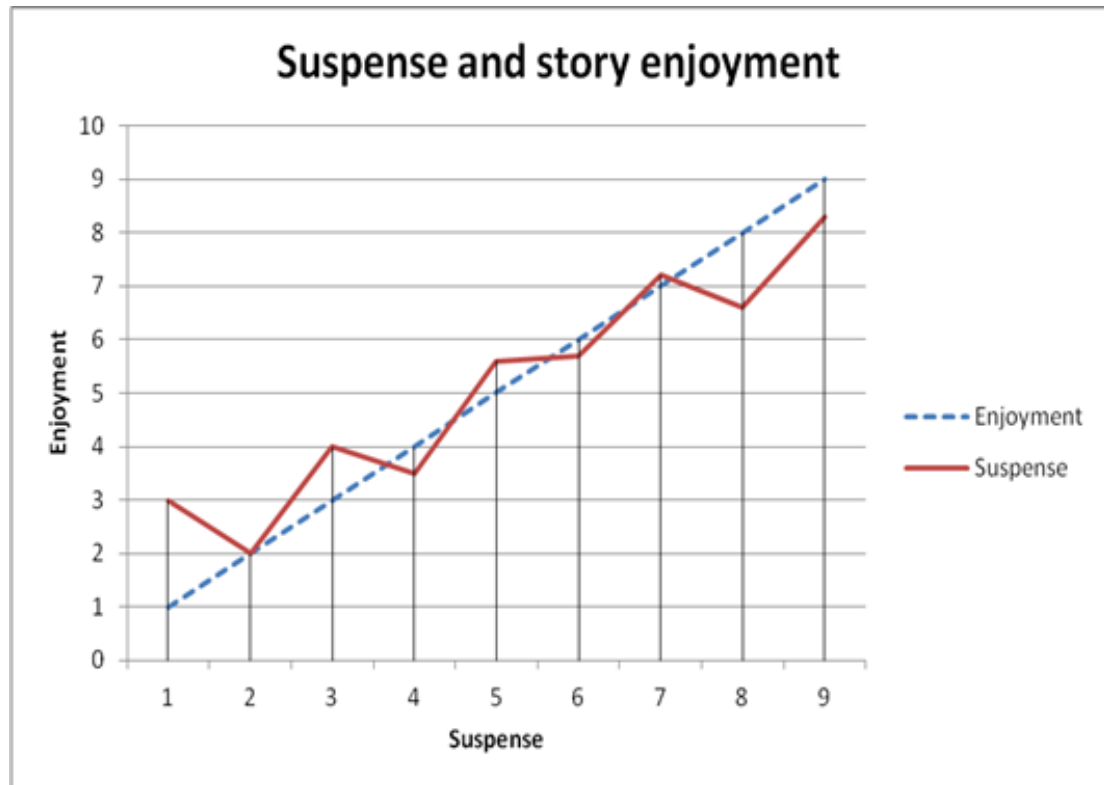


Figure 23 Experiment1: During the first reading, a higher degree of suspense leads to greater story enjoyment.

At the end of the experiment, after the audience had read the story twice, they were asked to indicate when they enjoyed the story the most. They could choose between the options “first time”, “second time”, “equally”, and “never” (Figure 24).

In order to analyse how suspense might influence story enjoyment on rereading as well as how the different degree of suspense in different scenes might contribute to the overall enjoyment the story brings to the audience, a repeated measures ANOVA was performed.

The test analysed two variables – the scenes and readings – as well as a between-subject factor regarding the time the audience reported their greatest story enjoyment.

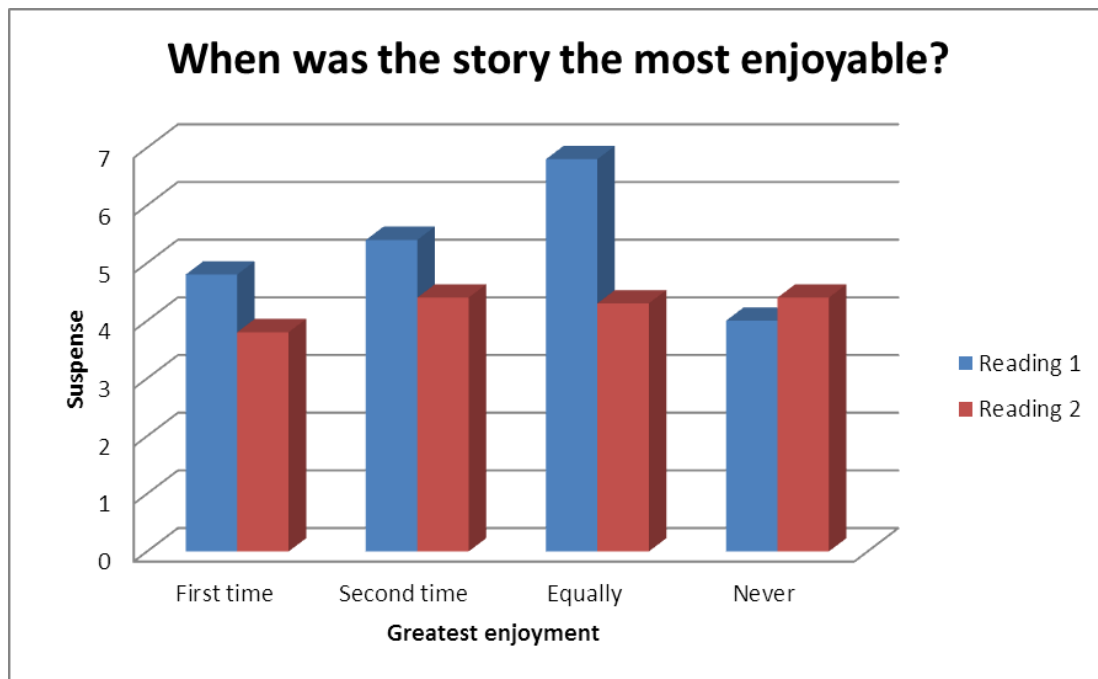


Figure 24 Experiment 1: Suspense and story enjoyment in interactive narrative.

The results of the analysis indicated that the interaction between the level of suspense perceived by the audience in different scenes and the factor of story enjoyment was not significant: $F(5.4, 89.2) = 1.48, p = .20$. The same was true in relation to the interaction between the mean degree of suspense experienced during each of the readings and story enjoyment: $F(3, 50) = 1.86, p = .15$. Interaction between all the three factors – reading, scene, and story enjoyment – was also insignificant: $F(5, 84) = .87, p = .50$ (Table 7).

		<i>Highest enjoyment</i>			
<i>Suspense</i>		First time	Second time	Equally	Never
		(N=25)	(N=20)	(N=4)	(N=5)
	Reading 1	4.8	5.4	6.8	4
	Reading 2	3.8	4.4	4.3	4.4

Table 7 Experiment 1: Degree of suspense and the highest story enjoyment.

These findings conclude that in interactive narrative with rereading, story enjoyment is not influenced by the degree of suspense perceived in the story. In other words, even if the story is perceived as suspenseful, it may not be enjoyable.

The role of suspense in story enjoyment was also tested for several story paths chosen by the audience: *C-DF1* or *DF1* followed by *CT2*, *CT1* followed by *C-DF2* or *DF2*, and *CT1* followed by *CDNF2* or *DNF2*. The results of a repeated measures ANOVA with a Greenhouse-Geisser correction were identical to those described above. There was no statistically significant ($p > .05$) interaction found between story enjoyment and the mean level of suspense in different scenes or readings as well among all of the three factors. However, these findings should not be considered as statistically strong due to the small size of a sample data.

Enjoyment and story predictability

After the first reading, the experiment participants were also asked to indicate how predictable the story was. To analyse if the degree of the predictability could influence the level of story enjoyment, a one-way ANOVA was performed. The results of the test showed no statistically significant difference between group means ($F(9, 44) = 1.37, p = .23$), indicating that the level of story predictability did not influence the story enjoyment.

The results of a one-way ANOVA also showed no statistically significant difference between the mean degree of suspense and story predictability reported after the first reading ($F(9, 44) = .89, p = .54$), suggesting that story predictability had no statistically significant influence on the level of suspense.

Based on the results of the data analysis, it is possible to conclude that when the audience experiences the interactive narrative for the first time, suspense is an important component of story enjoyment – the more suspense the story generates, the more enjoyable it is to the audience. However, when the story is presented to the audience more than once, the degree of suspense and level of enjoyment lose their strong connection. With repeated encounters, the interactive story can still be enjoyed despite the drop in the degree of suspense it generates.

6.3.4 Reader's perspective and level of suspense

As it was analysed earlier (Chapter 5), a story can be perceived by the audience from different perspectives – either the reader's or story character's – and the emotional response to the story can also depend on the point of view from which the story is perceived.

In order to analyse how the degree of suspense depended on the audience's identification with a story character in interactive narrative, the following test was performed.

After each of the story readings, the experiment participants were asked to indicate from which of the perspectives – *Reader*, *Bond*, or *Difficult to tell (Undefined)* – they had reported their emotional response¹⁴ (Table 8).

		<i>Reader</i>	<i>Bond</i>	<i>Difficult to tell</i>
Reading 1	Mean	4.6	6.6	6.1
	<i>Std Dev</i>	<i>2.21</i>	<i>1.52</i>	<i>1.73</i>
	<i>N</i>	<i>26</i>	<i>5</i>	<i>10</i>
Reading 2	Mean	3.7	5.4	4
	<i>Std Dev</i>	<i>1.9</i>	<i>2.22</i>	<i>1.73</i>
	<i>N</i>	<i>26</i>	<i>10</i>	<i>5</i>

Table 8 Experiment 1: Degree of suspense in relation to the readers' perspective.

Using a one-way ANOVA, this data was analysed in relation to the mean degree of suspense reported by the audience during the first and second readings. The results of the test showed that there was no statistically significant difference between the mean degree of suspense reported from the different perspectives from either the first reading ($F(2, 38) = 3.36, p = .05$), or the second reading ($F(2, 38) = 2.68, p = .081$).

These findings suggest that in interactive narrative, the perspective from which the story is perceived does not influence the degree of suspense the audience experiences.

Another question which was important to answer concerning the readers' perspective, was how this factor contributes to the story enjoyment: do the audience members who empathize with the story character strongly enjoy the story more than those who perceive it as external observers? To answer this question, a one-way ANOVA was used to analyse the difference between the mean degree of story

¹⁴ This question was included into the experiment shortly after it had started and was answered by 41 participants (14 male).

enjoyment experienced by the audience during the first reading and the perspective, from which the story was perceived. The results of the test revealed no statistically significant difference between the group means ($F(2, 38) = 1.34, p = .27$).

Therefore, it can be concluded that in interactive narrative, story enjoyment does not depend on the perspective from which the story is perceived, at least when the audience is exposed to it for the first time.

Later in this chapter, these results are compared with the results obtained from non-interactive readings in Experiment 2 and both non-interactive and interactive readings during Experiment 3.

6.3.5 Uncertainty and suspense

In relation to non-interactive narrative, increased uncertainty experienced by the audience is often linked to the higher degree of suspense they perceive (Section 2.1.3).

In order to analyse how this relation works in the interactive environment, the experiment participants were asked to report not only the degree of suspense but also the level of uncertainty they experienced in the scene [*TRAP*].

A one-way ANOVA was used to analyse how the degree of uncertainty about the upcoming outcome of the story scene could influence the level of suspense. The result of the analysis indicated a statistically significant difference between the group means during the first reading ($F(9, 46) = 2.79, p = .016$) as well as during the second reading ($F(9, 46) = 9.99, p < .001$).

These findings suggest that in interactive narrative, more uncertainty was associated with a higher degree of suspense. Thus, by making the outcome of the suspenseful episode more uncertain, it is possible to make it more suspenseful.

6.3.6 Individual factors and suspense perception

As discussed in more detail earlier in the thesis (Section 2.2.2), the degree of suspense perceived in the story can depend on the individual characteristics of audience members. Certain factors such as their age, gender, gaming expertise, etc. can influence the audience's emotional response to the narrative.

To test the role of the individual factors of suspense perception in interactive narrative, the following tests were performed.

Gender factor

Do male and female audience members experience different degrees of suspense in interactive narrative? To answer this question, a one-way ANOVA was employed analysing the difference in the mean degree of suspense reported during the first and second readings in relation to the gender of the audience members (Figure 25).

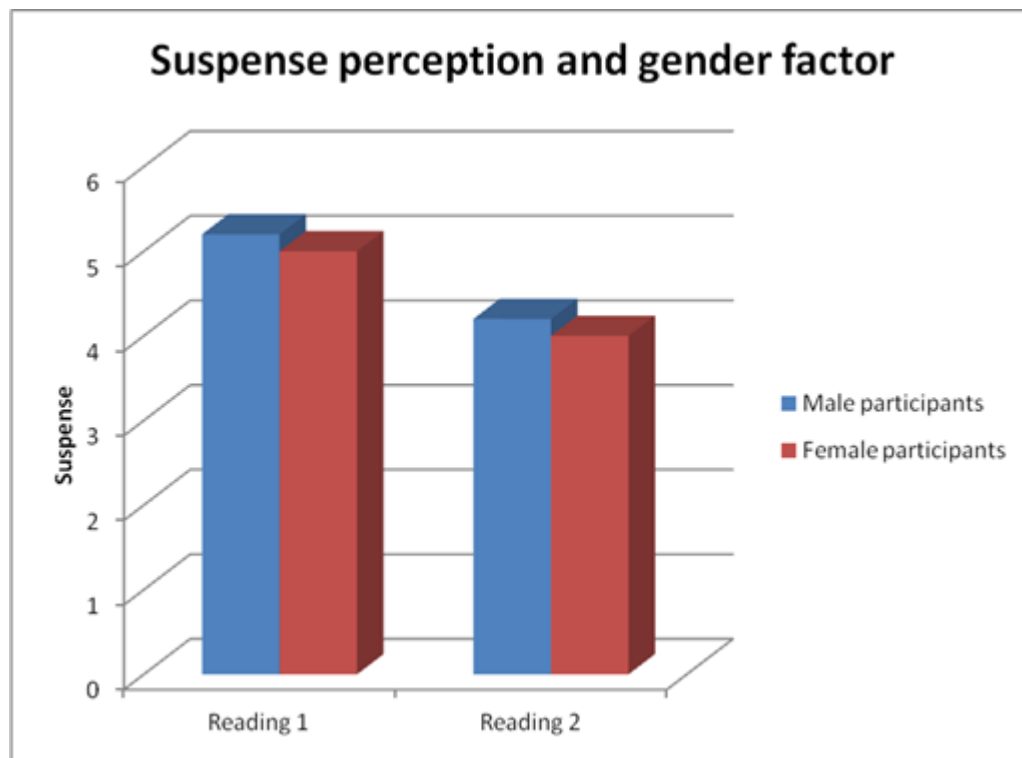


Figure 25 Experiment 1: The role of the gender factor in suspense perception in interactive narrative.

The results of the analysis revealed no statistically significant difference in the degree of suspense reported by male ($n = 21$) and female ($n = 33$) experiment participants for the first reading ($F(1, 52) = .16, p = .69$) and for the second reading ($F(1, 52) = .07, p = .79$).

Age factor

The majority of the experiment participants (55.6%) were 18-21 years old, 19.5% were 22-29 years old, 17.8% were 30-40 years old, and 7.1% were over 40 years old.

A one-way ANOVA was used to analyse the possible influence that the age of the experiment participants might have on their perception of suspense in the interactive story.

The results of the test showed that during the first reading ($F(3, 50) = .9, p = .45$) as well as during the second reading ($F(3, 50) = 2.1, p = .12$), the mean degree of suspense the audience experienced was not statistically significantly different between the different age groups.

Gaming expertise

It would be possible to assume that the interactive environment of the story presented in Experiment 1 would be more easily accepted and enjoyed by those experiment participants who were familiar with the concept of video games and played them on a regular basis.

However, according to the results of a one-way ANOVA analysing the mean degree of suspense in relation to the game expertise, there was no statistically significant ($p > .05$) difference in the degree of suspense reported by both non-gamers ($n = 22$) and those who reported regularly playing video games ($n = 32$) during the first reading ($F(1, 52) = .95, p = .33$) as well as during the second reading ($F(1, 52) = 1.17, p = .29$).

6.3.7 Conclusions

Analysis of suspense perception in interactive narrative allows making several conclusions.

First, during the initial reading, all the scenes in the story episode were perceived by the audience as statistically equally suspenseful. During the rereading, however, the mean degree of suspense dropped in those scenes that were presented to the audience in exactly the same way as during the first reading. As for the final scene of the episode, which depended on the audience's choice and was different each time, it was perceived statistically equally suspenseful during both the first and second readings. Therefore, it is possible to conclude that by manipulating the story path, it is possible to keep the level of suspense in the story high with repeated encounters.

Second, the higher degree of suspense perceived in the story does not guarantee that the story will present a greater level of enjoyment to the audience. Even though

both factors are linked when the audience is exposed to the story for the first time, rereading does not indicate any connection between these two factors. This finding suggests that in interactive narrative, suspense does not directly influence enjoyment with repeated encounters and thus, it should not be the only factor influencing the story enjoyment.

Third, the perspective from which the story is perceived as well as individual factors of the audience members such as a gender, age, and gaming expertise, has no statistically significant influence on the degree of suspense reported during the first and second readings. The only factor that clearly contributes to the degree of suspense is the level of uncertainty about the imminent outcome.

All the above findings regarding interactive narrative were compared to the results of the tests on non-interactive and semi-interactive stories set up as separate experiments described below.

6.4 Experiment 2: Non-interactive story with three readings

Thirty-five students and members of Victoria University of Wellington participated in the experiment – 20 (57%) of the participants were female; 20 (57.1%) were 18-21 years old.

Similar to the other experiments conducted for this thesis, participants were given a story to read and asked to complete the task assigned to the story's protagonist James Bond. They read the story three times and, since none of the readings offered a choice, the experiment participants could not influence the direction of the story (Figure 26).

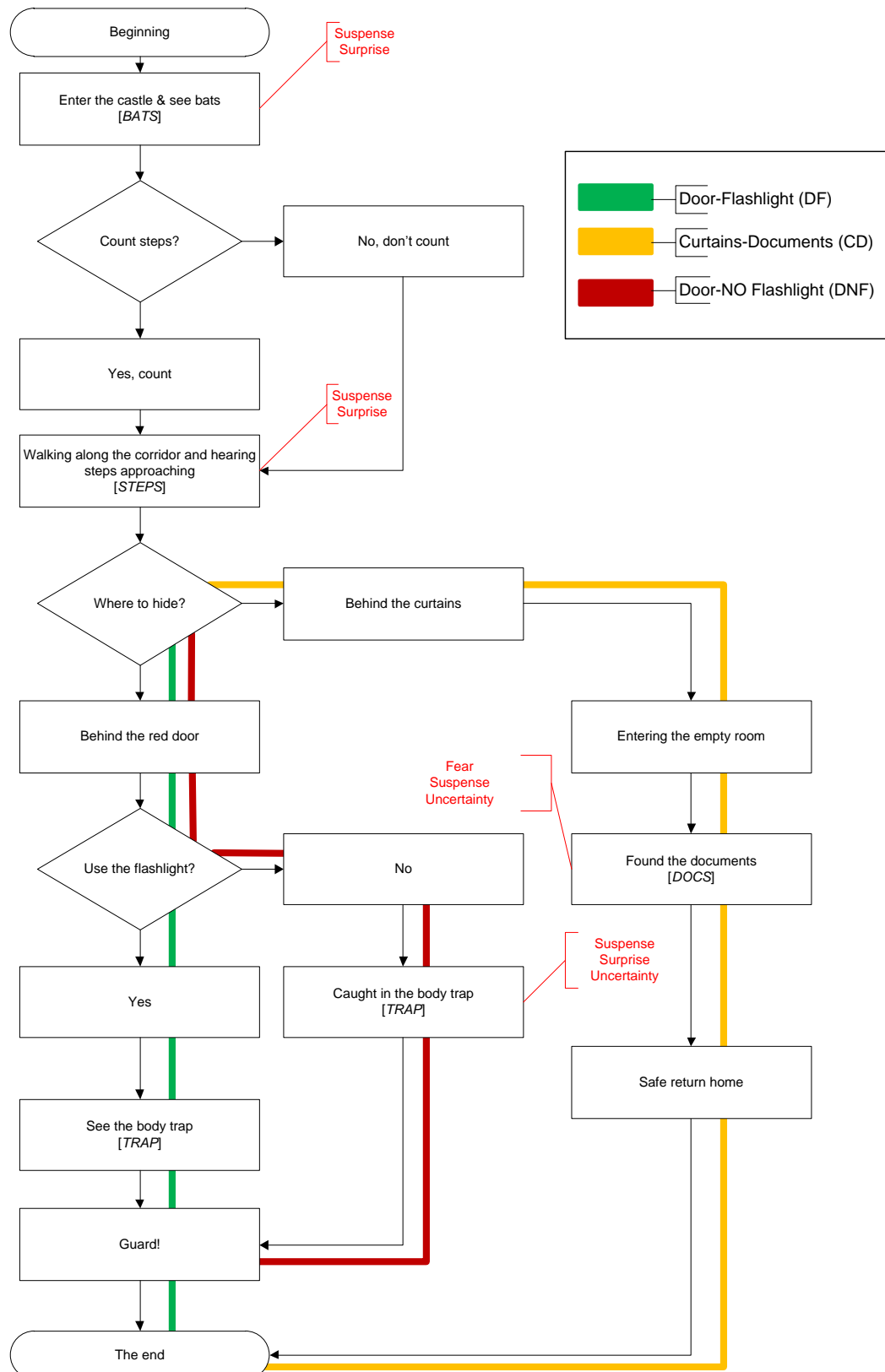


Figure 26 Experiment 2: Story paths offered for the non-interactive readings.

However, each of the readings presented a slightly modified story path to test a specific condition, which might influence the level of suspense perceived by the audience.

During the first reading, the experiment participants followed the path *DNF*: after hearing the approaching steps, Bond hides behind the red door, does not use his flashlight, and gets caught in a body trap.

During the second reading (the story path *CD*), after hearing the steps, Bond hides behind the curtains and then enters the small room where he successfully discovers the documents he was searching for. Such an alternation to the story was made in order to test how the desirable outcome of the suspenseful episode influences the degree of suspense perceived by the audience.

The third reading presented to the audience a story path *DF* similar to the path *DNF* used during the first reading with the only difference that this time, at the final scene [*TRAP*], Bond uses a flashlight and sees the trap. He avoids it but a moment later, his presence is revealed by the other trap, and he gets caught by the guard. The story path *DF* during the third reading was offered to the audience in order to test how their suspense perception changes after they experienced desirable resolution of the story episode during the previous reading.

6.4.1 Suspense perception in different scenes

As in the previous experiment, each of the scenes along the story path – [*BATS*], [*STEPS*], [*TRAP*]/ [*DOCS*] – was expected to generate a different degree of suspense.

The scene [*BATS*] was expected to generate the lowest degree of suspense in comparison to the other scenes of the story episode. The scene [*STEPS*] was expected to generate a higher degree of suspense than the scene [*BATS*] as it was associated with higher danger for the story's protagonist.

The scenes [*BATS*] and [*STEPS*] were presented to the experiment participants exactly the same way during each of the three readings. However, the final scene of the story episode was different each time.

During the first reading, the final scene [*TRAP*] pictures Bond getting caught in a body trap in a dark room behind the red door as he decides not to use his flashlight:

*You make a step and through the mist of pain you hear the
iron clang as the saw-teeth bit into your right leg below your*

knee. It must be a body trap!

[Please rate your level of Suspense/ Surprise/Uncertainty].

This scene was expected to generate the highest degree of suspense along the story path as the protagonist now faces the greatest danger.

During the second reading, after the scene [STEPS], the story path changes and Bond enters a small room where he discovers the secret documents he was looking for:

You creep softly forward down the centre of the passage and then reach the door. You bend and put your eye to the keyhole - you see a tiny, empty room that seems to have no other exit. You enter.

The music comes through a large metal box fitted to the back of the door through which you have come. 'Tape recorder,' you guess.

As the door is softly closed behind you the music stops and the metal box releases a folder with several sheets of paper pinned together. The papers bear the seal "Secret - BG". This is what you were looking for! You fold the papers and put them in the inner pocket of your jacket then shut the lid of the box.

[Please rate your level of Fear/ Suspense/ Uncertainty].

This scene, which is referred to here as [DOCS], brings the audience the desirable resolution. However, since it is not clear for the audience yet if Bond will be able to safely escape from the castle with the documents, it was expected that this scene would generate a reasonably high degree of suspense, similar to the scene [TRAP] presenting the obvious threat during the first reading.

The final scene of the third reading, [TRAP], is similar to the one offered to the audience during the first reading; however this time, Bond uses the flashlight and sees the trap:

Slipping fast and softly along the curtains on the wall, you reach the red door. You push it open and find yourself in a dark room. You take out the pencil flashlight from the pocket and push the door further, probing the darkness ahead.

The room is totally empty. On the highly-polished wood floor where your first step would have taken you, lies a yawning man-trap. Its rusty iron jaws, perhaps a yard across, are waiting for you to step on the thin covering of straw that partially concealed it.

[Please rate your level of Suspense/
Surprise/Uncertainty]

On the one hand, since the audience is already familiar with this scene and it does not present any actual danger to the story's protagonist, it would be possible to expect that the degree of suspense perceived in this scene is going to be low. However, uncertainty about the steps Bond is going to take after seeing the trap should keep suspense in this scene high. In addition, failure during the first reading and satisfactory outcome during the second reading, indicate that any resolution is possible and makes the audience wonder which outcome they should expect this time. Thus, it was expected that during the third reading, the scene [TRAP] would present a relatively high degree of suspense due to uncertainty triggered by this scene.

To compare the degree of suspense perceived by the experiment participants in each of the three scenes [BATS], [STEPS], and [TRAP] or [DOCS] a paired-sample t-test was conducted.

The results of the tests showed there was no statistically significant difference in the mean level of suspense perceived during the first reading in each of the scenes: [BATS1] ($M = 5.7$, $SD = 2.7$), [STEPS1] ($M = 5.7$, $SD = 2.8$), and [TRAP1] ($M = 5.8$, $SD = 2.8$). However, during the second reading, the scene [BATS2] ($M = 4.3$, $SD = 2.7$) generated statistically significantly less suspense than the scene [STEPS] ($M = 5.6$, $SD = 3.1$); $t(34) = -3.58$, $p = .001$ and the scene [DOCS2] ($M = 5.8$, $SD = 3$); $t(34) = -2.7$, $p = .01$. There was no statistically significant difference in the degree of suspense perceived in the scenes [STEPS2] and [DOCS2].

During the third reading, the final scene [*TRAP3*] ($M = 4.4$, $SD = 2.7$) generated a significantly higher level of suspense than the scene [*BATS3*] ($M = 3.8$, $SD = 2.9$); $t(34) = 2.31$, $p = .027$ and the scene [*STEPS3*] ($M = 3.8$, $SD = 2.6$); $t(34) = 2.15$, $p = .039$. The degree of suspense generated in the scenes [*BATS3*] and [*STEPS3*] was not significantly ($p > .05$) different.

These results confirm the expectations regarding each of the scenes. Even though the audience perceived all the scenes during the first reading as equally suspenseful, this had changed with rereading. The scene [*BATS*] generated the lowest degree of suspense whereas the final scene of the episode, either [*DOCS*] during the second reading or [*TRAP*] during the third reading, tended to be perceived as the most suspenseful.

These findings were similar to those obtained from Experiment 1, suggesting that in an interactive story. The first reading does not reflect any statistically significant difference in the degree of suspense generated in different scenes. However, on rereading the story, the scenes tended to present diverse levels of suspense. Since there was no difference how suspense was perceived in the non-interactive and interactive narratives, it can be concluded that interactivity as such had no influence on the degree of suspense perceived in different scenes of the story episode.

The results of the tests in Experiment 2 also showed that despite their familiarity with the story episode in the scenes [*BATS*] and [*STEPS*], the audience kept experiencing suspense during each of the three readings. Knowing that, it was important to analyse how the degree of suspense was changing in each of the scenes with repeated encounters.

6.4.2 Suspense perception and story rereading

To find out if there was any statistically significant difference between the degrees of suspense experienced by the experiment participants during each of the story readings, a repeated measures ANOVA was conducted. The results of the test with a Greenhouse-Geisser correction demonstrated that there was a statistically significant difference in the mean level of suspense generated by the different scenes ($F(2, 64) = 5.95$, $p = .005$) as well as during each of the three readings ($F(2, 52) = 9.54$, $p = .001$) (Table 9).

The interaction between rereading and the degree of suspense generated in different scenes of the story episode was also statistically significant ($F(3, 102) = 2.84, p = .042$).

		<i>Bats</i>	<i>Steps</i>	<i>Trap/Docs</i>
Reading 1	Mean	5.7	5.7	5.8
	<i>Std Dev</i>	2.65	2.83	2.77
Reading 2	Mean	4.3	5.6	5.8
	<i>Std Dev</i>	2.65	3.12	2.96
Reading 3	Mean	3.8	3.8	4.4
	<i>Std Dev</i>	2.90	2.6	2.74

Table 9 Experiment 2: Change of the degree of suspense between scenes and readings.

Paired samples t-test confirmed these findings. Scene [BATS1] ($M = 5.7$, $SD = 2.6$) generated more suspense than the scene [BATS2] ($M = 4.3$, $SD = 2.7$); $t(34) = 2.77, p = .009$ and more suspense than the scene [BATS3] ($M = 3.8$, $SD = 2.9$); $t(34) = 3.32, p = .002$. However, there was no change in the degree of suspense generated in the scenes [BATS2] and [BATS3]; $t(34) = 1.02, p = .31$.

Scenes [STEPS1] ($M = 5.7$, $SD = 2.8$) and [STEPS2] ($M = 5.6$, $SD = 3.1$) generated no significantly different degree of suspense. However, both scenes were perceived as significantly ($p < .05$) more suspenseful than the scene [STEPS3] ($M = 3.8$, $SD = 2.6$).

Despite the fact that the first reading presented to the audience a non-desirable outcome and the second reading lead to a desirable outcome, there was no statistically significant difference in the degree of suspense generated in the final scenes [TRAP1] ($M = 5.8$, $SD = 2.8$) and [DOCS2] ($M = 5.8$, $SD = 3$). The result of the test also showed that both of the scenes, [TRAP1] and [DOCS2], generated a statistically significantly ($p < .05$) higher level of suspense than the final scene during the third reading: [TRAP3] ($M = 4.4$, $SD = 2.7$) (**Figure 27**).

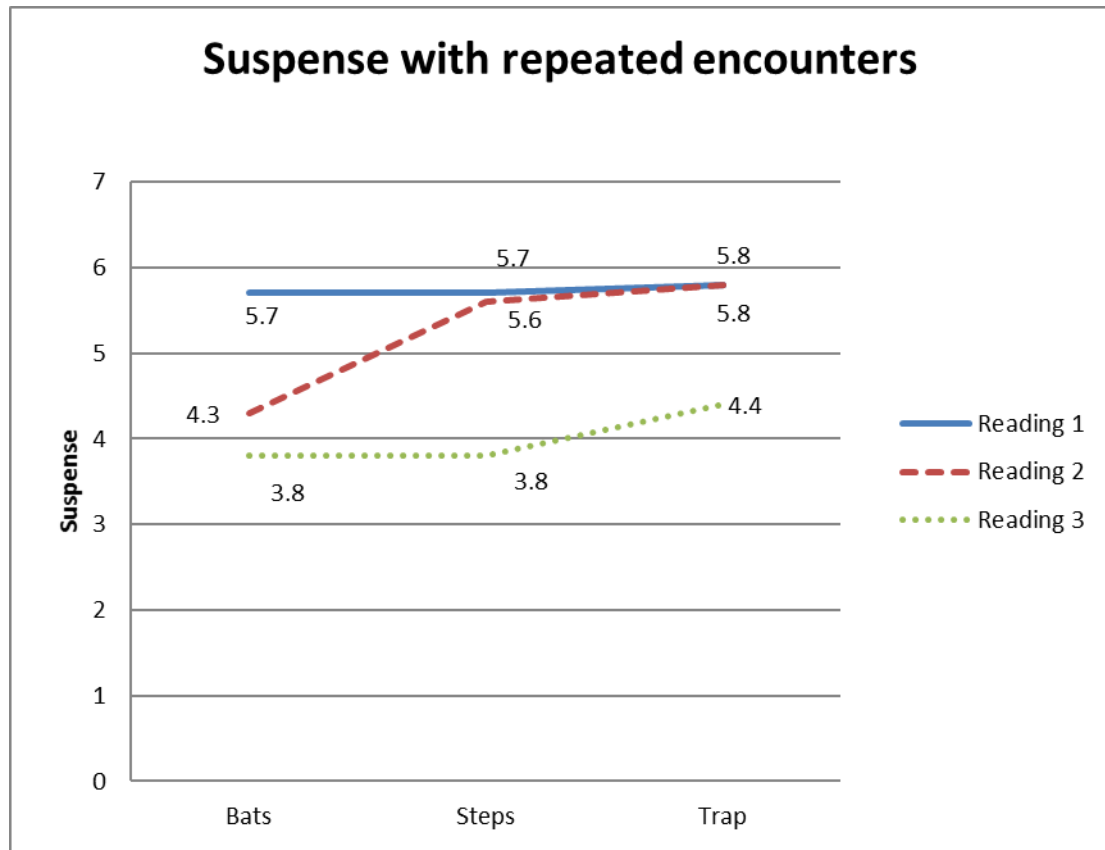


Figure 27 Experiment 2: Change of the degree of suspense with repeated encounters.

These results indicate that in non-interactive narrative, scenes like [BATS], which are less suspenseful by nature (design), tend to lose their degree of suspense quickly with repeated encounters. The scene which directly precedes the climax ([STEPS]) in the suspenseful episode, tends to generate a higher degree of suspense despite story rereading. The climax scene of the suspenseful episode tends to generate the greatest degree of suspense even with repeated encounters. However, the scene involving “seeing the trap” ([TRAP3]) during the third reading was perceived as less suspenseful than the scenes [TRAP1] and [DOCS2]. This may be due to the fact that seeing the trap, which caught the protagonist during the first reading, presented less suspense by nature.

6.4.3 Suspense and enjoyment

After the experiment participants read the story for the first time, they were asked to measure their degree of enjoyment obtained from the story episode.

To test how the degree of perceived suspense corresponded with the story enjoyment, a one-way between subjects ANOVA was conducted. The results indicated a statistically significant effect of the level of suspense the audience perceived during

the first reading on the level of enjoyment they experienced while reading the story $F(9, 25) = 6.33, p < .001$. The two variables were also strongly correlated: $r(35) = .80, p < .01$. Those experiment participants who reported a higher level of suspense also reported greater enjoyment of the story (Figure 28).

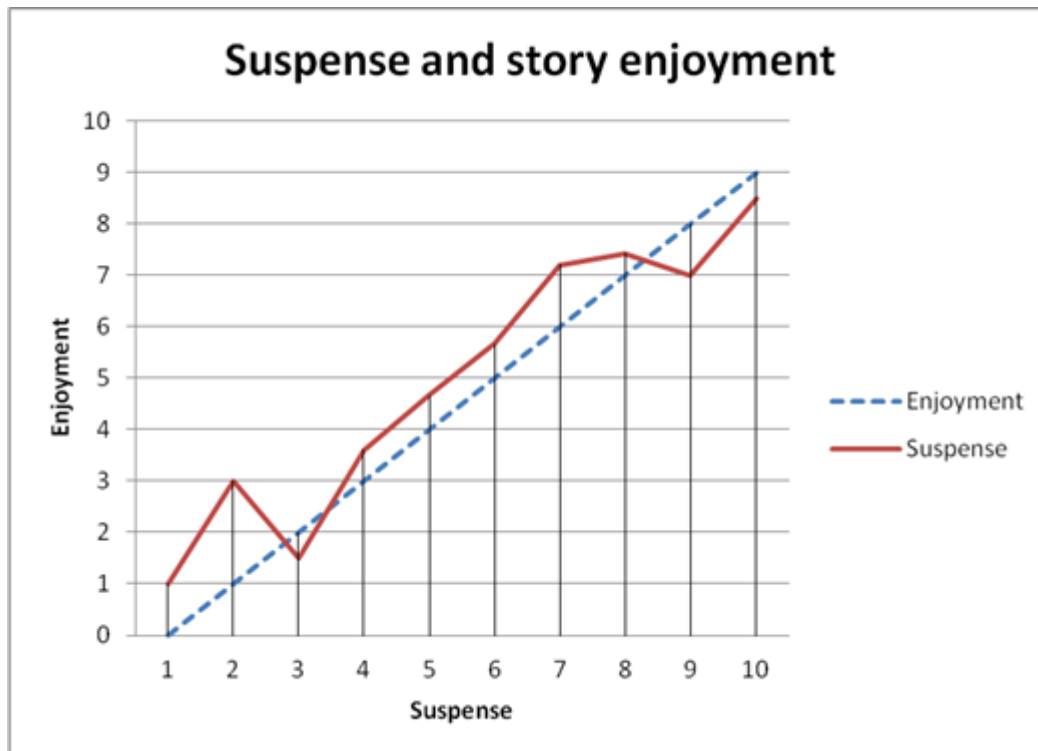


Figure 28 Experiment 2: During the first reading, a higher degree of suspense leads to greater story enjoyment.

At the end of the experiment, after the experiment participants completed all of the three readings, they were asked to indicate which of the readings they enjoyed the most: 14 of them indicated the first reading whereas 13 participants found the second reading to be more enjoyable (Figure 29).

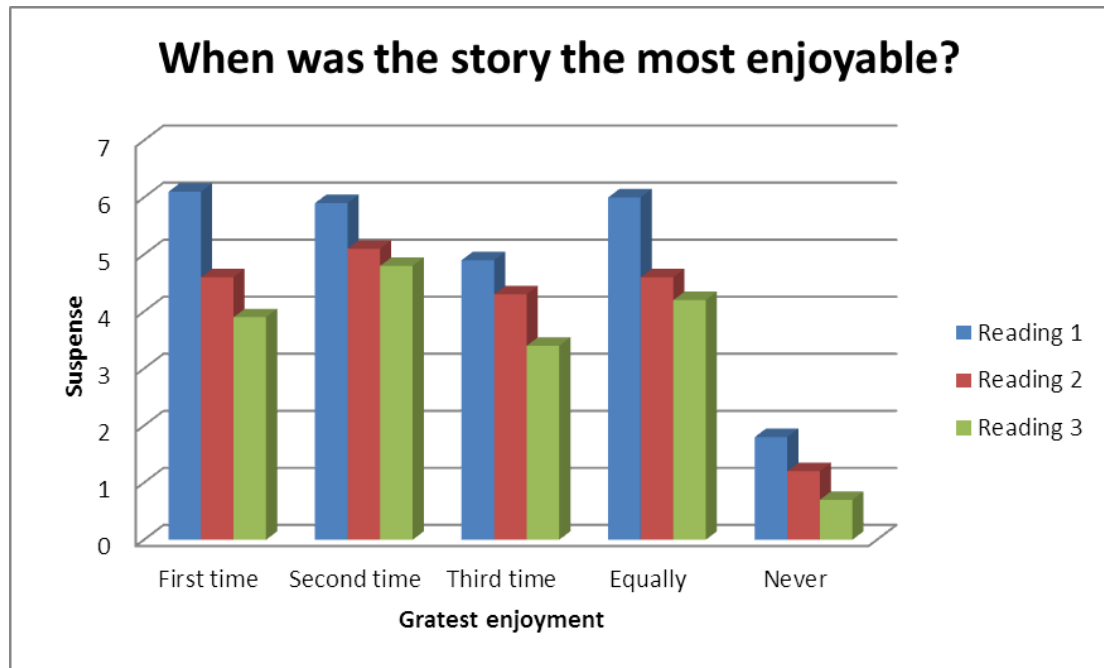


Figure 29 Experiment 2: Suspense and story enjoyment in non-interactive narrative.

To find out if the higher level of suspense also leads to greater story enjoyment when the story is reread, a repeated measure ANOVA was conducted. The test considered two variables (scenes and readings) and a between-subject factor in story enjoyment reported by the experiment participants at the end of the experiment.

A repeated measures ANOVA with a Greenhouse-Geisser correction determined that the interaction in the degree of suspense generated in different scenes of the story path and the resulting story enjoyment was not statistically significant ($F(8, 60) = .49$, $p = .86$). There was also no statistical significance found in the interaction between the level of suspense generated during each of the three readings and enjoyment obtained from the story ($F(6, 48) = .35$, $p = .91$). Interaction between all the three variables – reading, scene, and story enjoyment, also did not reveal any statistically significant difference in the level of suspense ($F(12, 94) = .86$, $p = .59$) (Table 10).

	<i>Highest enjoyment</i>					
<i>Suspense</i>		First time	Second time	Third time	Equally	Never
		(N=14)	(N=13)	(N=3)	(N=3)	(N=2)
	Reading 1	6.11	5.91	4.89	6.00	1.83
	Reading 2	4.64	5.1	4.33	4.56	1.17
	Reading 3	3.88	4.77	3.44	4.22	.67

Table 10 Experiment 2: Degree of suspense and the highest story enjoyment.

These findings suggest that in non-interactive narrative, when the audience members are exposed to the story for the first time, the degree of suspense they perceive in the story directly influences their enjoyment. These findings are consistent with the results from previous studies providing empirical evidence that non-interactive narratives containing suspense are more enjoyable for the audience than those which do not have suspense as their component (Madrigal and Bee 2005; Klimmt, Rizzo et al. 2009; Knobloch-Westerwick, David et al. 2009).

However, with repeated encounters, a higher level of suspense does not necessarily mean greater story enjoyment with repeated encounters – there is more than suspense necessary to enjoy on rereading.

These findings are similar to those obtained from Experiment 1 (two interactive readings) described earlier in this section.

6.4.4 Reader's perspective and level of suspense

In order to test if there was any difference in the degree of suspense reported from different perspectives – *Reader*, *Bond*, or *Difficult to tell (Undefined)* – a one-way between subjects ANOVA was conducted (Table 11).

The results of the analysis revealed no statistically significant difference in the mean degree of suspense perceived from the different perspective during the first reading $F(2,32) = 1.49, p = .24$.

		<i>Reader</i>	<i>Bond</i>	<i>Undefined</i>
Reading 1	Mean	5.17	6.73	5.33
	<i>Std Dev</i>	2.70	1.68	2.67
	<i>N</i>	18	11	6
Reading 2	Mean	3.85	6.50	5.63
	<i>Std Dev</i>	2.23	2.03	2.50
	<i>N</i>	13	14	8
Reading 3	Mean	2.77	5.50	3.75
	<i>Std Dev</i>	2.13	2.79	2.05
	<i>N</i>	13	14	8

Table 11 Experiment 2: Degree of suspense in relation to the readers' perspective.

However, the test results showed that during the second reading, there was a statistically significant difference in the degree of suspense perceived from the different perspectives: [$F(2,32) = 4.94, p = .014$]. Post hoc tests using the Tukey correction indicated that the mean degree of suspense for the perspective of *Reader* ($M = 3.85, SD = 2.23$) was significantly lower than the degree of suspense from *Bond's* perspective ($M = 6.50, SD = 2.03$). However, the state *Undefined* - when the experiment participants found it difficult to identify the particular perspective they were reading the story from - ($M = 5.63, SD = 2.50$), did not significantly ($p > .05$) differ from either *Reader's* or *Bond's* perspectives.

During the third reading, the test results also indicated a statistically significant difference in the mean degree of suspense reported from the different perspectives ($F(2, 32) = 4.44, p = .02$). Post hoc comparison via the Tukey HSD test demonstrated a statistically significant difference in the degree of suspense reported from the perspective of *Reader* ($M = 2.77, SD = 2.13$) and *Bond* ($M = 5.50, SD = 2.79$) – those audience members, who identified themselves with *Bond*, reported a higher degree of suspense than those who perceived the story as external observers, i.e., readers.

Thus, it can be concluded that in a non-interactive story, there is no statistically significant relationship between the degree of suspense and the perspective from which the story was seen during the first reading. However, with repeated encounters, identification with the story character contributes to the stronger emotional response to the story. Those audience members who identify themselves with the story

protagonist experience a higher degree of suspense while reading the story – *Reader* experiences significantly less suspense than *Bond*.

These findings differ from those obtained with Experiment 1 – in an interactive story, the perspective from which the audience perceived it did not influence the degree of suspense they experienced.

Thus, it is possible to conclude that interactivity and an offered choice make the perspective blur and become indistinguishable, whereas a non-interactive version of the story presents a different degree of suspense depending on the perspective from which it is perceived.

6.4.5 Uncertainty and suspense

In order to analyse the connection between uncertainty and suspense, the degrees of both emotional states were measured at the final scene of the story episode during each of the three readings and then analysed via one-way ANOVA.

The results of the test suggested that during the first reading, in the scene [TRAP] there was no statistically significant ($p > .05$) relationship between these factors. However, during the second reading, in the scene [DOCS], more uncertainty also meant significantly more suspense: $F(10, 24) = 5.8, p < .001$. The same was true for the third reading – more uncertainty in the scene [TRAP] was associated with a significantly greater degree of suspense, $F(10, 24) = 5.89, p < .001$.

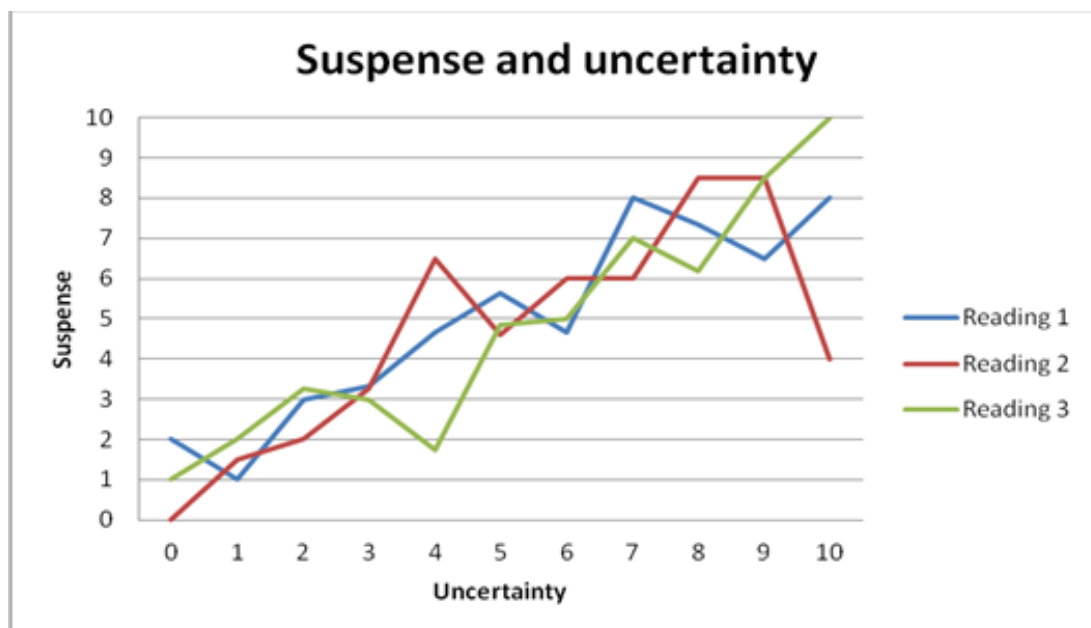


Figure 30 Experiment 2: Grater uncertainty corresponds with higher degree of suspense.

These findings may suggest that in non-interactive narrative, suspense and uncertainty influence one another on rereading; the more uncertain the situation appears to the audience members, the more suspense it presents to them.

As it was mentioned before, one of the purposes of this experiment was to test how the desirable resolution of the story episode presented during the second reading influenced the degree of suspense perceived in the story in the suspense perception in the story episode. A paired sample t-test was employed to compare the degree of uncertainty perceived in the scenes [*DOCS2*], [*TRAP1*], and [*TRAP3*]. The results of the test indicated that the scene [*DOCS2*] offering the desirable resolution ($M = 5.7$, $SD = 2.72$) presented statistically significantly more uncertainty than the scene [*TRAP3*] ($M = 4.8$, $SD = 2.86$), $t(34) = 2.1$, $p = .043$. However, there was no statistically significant difference between the mean degree of uncertainty between the scenes [*DOCS2*] and [*TRAP1*], $t(34) = .63$, $p = .53$.

These findings are similar to the results obtained from Experiment 1 analysing interactive narrative (Section 6.3.5) and may suggest that in both non-interactive and interactive stories, intensity of suspense is tightly linked to the level of uncertainty the story presents.

6.4.6 Individual factors and suspense perception

In order to analyse if the degree of perceived suspense depends on some individual characteristics of the experiment participants such as their gender, age, or gaming expertise, additional tests were performed.

Gender factor

To test a possible influence of the audience members' gender on their suspense perception, a one-way between subjects ANOVA was used.

The results of the test showed that there was no statistically significant difference in the mean degree of suspense reported by male ($n = 15$) and female ($n = 20$) participants of the experiment ($F(1, 33) = 2.52$, $p = .12$).

However, during the second and third readings, male and female audience members reported significantly different degrees of suspense: ($F(1, 33) = 9.04$, $p = .005$) and ($F(1, 33) = 6.68$, $p = .014$), correspondingly. The female participants

perceived the story as more suspenseful than the male participants reported (Figure 31).

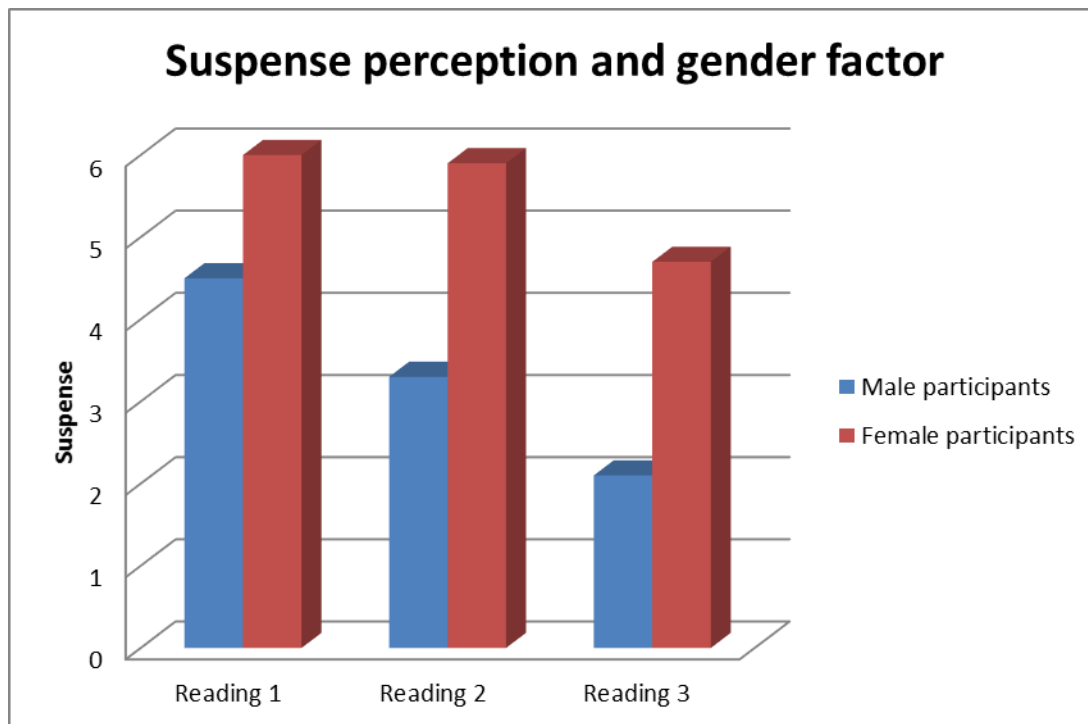


Figure 31 Experiment 2: The role of the audience's gender in suspense perception in the non-interactive narrative.

Thus, these findings may suggest that in non-interactive narrative, male audience members perceive suspense less strongly than females do.

These findings differ from those obtained from Experiment 1 (two interactive readings) analysed earlier in this chapter (Section 6.3.6) where both male and female participants of the experiment statistically perceived the same level of suspense. In this relation, it is possible to make an assumption that interactive environment of the story makes the gender difference vanish as the audience members become immersed in the story.

Age factor

The majority of the experiment participants (57.1%) were 18-21 year old, 28% were 22-29 year old, and the other 14.9% were 30-40 year old.

The results obtained from a one-way between subjects ANOVA indicated that there was no statistically significant difference ($p > .05$) in the degree of suspense

perceived by audience members from each different age groups during the three readings.

A similar finding was also obtained from the analysis of interactive story reading in Experiment 1 (Section 6.3.6) suggesting that the age difference of the audience does not influence their emotional response to the story despite its level of interactivity.

Gaming expertise

The results of the ANOVA test performed for each of the readings also revealed no statistically significant difference ($p > .05$) in the mean degree of reported suspense between the audience members who played video games on a regular basis and those who did not play them at all.

Thus, the gaming expertise of the audience members did not influence the degree of suspense they experienced in the non-interactive story. The same findings were obtained from the analysis of the interactive story reading in Experiment 1.

6.4.7 Conclusions

Analysis of suspense perception in non-interactive stories indicates several findings.

First, during the initial reading, all the scenes in the story episode were perceived as statistically equally suspenseful, which can be explained by their unfamiliarity to the audience. With repeated encounters, however, the final scene - either [*DOCS*] during the second reading or [*TRAP*] during the third reading - generated statistically significantly more suspense than the other scenes. It was also empirically confirmed that with repeated encounters, the scenes that are presented to the audience in exactly the same way repeatedly become less suspenseful, whereas the scenes with the new information keep generating a higher degree of suspense. Modified scenes (like [*TRAP 3*]) or newly presented scenes (like [*DOCS2*]) also present more uncertainty, which, as the results of the tests show, directly influence the level of suspense during rereading.

In comparison to the findings obtained from Experiment 1 analysing interactive story reading, it becomes clear that both non-interactive and interactive modes of story representation lead to the same changes in suspense perception with repeated encounters. Therefore, it is possible to conclude that interactivity or the choice offered

to the audience is not an important influential factor for keeping a high degree of suspense. The same result can be achieved in a non-interactive story simulating choice and letting the audience follow a completely different or modified story path.

Second, the results of the tests suggest that the desirable outcome in the scene [*DOCS*] presented to the audience during the second reading and the non-desirable one in the scene [*TRAP*] during the third reading were perceived by the audience as statistically equally suspenseful. This finding leads to the conclusion that in order for suspense to exist, the scene does not need to present an obvious danger – a desirable resolution of a story episode can be the same suspenseful as a non-desirable one.

Third, as was also discovered during Experiment 1, the degree of suspense perceived in the story directly influences story enjoyment only during the first reading. With repeated encounters, however, there is no evidence that more suspense makes the story more enjoyable to the audience.

Fourth, during the first reading, the degree of suspense in non-interactive narrative does not depend on the perspective from which the story is experienced by the audience. However, during the second and third exposure to the non-interactive story, those audience members who reported their emotional state from the perspective of *Bond*, experienced a statistically significantly higher degree of suspense than those who perceived the story as a *Reader*.

As was mentioned earlier (Section 6.3.7), in the interactive narrative, the degree of suspense was not influenced by the audience's perspective, during either the first or the second exposure to the story. This finding may suggest that interactive environment of the story is responsible for blurring the difference between external and internal perspective, from which the story is perceived.

Fifth, the results of the tests suggest that male and female experiment participants experienced statistically significantly different degree of suspense in the story when they were exposed to it during the second and third times – for the male participants the story was less suspenseful than for the female. These findings differ from those obtained during Experiment 1 which showed no statistically significant difference in the degree of suspense reported by male and female audience members. Thus, it is possible to suggest that as with the reader's perspective described above, interactivity blurs the gender difference.

6.5 Experiment 3: Semi-interactive story with three readings

The participants of this experiment were 36 students and staff members of Victoria University of Wellington: 21 (58%) of them were female and 24 (66.7%) were 18-21 years old.

As in the previous experiment, the participants were asked to experience themselves as James Bond and complete the task assigned to their avatar while reading the story. In total, there were three readings offered to the audience. The first reading was non-interactive and was presented to the experiment participants exactly the same way as for Experiment 2 (Section 6.4).

The second reading presented some choice. When the story path reached the scene [*STEPS*], the audience has to make a choice for their character regarding where to hide. One of the options was to follow the same path as it was presented during the first reading, i.e. hide behind the red door, do not use the flashlight, and get caught in the body trap.

Another option offered at the scene [*STEPS*] was to hide behind the nearest wall curtains, then enter the small room, and eventually discover the secret documents (scene [*DOCS*]). This path is referred to as *CD*.

On the third reading, the audience follows the same story path as during the first reading, but this time after entering the room behind the red door, they have a choice of making a decision regarding either to use the flashlight (path *DF*) or not to use it (path *DNF*). Depending on the choice made, the audience either faces the scene [(Caught in) *TRAP*] or the scene [(See) *TRAP*].

Since the participants of this experiment were offered choice during the second and third readings, the story paths they chose have split. The results of the choice are presented below (Figure 32).

Reading 3 \ Reading 2	DF	DNF
CD	20	9
DNF	4	3

Figure 32 Experiment 3: Choice of the story-path (number of the participants) during the second and third readings.

The main purpose of this experiment was to test how interactivity influences suspense perception in the story and to compare these findings with those obtained from Experiment 2. Thus, in some tests presented in the following subsections, the size of the sample in this experiment was limited to 20 participants – those participants who by choice, experienced exactly the same story readings as the participants of Experiment 2.

6.5.1 Suspense perception in different scenes

In order to compare the level of suspense generated in different scenes of the story episode, a paired samples t-test was conducted.

The results of the test for the first reading suggested that there was no statistically significant difference ($p > .05$) in the degree of suspense perceived in the scenes [BATS1], [STEPS1], or [TRAP1]. This finding is consistent with those obtained from Experiments 1 and 2.

In order to be able to compare the results of the data analysis obtained from Experiment 3 with those received from Experiment 2, where the audience followed the story paths *DNF-CD-DF*, the data in Experiment 3 was sampled around the same story paths.

Since the second reading in this experiment was interactive, only 29 participants chose to follow the path *CD* and only 20 of them experienced the story paths *DNF-CD-DF*. For this group of 20, the paired samples t-test indicated no statistically significant difference ($p > .05$) between the level of suspense perceived in different scenes during either the first or the second readings.

As for the third reading, the results of the paired samples t-test showed a significantly higher level of suspense reported in the final scene [TRAP3] ($M = 4.6$, $SD = 2.54$) than in the scene [STEPS3] ($M = 2.4$, $SD = 2.4$), $t(19) = 3.80$, $p = .001$ or the scene [BATS3] ($M = 2.3$, $SD = 2.29$), $t(19) = 4.16$, $p = .001$. There was no statistically significant difference found between the degrees of suspense experienced in the scenes [BATS3] and [STEPS3]. Thus, during the third reading, the scene [TRAP] was perceived as the most suspenseful.

These results suggest that only the third reading presented a difference in the degree of suspense among the scenes of the story episode. The first and the second readings generated statistically equal degrees of suspense in each of the scenes during each of the story readings. These results are no different from those obtained from

Experiment 2¹⁵ suggesting that the interactive and non-interactive environment of the story does not influence the degree of suspense perceived by the audience in each of the scenes during each of the readings. In order to analyse how interactivity might influence suspense perception with repeated encounters, further tests were conducted (§6.5.2).

Despite the offered choice, there were 9 experiment participants who during the third reading chose the same story path *DNF* as they were offered during the first reading – i.e. they chose not to use a flashlight and thus, their character Bond got trapped in the body trap again.

The results of the paired samples t-test indicate that this group of the audience experienced no statistically significant difference ($p > .05$) in the degree of suspense generated in different scenes of the story-path during the third reading – the degree of suspense in the final scene [*TRAP3*] ($M = 3.11$, $SD = 3.10$) was statistically the same as in the scenes [*BATS3*] ($M = 2.3$, $SD = 2.50$), and the scene [*STEPS3*] ($M = 2.8$, $SD = 3.10$).

Interestingly enough, 7 of the 9 participants reported that they would prefer more choice offered to them in the story. It is possible that after the failure during the first reading and the desirable episode resolution during the second reading, these participants expected something different to happen in the scene [*TRAP*] when they read the story for the third time, and that is why they had taken this path again.

Another group of the experiment participants ($n = 7$) during the second reading chose the path *DNF* instead of *CD* and thus, experienced the same ending of the story episode two times in a row. The results of the paired samples t-test indicate that there was no statistically significant difference ($p > .05$) in the degree of suspense these members of the audience perceived in different scenes during the second reading: [*BATS*] ($M = 5.4$, $SD = 1.90$), [*STEPS*] ($M = 5.6$, $SD = 2.93$), and [*TRAP*] ($M = 6.4$, $SD = 5.57$).

¹⁵ The only difference was the lower degree of suspense in the scene [*BATS2*] in comparison to the level of suspense in other scenes of the story episode reported during the second reading in Experiment 2. In Experiment 3, all the scenes during the second reading generated statistically equal degree of suspense.

These findings may suggest that in order to increase the degree of suspense with repeated encounters, previously taken choices should be modified, completely removed, or substituted with a new option.

6.5.2 Suspense perception between the story readings

To test how the degree of suspense changes with rereading, a repeated measures ANOVA was performed. The sample data was limited to the answers obtained from the 20 participants whose chosen story paths were identical to those proposed in Experiment 2.

The results of repeated measures ANOVA with a Greenhouse-Geisser correction suggested that there was no statistically significant ($p > .05$) difference found in the degree of suspense reported in the different episodes. However, there was a statistically significant effect of rereading on the experienced degree of suspense: $F(2, 33) = 17.9, p < .001$. The interaction between the degree of suspense generated by different scenes of the story episode and repeated encounters was also statistically significant $F(2, 47) = 4.31, p = .013$.

		<i>Bats</i>	<i>Steps</i>	<i>Trap/Docs</i>
Reading 1	Mean	6.1	6.3	5.9
	<i>Std Dev</i>	2.30	2.56	2.76
Reading 2	Mean	4.4	5.0	5.1
	<i>Std Dev</i>	2.85	3.05	2.99
Reading 3	Mean	2.3	2.4	4.6
	<i>Std Dev</i>	2.29	2.41	2.54

Table 12 Experiment 3: Change of the degree of suspense between scenes and with rereading.

To analyse how the degree of suspense reported in each of the scenes changed with rereading, a paired samples t-tests were performed. The results of the test showed that there was a statistically significant drop in the degree of suspense perceived in the scene [BATS]. This scene was the most suspenseful during the first reading – [BATS1] ($M = 6.1, SD = 2.3$) generating significantly more suspense than the scenes [BATS2] ($M = 4.4, SD = 2.9$); $t(19) = 2.26, p = .36$ and [BATS3] ($M = 2.3, SD = 2.3$);

$t(19) = 6.6, p < .001$. The scene [BATS2] also generated more suspense than the scene [BATS3]; $t(19) = 3.2, p = .004$.

As for the scene [STEPS], there was no statistically significant ($p > .05$) difference discovered between the first reading [STEPS1] ($M = 6.3, SD = 2.6$) and the second reading [STEPS2]. ($M = 5, SD = 3.1$). However, during the third reading, the scene [STEPS3] ($M = 2.4, SD = 2.4$), generated significantly less suspense than the scene [STEPS1]; $t(19) = -7, p < .001$ and [STEPS2]; $t(19) = -3.3, p = .004$.

The results of the test also indicated that there was no statistically significant ($p > .05$) difference in the degree of suspense generated in the final episodes of the second and the third readings: scenes [DOCS2] ($M = 5.1, SD = 3$) and [TRAP3] ($M = 4.6, SD = 2.5$), correspondingly. During the first reading though, the scene [TRAP1] ($M = 5.9, SD = 2.8$) generated significantly more suspense than the scene [TRAP3]; $t(19) = 2.7, p = .0013$. However, the scenes [TRAP1] and [DOCS2] were perceived by the audience as statistically equally suspenseful ($p > .05$) (Figure 33).

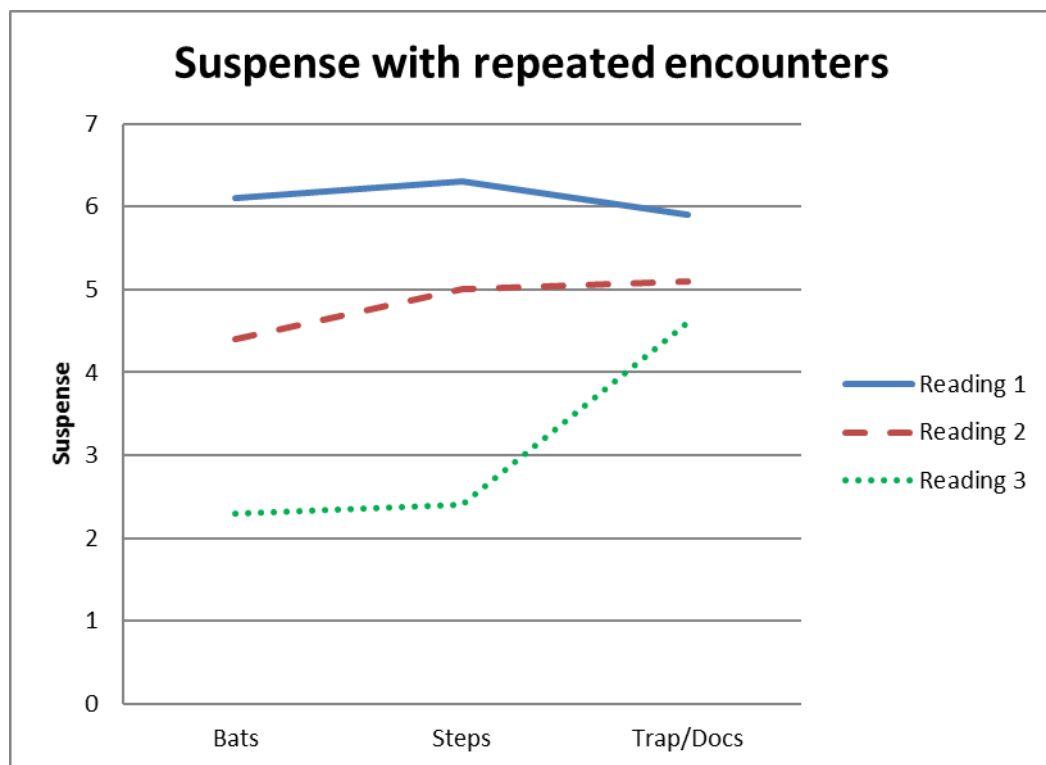


Figure 33 Experiment 3: Change of the degree of suspense with repeated encounters.

Thus, based on the results of the data analysis presented above, it is possible to conclude that with repeated encounters, the degree of suspense tends to drop in the

non-interactive scenes (i.e. [BATS]), and that repeated encounters presented to the audience in exactly the same way, by their nature, do not present strong fear-hope balancing necessary for creating suspense. In the case when the scene presents a higher threat to the protagonist (i.e. [STEPS]), it takes longer - more than two sequential story readings - for the degree of suspense to drop. As for the final scene of the episode, [TRAP], presenting an undesirable outcome during the first reading and [DOCS] leading to the desirable resolution during the second reading, it was perceived as statistically equally suspenseful.

The scene [STEPS], which was also non-interactive, became less suspenseful only during the third reading. The first non-interactive reading, and the second interactive one, both generated statistically equal degree of suspense in this scene. It is possible to suggest that such consistency was due to the fact that the scene [STEPS] by design presented more danger to the story's protagonist and preceded the climax of the story episode. The drop of suspense in this scene during the third reading could occur due to the fact that the audience had already experienced both the desirable and non-desirable outcome of the suspenseful episode and thus did not anticipate new events in this scene during the third reading.

As for the final scenes of the story episode, [TRAP 1], [DOCS 2], and [TRAP 3], the reduction of suspense was noticed only during the third reading when Bond saw the trap, which caught him during the first reading. Apparently, as was confirmed by the results from the Experiments 1 and 2, "seeing the trap" corresponded with low direct danger to the story's protagonist and was perceived as less suspenseful than the actual trapping during the first reading.

For those nine experiment participants who chose the same story path on the third reading as they were offered during the first one, the paired samples t-test indicated statistically a significant reduction of suspense with rereading in the scene [BATS]. The scene [BATS1] ($M = 4.8$, $SD = 2.1$) generated significantly more suspense than the scene [BATS2] ($M = 3.6$, $SD = 2.7$); $t(8) = 3.05$, $p = 0.016$ and the scene [BATS3] ($M = 2.3$, $SD = 2.5$); $t(8) = 2.8$, $p = .023$. However, there was no statistically significant ($p > .05$) difference between the second and third readings in terms of the degree of suspense generated during each reading.

The same pattern was discovered for the scene [STEPS]: the scene [STEPS1] ($M = 6.9$, $SD = 2.1$) was perceived as significantly more suspenseful than the scene [STEPS2] ($M = 4.8$, $SD = 2.7$); $t(8) = 3.46$, $p = 0.009$ and the scene [STEPS3] ($M = 2.8$,

$SD = 3.2$); $t(8) = 4.55$, $p = 0.02$. The scenes [STEPS2] and [STEPS3] were perceived by the audience as statistically equally suspenseful ($p > .05$).

The results of the test also suggest that the final scene of the episode – [TRAP1] ($M = 7$, $SD = 2.5$) during the first reading and [DOCS2] ($M = 6.1$, $SD = 2.1$) during the second reading with $p > .05$ generated no significantly different degree of suspense. However, during the third reading, the final scene [TRAP3] ($M = 3.1$, $SD = 3.1$) was perceived as significantly less suspenseful as it was on the first reading; $t(8) = -3.42$, $p = .09$. It was also less suspense than the final scene [DOCS] on the second reading presenting the desirable resolution: $t(8) = -2.75$, $p = .025$.

These findings are similar to those obtained from Experiment 2 and allow the conclusion that the degree of suspense in the story episode tends to drop with repeated encounters if the scenes are already familiar to the audience. On the other hand, if with repeated encounters the story unfolds in a new direction, the audience experience higher degree of suspense in such new scenes than in the known ones.

6.5.3 Suspense and story enjoyment

When the first reading was completed, the audience members were asked how satisfied they were with the amount of choice offered. 25 of the participants were interested in more choice whereas 10 were satisfied with the non-interactive mode of the story. To find out if the choice satisfaction contributed to story enjoyment, a one way ANOVA was performed. The results of the test suggested that with $p > .05$, there was no statistically significant difference in the level of enjoyment obtained by either of the groups during the first reading of the story episode.

After the first reading, the experiment participants reported their overall enjoyment of the story. In order to find out how their level of enjoyment corresponded with the degree of suspense they experienced during the reading, one-way ANOVA was performed. The results of the test indicated a statistically significant effect of the level of suspense on the level of story enjoyment $F(7, 28) = 7.37$, $p < .001$. The two variables were also strongly correlated: $r(36) = .77$, $p < .01$.

Since the first reading in Experiment 3 was non-interactive, these findings support the results obtained from Experiment 2 – when a non-interactive story is read for the first time, more suspense means a higher degree of enjoyment (Figure 34).



Figure 34 Experiment 3: During the first reading, a higher degree of suspense leads to greater story enjoyment.

After all three readings were completed, the experiment participants were asked to indicate which of the readings they enjoyed the most. Then, a set of repeated measures ANOVA was conducted to test a possible connections between the degree of suspense obtained during each of the readings and the resulting story enjoyment.

The first analysis was performed on the data obtained from the group of 20 participants who had the same story reading experience as the participants of Experiment 2 (Table 13).

The results of the tests of within-subjects effects (Greenhouse-Geisser) suggested that the relation between story enjoyment and the degree of suspense generated in different scenes - as well as during each of the three readings - was not statistically significant ($p > .05$). Interaction between all the three variables – reading, scene, and story enjoyment – also did not influence the degree of suspense perceived by the audience.

	<i>Highest enjoyment</i> ¹⁶				
			First time (N=6)	Second time (N=8)	Never (N=4)
<i>Suspense</i>	Reading 1	Mean	5.7	6.1	5.3
		<i>Std Dev</i>	3.01	1.89	2.63
	Reading 2	Mean	5.5	5.0	3.5
		<i>Std Dev</i>	2.51	2.00	3.10
	Reading 3	Mean	2.3	3.4	2.5
		<i>Std Dev</i>	1.63	2.45	1.92

Table 13 Experiment 3: Degree of suspense and the highest story enjoyment.

The other repeated measures ANOVA was conducted to study a possible connection between the degree of suspense perceived during a story reading and the enjoyment obtained by those experiment participants whose first and third readings presented the same story path ($n = 9$). The results of a repeated measures ANOVA with a Greenhouse-Geisser correction indicated no statistically significant ($p = .05$) difference between the degree of suspense experienced during each of the three readings and their ultimate story enjoyment. Those audience members who enjoyed the first reading the most ($n = 4$) and those who preferred the second reading ($n = 5$) reported statistically no different degree of suspense.

Thus, the results of this test suggest that when audience members experience repeated exposure to the story, the enjoyment they obtain from it does not depend on the degree of suspense.

6.5.4 Reader's perspective and level of suspense

To analyse if the perspective from which the story was read influenced the degree of suspense perceived by the audience members, and to compare the results with findings obtained from the analysis of this condition in Experiment 2, a one-way ANOVA was performed. The test only considered the sample of the 20 participants who followed the story path *DNF-CD-DF*.

¹⁶ Due to the small number of samples (one person for each condition), the highest enjoyment reported to be obtained during the third reading and every reading, was not considered in the test.

As in the previous experiments, the participants were asked to indicate the perspective from which they measured their emotional response to the story during each of the readings: *Reader*, *Bond*, or *Difficult to tell (Undefined)*. Since only two of the participants reported their perspective as *Undefined*, their answers were excluded from the analysis due to the small sample size and low reliability of the result. The degrees of suspense perceived from the perspectives of *Reader* and *Bond* are presented in the table below (Table 14).

		<i>Reader</i>	<i>Bond</i>
Reading 1	Mean	4.92	7.33
	<i>Std Dev</i>	2.42	1.00
	<i>N</i>	12	6
Reading 2	Mean	4.17	6.50
	<i>Std Dev</i>	2.48	1.38
	<i>N</i>	12	6
Reading 3	Mean	2.38	4.60
	<i>Std Dev</i>	1.01	2.40
	<i>N</i>	13	6

Table 14 Experiment 3: Degree of suspense in relation to the readers' perspective.

The results of one-way ANOVA suggested that with $p > .05$ there was no statistically significant difference in the degree of suspense perceived from each of the perspective during the first, second, and third readings.

This finding regarding the first non-interactive reading is consistent with the results obtained from the first reading in Experiment 2 – the readers' perspective did not influence the degree of perceived suspense in the story.

However, as for the second and third readings, which both were interactive in Experiment 3 and non-interactive in Experiment 2, the findings suggested that with repeated encounters, interactivity seems to contribute to blurring the boundaries between the external perspective of a story reader and internal perspective of a story character, whereas non-interactive mode of the story keeps these two perspectives separate.

Thus, in the non-interactive story, the audience members who experienced the story from the perspective of James Bond tended to perceive it as more suspenseful

than those who experienced the story as “Readers”. In the interactive story, though, there was no statistically significant difference in the degree of suspense perceived from these two perspectives.

To test if the readers’ perspectives contribute to the story enjoyment, a one-way ANOVA was performed analysing the complete set of data obtained from all the participants of the experiment. The test aimed to explore a possible relationship between the degree in the level of story enjoyment and readers’ perspective both reported after the first reading was completed. All three groups of the audience reported no statistically significantly different degree of obtained enjoyment: *Reader* ($M = 4.61$, $SD = 2.41$); *Bond* ($M = 5.67$, $SD = 2.40$); and *Undefined* ($M = 5.5$, $SD = 2.10$), $F(2, 33) = .75$; $p = .48$.

Therefore, the results of the test indicated that not only did the readers’ perspective remained uninfluenced, the degree of suspense perceived in the story, it also had no statistically significant impact on the story enjoyment.

6.5.5 Uncertainty and suspense

As in Experiment 2, the degree of uncertainty was measured in the final scene of the episode during each of the story readings. In order to find out how suspense and uncertainty correspond with each other, a one-way ANOVA was used.

The results of the test suggested that during the first reading ($n = 36$), more uncertainty in the episode [*TRAP*] corresponded with a significantly higher degree of suspense ($F(9, 26) = 4.66$, $p = .001$).

During the second reading ($n = 29$), in the scene [*DOCS*] there was a statistically significant difference between the group means ($F(9, 19) = 2.75$, $p = .031$). Thus, more uncertainty during the second reading also corresponded with a greater degree of experienced suspense.

Despite alternative paths offered for choice during the second reading, some of the audience members ($n = 7$) deliberately chose to follow the same path as they did during the first reading. The result of a one-way ANOVA performed for this group found no statistically significant difference between the group means ($F(4, 2) = 3.54$, $p = .23$), suggesting that the degree of uncertainty and suspense did not influence each other.

The same tendency was discovered regarding the final episode [*TRAP*] of the third reading when some of the audience members ($n = 12$) chose the path *DNF*, which they were already familiar with through the first reading. According to the result of the one-way ANOVA, the higher degree of suspense did not correspond with greater uncertainty: $F(6, 5) = .39, p = .86$.

However, for the rest of the experiment, participants ($n = 23$) who took advantage of the offered choice and experienced the path *DF* during the third reading, experienced a higher degree of uncertainty related to the increased degree of suspense. In this episode, the audience has a chance to see the trap which caught Bond during the first reading. However, seeing this does not help them to escape the guard. This situation results in an increased level of uncertainty as well as a higher degree of suspense.

Therefore, as it was also found from the data analysis performed for the Experiments 1 and 2, the greater degree of uncertainty experienced by the audience leads to a higher degree of suspense in the story.

6.5.6 Individual factors and suspense perception

A set of a one-way ANOVA was conducted to analyse the possible impact that various individual factors such as gender, age, and gaming expertise of the experiment participants might have on the degree of suspense perceived during each of the readings. The results of the tests are presented below.

Gender factor

The results of a one-way ANOVA indicated a statistically significant difference in the degree of suspense perceived by male and female audience members during the first reading. The level of suspense experienced by the male participants ($M = 4.20, SD = 2.78$) was statistically significantly different from the degree of suspense reported by the female participants ($M = 6.39, SD = 1.71$), $F(1, 34) = 5.93, p = .02$.

However, during the second and third readings, there was no statistically significant ($p > .05$) difference discovered between the degree of suspense reported by male and female participants.

In order to be able to compare the role of choice offered during the second and third readings, a one-way ANOVA was separately performed for the data obtained from the 20 participants who chose the path *DNF-CD-DF*. The results suggested that a

statistically significant difference in the degree of suspense perceived by the male ($n = 8$) and female ($n = 12$) participants was also only noticed during the first, non-interactive, reading. The male participants ($M = 3.75$, $SD = 2.97$) reported a significantly lower level of suspense than the female participants ($M = 6.5$, $SD = 1.79$), $F(1, 18) = 5.83$, $p = .027$. However, during the second and third readings, with $p > .05$, there was no statistically significant difference found in the degree of suspense experienced by male and female audience members.

These findings suggest that the choice offered to the audience during the second and third readings eliminated the difference in suspense perception between the male and female participants. This tendency supports the results obtained from Experiment 2 where all the three readings presented a non-interactive story path and female participants tended to perceive suspense more strongly stronger than the male participants did.

Age factor

Most of the experiment participants (57.1%) were 18-21 years old; 28% were 22-29 years old, and the others (14.3%) were 30-40 years old.

In order to analyse if the degree of suspense depended on the age of the experiment participants, a one-way ANOVA was conducted. The results of the test found no statistically significant ($p > .05$) difference in the degree of suspense reported during each of the readings by the experiment participants of the different age groups.

The same findings were obtained from a one-way between subjects ANOVA performed for the data collected from those participants who chose the path *DNF-CD-DF*. There was no statistically significant difference ($p > .05$) in the degree of suspense perceived by the male and female readers during each of the three readings.

Thus, as well as in non-interactive form of the narrative, in the interactive story the degree of suspense does not depend on the readers' age.

Gaming expertise

Based on the results of a one-way ANOVA, there was no statistically significant ($p > .05$) difference found in the degree of suspense reported by the audience members

with different gaming expertise i.e., those, who played video games and those who did not.

The same was true for the group of the 20 participants who experienced the DNF-CD-DN story path.

Since in Experiment 2 the analysis of gaming expertise as a possible influential factor for suspense perception also did not find any connection between the gaming expertise and degree of suspense experienced by the audience, it is possible to suggest that interactive and non-interactive stories are perceived by gamers and non-gamers statistically equally.

6.5.7 Conclusions

From the above analysis, examining how suspense was perceived by the participants of Experiment 3, where the first reading was non-interactive and the other two depended on the audience's choice, it is possible to make the following conclusions.

First, there was no statistically significant difference found between the degree of suspense generated in each of the scenes, [BATS], [STEPS], [TRAP]/ [DOCS] during the first, non-interactive, reading. This finding is consistent with the one obtained from Experiment 2.

The second reading in Experiment 3 – interactive with the desirable outcome – was also statistically equally suspenseful in all the scenes. This result differs from the results obtained from Experiment 2 where the second reading presented the same story path as Experiment 3 but in a non-interactive mode and where the final scene [DOCS] was statistically significantly more suspenseful than the other scenes of the episode. It is possible to suggest that equality of the degree of suspense between the scenes during the second reading of the story in Experiment 3 occurred due to the shift from the non-interactive mode of the story during the first reading to the interactive mode during the second reading. However, in order to make a stronger claim in this relation, further tests would be required to examine in greater detail how shifting from a cut-scene to choice and backwards might influence the perception of suspense in video games and interactive narrative with repeated encounters. This would make an interesting topic to explore in future work.

During the third reading in Experiment 3, the scene [TRAP3] was significantly more suspenseful than the scenes [BATS3] and [STEPS3]. These findings are

consistent with the results obtained from Experiments 1 and 2 suggesting that initially, when the audience members are exposed to the story for the first time, they perceive all the scenes of the story episode as statistically equally suspenseful. However, with repeated encounters, the scenes that were offered to the audience in exactly the same way over and over become less suspenseful in comparison to the scene presenting some new information. This conclusion, which confirms the expectation presented in the Hypothesis 2, is also supported by the fact that with repeated encounters, the drop of suspense was recorded in the scenes [BATS] and [STEPS]; however the final scene, either [TRAP] or [DOCS] presented a higher degree of suspense even with multiple exposures to the story.

As the results of the data analysis in Experiment 3 suggest, the higher degree of suspense in the story is linked to the greater level of uncertainty the audience experiences. Therefore, as was initially suggested by the Hypothesis 3, by presenting the audience with an absolutely new or modified scene on repeated encounters, it is possible to generate more uncertainty and thus keep the audience's level of suspense higher.

The second finding confirms the results obtained from Experiments 1 and 2 – story enjoyment strongly depends on the degree of suspense the story presents only when the audience are exposed to it for the first time. With repeated encounters, however, there is no statistically sound evidence that the stronger suspense the audience members perceive in the story, the greater enjoyment they will get. This finding supports Hypothesis 4 presented at the beginning of this chapter.

Third, the results of the data analysis suggest that the perspective from which the audience perceive the story (an external observer or story character) does not influence the degree of suspense perceived in the interactive narrative. These findings are consistent with the results obtained from Experiment 1. In the non-interactive narrative, however, as was confirmed by the results in Experiment 2, external observers do tend to perceive a story episode as less suspenseful in comparison to those audience members who identify themselves with the story character.

This difference is quite important and may suggest that the interactive environment of the story blurs the external and internal perspective from which the story can be perceived.

Fourth, the interactive environment of the story also eliminates a difference in suspense perception between male and female audience members – both groups

perceive suspense statistically equally when the story is interactive. However, when the choice is withdrawn from the story, the male audience members perceive it as more suspenseful than the female.

This is another interesting finding highlighting a difference in emotional response to the stories presented in the interactive and non-interactive modes.

Finally, the results of the data analysis performed in Experiment 3 show no statistically significant difference in the degree of suspense reported by the experiment participants of different age and with different gaming expertise suggesting that these factors do not influence suspense perception in the story.

6.6 The role of interactivity in suspense perception

As it can be concluded from the results of the tests performed in the Experiments 1, 2, and 3, each of which presented a different degree of interactivity for the story reading, there is a difference between how the emotional state of suspense is perceived in non-interactive and interactive stories.

Some of the differences were blurring of the readers' perspectives and gender factor as an influential criterion for suspense perception in the interactive narrative. They are both clearly distinguished in non-interactive form of narrative.

However, one of the most important questions raised in this thesis – whether or not interactivity (a choice offered to the audience) influences the degree of suspense perceived in the story, has to be answered.

In order to do so, a repeated measures ANOVA was conducted comparing the degree of suspense perceived in each of the scenes and each of the readings by the 35 experiment participants who experienced the story in a non-interactive mode (Experiment 2) as well as the 20 participants whose reading experience was a mixture of non-interactive and interactive representation of the story (Experiment 3). The story mode (Experiment 2 or 3) was used as a between-subjects factor in the ANOVA.

The results of the test revealed no statistically significant difference between the mean level of suspense reported in the different scenes in relation to the level of offered interactivity $F(1.7, 87.8) = .34, p = .67$ or between the different readings $F(1.9, 98) = 2.02, p = .14$. The interaction between the mean degree of suspense generated in different scenes and readings in relation to the mode of interactivity offered in the story was also statistically insignificant $F(27.3, 526) = 2.75, p = .05$.

These findings suggest that the degree of suspense the audience perceives in the story does not depend on the level of interactivity the story presents. This finding supports Hypothesis 1 of this thesis: a choice offered in the story does not lead to a reduction in the level of suspense.

6.7 Summary

The results of the data analysis from all the three experiments lead to several conclusions:

In both interactive and non-interactive forms of narrative, the degree of suspense drops with repeated encounters.

By offering a new story path or varying a previously presented scene, it is possible to keep the audience's level of suspense high with repeated encounters.

When the audience has no choice offered in a suspenseful scene, they perceive no more suspense than when they offered some choice in the same scenes. This evidence counters the theories arguing that choice contributes to reduction of suspense.

When the story, either interactive or non-interactive, is experienced only once, a higher level of suspense reported during the reading corresponds with a higher degree of enjoyment obtained from the story. However, there is no such correlation with repeated encounters. Those readers who enjoy the story more do not necessarily experience a greater level of suspense. This suggests that even though suspense is an important element of story enjoyment and helps to keep the audience "hooked" when they experience the story for the first time, a high degree of suspense with repeated encounters does not guarantee that the story is enjoyed more.

In a non-interactive story, the perspective from which the story is seen tends to influence the degree of suspense. Thus, those audience members who identify themselves with a story character also report a higher degree of suspense than those who remain in the position of the external observer of the story. However, in an interactive narrative, both perspectives tend to generate the same degree of suspense. This finding may suggest that interactivity makes the identification boundaries blur in terms of emotional response to the story.

There is a gender difference in the perception of the degree of suspense in non-interactive narrative. Female participants of the experiment reported a higher degree

of suspense than the male participants did. However, in interactive forms of the narrative, there was no statistically significant difference in the degree of suspense perceived by the male and female participants – both groups reported a statistically equal degree of suspense.

Overall, there is a difference in suspense perception in non-interactive and interactive forms of the narrative, as well as how the emotional state of suspense is perceived during the first exposure to the story and with repeated encounters. These differences have to be taken into account when one aims to create an enjoyable interactive story.

Chapter 7

Conclusions

The aim of this dissertation was to contribute to the area of interactive narrative studies through the analysis of suspense perception in interactive stories. The dissertation was primarily focused on exploring the impact of the reader's perspective, choice, and repeated exposure to the same story episode in suspense perception in interactive narrative.

The dissertation presents both theoretical and experimental approaches towards studying the phenomenon of suspense perception in interactive narrative.

Its theoretical part addresses the analysis of immersion in the interactive narrative and how the perspective from which the story is perceived by the audience may contribute to their perception of the emotional state of suspense in the story (See Chapter 3).

Another topic explored in the theoretical part of the dissertation addressed the question of the impact of choice on suspense perception and how to create choice options allowing the audience to experience a higher degree of suspense when the story is read multiple times (See Chapter 4). This section also included practical suggestions regarding choice manipulation, some of which were also tested empirically and proved to be effective (See Chapter 6).

Finally, suspense perception in interactive narrative has been studied empirically and the results revealed several findings, which are presented in the following section.

7.1 Contributions

This dissertation has made several contributions to the area of interactive narrative by answering related research questions (RQ) and empirically testing the hypotheses.

7.1.1 Research questions and answers

Both theoretical and empirical research conducted in this dissertation provided answers to the research questions presented below.

RQ1: How does a level of suspense change with repeated encounters?

In interactive narrative as well as in non-interactive one, repeated exposure to the same story episode results in reducing the degree of suspense. However, by manipulating the choice and presenting the new choice options during rereading, it is possible to keep the audience's level of suspense at a high level when the story is reread.

RQ2: How do choices offered to the audience influence their suspense perception?

The results of the imperial research in this dissertation confirm that a choice itself does not contribute to the reduction of suspense, and those audience members who could influence the story progression by their choices reported statistically equal degree of suspense to those who were not given any choice. This finding discredits the theories arguing that choice contributes to reduction of suspense (Frome & Smuts, 2004).

RQ3: Is the level of suspense reported from a distant observer perspective comparable to the degree of suspense experienced by the audience member immersed in the story and considering himself as a story character?

Through the critical literature analysis and discussion, the conclusion has been made that both perspectives – the reader's and story character's – are compatible in terms of suspense perception.

RQ4: Does a degree of suspense depend on the perspective from which the story is perceived (story character or external observer)?

The results of the experiments conducted in this dissertation demonstrate that, unlike non-interactive narrative, in an interactive story, the perspective from which the story is experienced (i.e., reader or story character) does not influence the degree of perceived suspense. This finding may suggest that interactivity makes the identification boundaries blur in terms of emotional response to the story.

RQ5: Does more suspense necessarily lead to the greater story enjoyment in interactive narratives?

Story enjoyment and suspense are related only when the interactive story is experienced for the first time. However, there is no such correlation with repeated encounters. Those readers who enjoyed the story more during the second and third readings did not necessarily experience a greater level of suspense. This may suggest that even though suspense is an important component of story enjoyment helping to engage the audience in the story when it is experienced for the first time, a higher degree of suspense with repeated encounters does not mean greater enjoyment.

RQ6: How can one keep suspense high with repeated encounters in the interactive narratives?

The analysis of the role of choice in suspense perception resulted in suggestions for several ways to manipulate the choice options offered to the audience members in order to keep their level of suspense high during the first and subsequent exposure to the story.

The manipulation of the choice options proposed by the dissertation is based on the fact that each choice option has to be perceived by the audience as uncertain in regard to the anticipated outcome – in order to keep the audience in suspense, the choice must not to be perceived as either clearly good or bad, but rather present a balance of equally possible outcomes.

With repeated encounters, previous choice options – if they resulted in the positive outcome - should be removed or substituted with a new choice, maintaining the story's uncertainty. In the case when the result of the choice taken during the first

reading was undesirable, it can remain as one of the choice options during the second reading.

The proposed manipulations with choice were tested during the experiments and the results empirically demonstrated that in interactive narrative, the intensity of the suspense is tightly linked to the level of uncertainty the story presents. The readers of the interactive version of the story which presented a non-desirable outcome reported gradually increasing suspense towards the end of the story episode. This finding may indicate, as was suggested by the theoretical analysis, that in order to keep the readers' level of suspense high on rereading, the choice leading to the positive resolution should be removed from the story. Note also that the version of the story with a desirable (i.e., winning) outcome generated the same degree of suspense as the rest of the story on its first reading, so that the choice leading to a desirable outcome should not be removed until it has been experienced.

RQ7: Does greater uncertainty about the story outcome result in the greater degree of suspense?

Results of the empirical tests suggest that the greater degree of uncertainty experienced by the audience leads to a higher degree of suspense in the story. This is true for both non-interactive and interactive narratives

RQ8: Do male and female members of the audience perceive suspense differently in interactive stories?

As the results of the experiments in this thesis demonstrate, unlike non-interactive narrative, there was no gender difference in the degree of suspense reported by male and female readers of the interactive version of the story – both groups reported statistically equal degree of suspense. This suggests that in the interactive environment, the factor of gender is not responsible for the degree of suspense experienced by the audience.

RQ9: Do the age and gaming experience of the audience correlate with the degree of suspense they experience in interactive narratives?

The results of the experiments suggest that in both interactive and non-interactive forms of the narrative, the degree of suspense does not depend on the audience members' age.

The experiments did not find any connection between the gaming expertise and degree of suspense experienced by the audience. Based on this finding, it is possible to suggest that interactive and non-interactive stories are perceived by gamers and non-gamers statistically equally.

7.1.2 Confirmed hypothesis

The results of the experiments conducted in this dissertation confirmed all the hypotheses presented below:

Hypothesis 1. Choice offered to the audience in interactive narrative does not result in a reduction in the degree of suspense perceived by the audience.

Hypothesis 2. In interactive narrative, the degree of suspense drops with repeated encounters, especially in those scenes (both non-interactive and interactive) which are presented to the audience the same way over and over.

Hypothesis 3. By manipulating the choice offered to the audience with repeated encounters, it is possible to keep the degree of perceived suspense relatively high.

Hypothesis 4. In interactive narrative, suspense is an important but not essential component of story enjoyment.

The following section considers the above contributions in relation to the other published research in the area of emotional response to interactive narrative.

7.2 Comparison to related work

This dissertation is one of the few studies in the area of interactive narrative which has empirically studied the audience's perception of suspense in interactive narrative.

Other studies include the research conducted by C. Klimmt, A. Rizzon et al. (Klimmt, Rizzo, et al., 2009), confirming that suspense is a key element for video game enjoyment. However, this study did not address the issue of suspense perception in a video game during repeated exposure. This was one of the topics of exploration in the current dissertation. The result of the empirical research found that, with repeated encounters, the audience's enjoyment does not depend on the level of suspense.

The thesis also confirms the findings from the area of interactive narrative in the context of interactive television (Vorderer, 2000a), arguing that suspense can be triggered in the interactive environment.

Another important contribution of the thesis in relation to the related work is the fact that choice does not make the story less suspenseful as it was argued by some scholars (Frome & Smuts, 2004).

7.3 Limitations

Interactive narrative can often be accompanied by visual and audio effects as well as - in the context of a video game - ludic components, such as scoring the player's performance. These factors were not taken into account in the dissertation even though they are almost certainly highly important and may have additional influence on suspense perception.

Another limitation that should be the focus of further research is addressing the issues of suspense perception in the multi-player online environment, especially in the competitive, multi-user types of media such as multi-user domain (MUD) or massively multiplayer online role-playing games (MMORPGs).

7.4 Future work

The role of suspense generation and perception in an interactive environment is a topic which deserves deep and detailed exploration in future work.

One of the areas of research suggested would be the effect of a video game's environment, presenting both visual and audio stimuli. It would also be interesting to explore this topic in the context of online media such as multi-user video games where suspense can also be influenced by the immediate narrative generated by the players as well as the social competition factor.

The topic of suspense perception and generation is also important to explore in the context of story-generating systems, where creating suspense can become one of the critical components of the story attracting the readers.

This topic would also be interesting to explore in the area of e-learning and narrative healing where emotional response to the story is particularly important.

7.5 Summary

This dissertation has made a valuable contribution to the area exploring emotional response to interactive narrative and especially the role of suspense in story perception. It has been one of the few empirical studies in this area, and the findings it presents can be used to support relevant theories and stimulate further exploration in the area of emotional response to interactive narrative.

Appendix A

Story Script and Questionnaires

The story episode used for the experiments in this thesis was initially created for the interactive story-reading used in Experiment 1. Then, it was modified to satisfy the purposes of Experiment 2 testing the emotional response to non-interactive stories and Experiment 3 altering non-interactive and interactive readings of the story (i.e. semi-interactive story).

The script presented below reflects all the alterations made to the story using the indexes [*Experiment 2*] or [*Experiment 3*] in the appropriate places in the script. The part of the script without the index was used in all of the three experiments.

(1) At nine o'clock you check your pockets to make sure that you have a watch, pencil flashlight, and a small steel file on you. Then you leave your hideout under the bridge. The moon is blazing down and there is total silence except for the occasional sinister chuckle of a gecko from the shrubbery.

You walk through a belt of trees and stand looking up at the great bat-winged castle that towers up to the sky. From several windows, yellow light is shining faintly - this will be your target area.

(2) What are the chances you will survive the mission?

Chances to survive the mission (0...10) (Very low... Very high)

(3) You stride quietly off across the gravel and come without incident to the tiny entrance under the wooden bridge.

You press lightly and the door gives inwards. It is dark inside.

(4) You take out the pencil flashlight from the pocket and push the door farther, probing the darkness ahead - nothing but velvety blackness.

You close the door softly behind you, and sweep the beam of your torch round you. A shadow sweeps across the thin beam of light and another and another, and there is a shrill squeaking from all around you. Bats!

(5) Please rate your levels of:

Suspense (0...10) (Very low... Very high)

Surprise (0...10) (Very low... Very high)

(6) You are in some vast underground cellar where no doubt the food supplies for a small army had once been stored. You pass one or two bulky arched pillars, and now the great cellar seems to narrow because you can just see walls to right and left of you and above you an arched cobwebby roof. Yes, here are the stone steps leading upwards! You climb them softly. Will you count them?

- Yes, count them (Go 7)
- No (Go 8)

(7) There were exactly twenty steps before you came to the entrance, a wide double door with no lock on your side. You softly push the door open and find yourself in a long stone corridor that slopes on upwards. At the end is a modern door and beneath it shows a thin strip of light.

(8) You come to the entrance, a wide double door with no lock on your side. You softly push the door open and find yourself in a long stone corridor that slopes on upwards. At the end is a modern door and beneath it shows a thin strip of light.

(9) You walk noiselessly up the incline and then held your breath and put your ear to the keyhole. Dead silence!

You grasp the handle and inch the door open and then, go through and close the door behind you. No doubt, you are in the main hall of the castle. The big entrance door is on your left, and a well-used strip of red carpet stretches away from it and across the fifty feet of hall into the shadows that are not reached by the single large oil lamp over the entrance. The hall is not embellished in any way, except for the strip of carpet, and its roof is a maze of longitudinal and cross beams interspersed with latticed bamboo over the same rough plaster-work as covered the walls. There is still the same castle-smell of cold stone.

Your quarry is somewhere straight ahead.

(10) You keep away from the carpet and hug the shadows of the walls.

The next door, obviously the entrance to one of the public rooms, has a simple latch to it. You bend and put your eye to the keyhole. Another dimly interior. No sound. You ease up the latch, inch the door ajar and then open, and go through. It is a second vast chamber, but this time, one of baronial splendour - the main reception room. Probably here Blofeld receives visitors.

Between tall red curtains, edged with gold, fine set-pieces of armour and weapons hung on the white plaster walls, and there is much heavy antique furniture arranged in conventional groupings on a vast central carpet in royal blue. The rest of the floor is of highly polished boards, which reflect back the lights from two great oil lanterns that hang from the high, timbered roof, similar to that of the entrance hall, but here with the main beams decorated in zigzag motif of dark red.

(11) Suddenly between the tall red curtains, you see a small door. Probably it leads to the private apartments. You bend to listen, but immediately leap looking for a place of concealment. Steps are approaching!

(12) Please rate your levels of:

Suspense (0...10) (Very low... Very high)

Surprise (0...10) (Very low... Very high)

(13) As you turned around looking for a place of concealment, you noticed another, much larger door in dark red, piping out from behind the widely spaced curtains. It is in about fifteen feet far from you.

- Try to reach the red door and hide behind it (Go 14)
- Try to hide behind the nearest tall red curtains (Go 22)

(14) Slipping fast and softly along the curtains on the wall, you reach the red door. You push it open and find yourself in a dark room. Will you use your flash light?

- Yes (Go 15)
- No (Go19)

(15) You take out the pencil flashlight from the pocket and push the door farther, probing the darkness ahead.

The room is totally empty. On the highly-polished wood floor where your first step would have taken you, lies a yawning man-trap, its rusty iron jaws, perhaps a yard across, waiting for you to step on the thin covering of straw that partially concealed it.

(16) Please rate your levels of:

Suspense (0...10) (Very low... Very high)

Surprise (0...10) (Very low... Very high)

Uncertainty (0...10) (Very low... Very high)

(17) You step round the trap and immediately the cunningly sprung boards give out penetrating squeaks and groans. It is what Japanese call a "nightingale floor". Relict of the old days when people wanted to be warned of intruders.

(18) Next moment the door behind you opens to reveal a stocky man in plain clothes holding a gun pointing at you. The guard! Then it all goes black...[The End]

(19) You make a step and through the mist of pain you hear the iron clang as the saw-teeth bit into your right leg below your knee. It must be a body trap!

(20) Please rate your levels of:

Suspense (0...10) (Very low... Very high)

Surprise (0...10) (Very low... Very high)

Uncertainty (0...10) (Very low... Very high)

(21) Next moment the door opens and you see a brown face with slit eyes. The guard! And someone else is holding a torch for him. Then it all goes black... [The End]

(22) You leap for cover behind the nearest curtains. Then the small door opens halfway to show the back of one of the guards. Apparently satisfied, the man backs out, bowed deeply to the interior and closes the door. He passes your place of concealment so close to you that you catch a brief glimpse of a surly, slit-eyed brownish face. Then he walks on across the hall and you hear the click of the far door and then there is silence.

(23) You wait for good five minutes before gently shifting the curtain so that you could see down the room. You are alone and creep back to the small door. This time no sound comes from behind it.

(24) Please rate your levels of:

Fear (0...10) (Very low... Very high)

Suspense (0...10) (Very low... Very high)

Uncertainty (0...10) (Very low... Very high)

(25) You quietly but firmly thrust the door open and leaped through.

A totally empty, totally featureless length of passageway yawn at you. It stretches perhaps twenty feet in front of you. It is dimly lit by a central oil lamp and its floor is of the usual highly polished boards. From behind the facing door at the end comes the

sound of music. Will you go ahead or leave the room to explore the other one behind the red door you noticed earlier?

- Go ahead
- Leave and explore the room behind the red door

(26) You creep softly forward down the centre of the passage. Then...

When it came, there was absolutely no warning. One step across the exact halfway point of the flooring and, like a seesaw, the whole twenty feet of boards swivel noiselessly on some central axis and you, arms and legs flailing and hands scrabbling desperately for a grip, find yourself hurtling down into a black void. A trap! As your body plunges off the end of the inclined platform into space, an alarm bell, triggered by the mechanism of the trap brays hysterically. You have a fractional impression of the platform, relieved of your weight, swinging back into position above you.

(27) Please rate your levels of:

Suspense (0...10) (Very low... Very high)

Surprise (0...10) (Very low... Very high)

Uncertainty (0...10) (Very low... Very high)

(28) Through the mist of pain you realize that you've just failed. Then it all goes black.[The End]

(29) Slipping fast and softly along the curtains on the wall, you reach the red door. You push it open and find yourself in a dark room. Will you use your flash light?

- Yes (Go 15)
- No (Go 19)

(30) The end. This time you failed.

Now, please take a moment to answer the questionnaire on the following page before you have another chance to accomplish the mission.

(31) How much did you like the story?

How much did you like the story?(0...10) (Disliked extremely...Liked very much)

Do you agree that the story was suspenseful?

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

How surprising was the twist in the story? (0...10) (Not surprising at all... Very surprising)

How many choices would you have liked in the story?

- More than I was offered
- Just fine as it was
- Fewer than I was offered

You have rated the level of the emotional states from the position of:

- You as a reader
- James Bond
- It is difficult to tell

(32) Here is your second chance to complete the mission and get away safely.

[The story is presented to the readers the same way as above]

(33) Sorry, but you failed the mission again. Would you like another attempt?

- Yes (Go 34)
- No (Go 35)

(34) Maybe next time. Now, please compare the emotions you experienced during the first and second readings.

(35) Please compare the emotions you experienced during the first and second readings.

(36) When did you enjoy the story more?

- When I read it first time
- When I read it second time
- Both times
- I did not like the story at all

Please compare the degree of suspense you experienced during the first and second readings:

- First reading (0...10) (Didn't feel any... It was very strong)
- Second reading (0...10) (Didn't feel any... It was very strong)

How predictable was the ending of the story during the first and second readings?

- First reading (0...10) (Very predictable... Totally unpredictable)
- Second reading (0...10) (Very predictable... Totally unpredictable)

Was the language of the story difficult to understand?

- No, it was easy
- Somewhat difficult
- Yes, it was difficult

How strong was surprise that you experienced during the first and second readings:

- First reading (0...10) (Didn't feel any... It was very strong)
- Second reading (0...10) (Didn't feel any... It was very strong)

During the second reading, you have rated the level of the emotional states from the position of:

- You as a reader
- James Bond
- It is difficult to tell

(37) Finally, please tell us a bit about yourself answering the following questions.

What is your gender?

- Male
- Female

What is your age (years)?

- 18 - 21
- 22 -29
- 30 - 40
- Over 40

For how long have you been living in an English-speaking country?

- Less than a year
- 1 - 5 years
- More than 5 years

What are your favourite genres of fiction literature? Please check all that apply.

- Action-adventure

- Crime
- Detective
- Fantasy
- Horror
- Mystery
- Romance
- Science fiction
- Western
- Other (please specify)

How often do you play video games?

- Never (Go... If you wish to receive the results)
- Less than Once a Month
- Once a Month
- 2-3 Times a Month
- Once a Week
- 2-3 Times a Week
- Daily

For how long have you been playing video games?

- Less than a year
- 1-5 years
- Over 5 years

What are your favourite genres of video games? Please check all that apply.

- Shooter
- Role-playing
- Action
- Strategy
- Adventure
- Other (please specify)

When choosing a new video game to play, how important is it for you to have an interesting story?

- Not at all Important
- Very Unimportant
- Somewhat Unimportant
- Neither Important nor Unimportant
- Somewhat Important
- Very Important
- Extremely Important

If you wish to receive the results of this study, please indicate the email address where it should be sent to.

Thank you for your time. We would like to reward you with a \$5 Wishbone cafe Voucher.

The voucher can be either posted to you via internal Victoria University mail service or you can come and pick it up at [Address]. Which option do you prefer?

- I want to pick up the voucher. To arrange the time for that, please email me at (please provide your VUW email address only):
- Please post the voucher to the following address in Victoria University:
- I do not want to receive the voucher

Appendix B

Generic information sheet

Participant Information Sheet for a Study of Emotional Response to Stories in Interactive Narrative

Researcher: Iuliia Khrypko: School of ECS, Victoria University of Wellington

I am a PhD student in Engineering and Computer Science at Victoria University of Wellington. In my research, I aim to find out the essential components of interactive stories that make them appealing to readers. As part of my research I am undertaking a project examining emotional response to stories in interactive narrative by its readers.

I am inviting VUW staff and students as well as their friends and family members interested in interactive narrative to participate in this study. The participants will be asked to answer questions describing their perception of the storyline while reading short interactive stories and on completion of the story reading.

The duration of the experiment session will be limited to one hour.

All the collected responses will be used anonymously in my research project. It will not be possible for you to be identified personally. Only grouped responses will be presented in this report. All material collected will be kept confidential. No other person besides me and my supervisors, Dr Peter Andreae (XXX@XXXX, Ph.: (04) 463 XXXX), Dr Stuart Marshall (XXX@XXXX, Ph.: (04) 463 XXXX), and Dr Marc Wilson (XXX@XXXX, Ph.: (04) 463 XXXX) will see the data. The PhD thesis will be submitted to the School of Engineering and Computer Science and deposited in the University Library. It is my intention to publish the results of the project in international journals and present at conferences.

You have the right to withdraw from research participation at any time before the data is analysed (i. e. within ten days after the experiment). Just let me know.

If you have any questions or would like to receive further information about the project, please contact me at XXX@XXXX or (04) 472 XXXX (ext. XXXX). Alternatively, you may contact my supervisors.

Thank you!

Iuliia Khrypko

Appendix C

Generic consent form

Consent to Participation in Research

“Emotional Response to Stories in Interactive Narrative”

I have been given and have understood an explanation of this research project. I have had an opportunity to ask questions and have them answered to my satisfaction. I agree to participate in this research and understand that I may withdraw myself (or any information I have provided) from this project before the data is analysed (i. e. within ten days after the experiment).

I understand that any information I provide will be kept confidential to the researcher and her supervisors. The published results will be kept in an anonymous format, and I will not be personally identifiable from the stored data.

I understand that the results of this research when it is completed will be a part of PhD thesis stored in the University Library. Results of the research can also be published in journals or presented at academic or professional conferences.

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