

The Impact of Narrative choices on Agency in Serious Games

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Graduation Thesis, August 2020

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Abstract—Having a narrative is a key characteristic of many games. As such, it is also a common suggestion in efforts to increase engagement in serious games. However, creating a narrative that allows for player interaction is labor intensive. Therefore, the involvement of an interactive narrative needs to significantly alter the player experience to make it worth the time investment. The focus of this research is whether the manipulation of interactivity on narrative choices can cause a change in the feelings of agency and overall narrative experience of the player. Participants played two versions of a serious game: CHOICE and NO-CHOICE. In the CHOICE condition, the player is able to choose the path in which they want to take the story. In the NO-CHOICE condition, the player is only presented with one option to choose at any moment. Game metrics and surveys were used to assess differences in player experience between conditions. One part of the questionnaire measured perceived aspects of the game quality, while the other measured agency and related constructs using 8 dimensions: Effectance, Presence, Character believability, Identification, Aesthetic pleasantness, Curiosity, Suspense and Enjoyment. A pilot study was conducted to test the viability of the game and methodology. It was followed by a randomized controlled experiment. Results showed a significant difference between groups on Effectance. Therefore, a serious game with the purpose of increasing the players feeling of effectance may benefit from the implementation of narrative choices.

I. INTRODUCTION

One of the main differences between the act of consuming media and playing a game is the ability of the audience to act in the fictional world they are seeing (Aarseth, 1997). Interactivity is a key feature of games and has an effect on multiple aspects of the player experience, such as immersion (Tamborini & Skalski, 2006), presence and engagement (Schoenau-Fog, 2011). For this reason, when thinking about designing a game, it is important to think about the type of interactivity one wants to offer to the player and the feedback mechanisms that the game has to have in place in order to properly react to the player's actions. Interactivity can be implemented into different aspects of games and in different manners. For example, the player may be allowed to: customize their avatar, interact with other characters, choose between weapons, etc. Depending on the game's design, the player may feel as if they are taking meaningful action inside

the game. This feeling is referred to as *agency* (Murray, 1997) and is seen as a fundamental feature of games (Mateas, 2002).

This research focuses on agency, specifically on whether the player's feeling of agency can be enhanced through choices that influence the game's narrative. The focus on the narrative elements of games comes from the fact that most games tend to have a premise or backstory, even if a very simple one (e.g., *Angry Birds* bases their gameplay on the premise of the birds trying to protect their eggs from green-colored pigs). The creation of backstories helps to ground the actions the player makes and gives them a purpose inside the game world. However, justifying gameplay is not the only purpose that a narrative has. The implementation of stories in games also aims to produce narrative engagement, i.e. the feeling of being transported into the story (Green, 2014), for the purpose of enhancing the player's experience. It is no surprise then, that narration plays an important role in serious games since it helps in combining all of the game elements in a coherent manner, making it easier for the players to immerse themselves and more likely to absorb the "serious sense" of the game (Kampa, Haake, & Burelli, 2016; McDaniel, Fiore & Nicholson, 2010).

Since interactivity and narration play an important role in the player's engagement there is an implicit understanding that providing the player choice within the game's narrative is beneficial to their game experience. However, the creation of an interactive story is a time consuming and complex process. Therefore, it only makes sense to design one if it indeed positively impacts the player experience. For that reason, this research aims to measure the impact narrative choices have on the feeling of agency and other related constructs and investigates the following research questions:

- **Research Question 1 (Q1):** Is there a difference in the user's feeling of agency between a game where their choices affect the narrative, versus a game that does not provide those choices in the same narrative?
- **Research Question 2 (Q2):** Do constructs related to agency change between conditions?

The related constructs considered for this research are the following: Presence, Character believability, Identification,

Aesthetic pleasantness and Suspense (Roth, 2016). Moreover, Play Engrossment and Enjoyment (among other factors) were measured using the GUESS questionnaire which was included to assess the game quality and overall game experience.

Interactive stories (IS) provide a suitable field for this investigation since narrative and narrative choices are at the core of the gameplay experience. For the purposes of this research, a narrative was integrated into an already existing serious game with two implementations: a linear progression in which users are not offered choices, and one in which their choices impact the narrative. The two versions of the game were then tested in a randomized controlled trial study in which users' self-reported levels of agency and related constructs were gathered.

This paper first discusses the relevant theoretical frameworks that informed the study. These include the study of agency, interactive stories, branching narratives and the implementation of them in serious games. Following the literature review, the methodology is discussed in detail, including the game used in the experiment, the experiment conditions, and the tools for data collection. This is followed by a brief section containing the hypothesis after which there is a section dedicated to the pilot study, which was conducted to inform the experiment. Finally, the full-scale study is described, followed by the discussion and conclusion.

II. LITERATURE REVIEW

As a concept, *agency* has been defined in multiple ways. It has been characterized as happening when the computational model used to design a game is capable of supporting the actions a player wants to take inside of it (Wardrip-Fruin, Mateas, Dow & Sali, 2009). Agency has also been defined as the combination of opportunities to take action inside the game (material affordance) and reasons the game gives to a player to follow through a certain strategy (motivational affordance) (Mateas, 2002). For the purpose of this research, the definition of agency used is the one proposed by Murray in which agency refers to the feeling of taking meaningful action inside a game (Murray, 1997). This feeling can be given to the player in multiple ways since there are different actions that a player can take inside a game. A player can be given the ability to walk and explore their environment, pick up objects and examine them, choose dialogue options when talking to characters inside the game, etc.; and depending on the consequences seen the player can get the feeling that their actions are meaningful inside the game. In this manner, Murray's definition of agency is similar to the concept of *effectance* used in psychological research which refers to the feeling of having an influence inside the game's world, gained by getting feedback from the game and being able to see the effects of one's action (Klimmt, Hartmann & Frey, 2008). When it comes to effectance it is necessary to make the distinction between local and global effectance. Local effectance refers to the player's action having an immediate effect while global effectance refers to the effect the player's action have on the overall progression of the game. In the case of IS global effectance would be having the player's action

influence the progress of the narrative leading to different endings (Roth & Koenitz, 2016). For the purpose of this research, the concept of effectance is used to measure agency since it provides a definition of what constitutes a meaningful action for the player, i.e. an action that influences the game world in a manner that is visible to the player.

This research is focused on the narrative of games and on whether the player's feeling of agency can increase by being given choices and actions that influence a game's narrative. The decision to focus on this comes from the importance that the creation of a story has for the design of games. In fact, it is common for game manuals to have the creation of narrative as a given step in the designing process (Salen & Zimmerman, 2004) (Schell, 2008). While it is true that some games do not have a narrative (e.g. *Candy Crush*), an overview of most games points that the creation of a story inside games is almost as common as visual elements and their importance is increasingly growing in the field of videogame making (Domsch, 2013). From a game designer perspective what becomes important are the practical ways in which narrative elements have been implemented in games and the impact they have on the player overall game experience.

It has been argued that gameplay and story are at opposite ends of the spectrum since the best way to tell stories is through a linear manner and games have to instead provide a sense of freedom of action which is done through a flexible structure rather than a linear one (Costikyan, 2000) (Juul, 1998). Perhaps this is the reason why when stories started to be implemented into games they were most commonly done through cut-scenes which broke off the gameplay and made the player watch the events unfold in a manner similar to a movie scene. In this way, the story was able to be kept linear throughout the game. As games became more complex, attention has been drawn to ways in which players could influence the narrative of the game (e.g. *Life is Strange*, *Detroit: Become Human*, *Kentucky Route Zero*).

When talking about the story of a game it can be seen as being composed from the events that set up the conditions for the gameplay (diachronic story) and the story that unfolds within the game (synchronic story) (Poole, 2000). Most games tend to have a diachronic story in the form of a backstory or premise (e.g. in *Mario Bros* the kidnapping of Princess Peach is the event that gives a reason behind Mario's journey). Poole (2000) defines this type of story as unchangeable in nature since it happens in the past and this means players can't influence it. For this reason, when discussing interactivity in the narrative elements we have to look at the synchronic story.

When looking at the implementation of narratives in serious game, we see that having a narrative has been shown to serve in increasing the immersion, engagement and motivation of the players as well as heighten the ability of them to retain the material learned (Naul & Liu, 2019). Immersion (i.e. the feeling of losing track of time and feeling detached from the real world) is a concept thought to be formed of other components among which is presence (Naul & Liu, 2019). A quantitative study using Crystal Island (a narrative centered learning environment which teaches people

about microbiology) showed that narrative has a significant impact in the player's feelings of presence (McQuiggan, Rowe, Lee, & Lester, 2008). Another study found that incorporating fantasy narratives influences the motivation of learners (Parker & Lepper, 1992). In the study four different versions of the same educational activity were created (one control condition with no narrative and 3 conditions with fantasy narratives) and students reported more interest in the versions that had fantasy narratives. These findings suggest that narrative has indeed a positively impact on the player experience. The next step in reasoning is to think about how best to implement these narratives. Responsive storytelling has been said to be a feature of effective game narratives. Naul and Liu (2019) conducted a literature review on narrative in serious games and found out that adaptive storytelling could be a factor in encouraging players in the learning environment. This happens because players would feel higher feelings of agency and freedom when they see that their decisions had an effect in the narrative.

When looking at narrative involvement there are two dimensions underlying the process, which are distinguished by how the story is being perceived by the player; the narrative can be generated from the player's action within the game (alterbiography) or be conveyed through scripted moments (scripted narrative) (Calleja, 2009). Alterbiography is commonly seen in sandbox type of games that are designed to give various opportunities to the player to create their own stories. This type of narrative is seen e.g. in *The Sims* where the players decide the fate of their characters and a narrative emerges according to the players' decision to get a job, make friends, marry, go on vacations and so on. When it comes to scripted narrative, it can be presented either in the form of push narrative or pull narrative (Nutt, 2008). The former refers to moments where the narrative is conveyed to the player in an overt way (e.g. using cut-scenes) while the latter relies on the player pulling the narrative elements - that may be scattered throughout the environment (e.g. in the form of tape recordings or letters) - towards them. Alterbiography is often informed or influenced by the scripted narrative.

The narrative involvement that a player can have depends largely on the type of game. For the purpose of this research interactive stories (IS) are chosen as the field of investigation since narrative choice is at the very basis of the experience. In an IS, a person has to be able to influence the narrative and this is done commonly by the player taking the role of a character inside the story. When a player is able to make choices that influence the story, the narrative is no longer linear because the player's decisions causes the narration to separate into multiple paths becoming a branching narrative.

There are multiple ways to implement a narrative that allows for player interaction in a game. To have a narrative that with every player's choice splits into multiple paths would mean writing an ever-growing number of outcomes leading to a combinatorial explosion (Schell, 2008). Implementing and creating such a narrative, if possible at all, would mean investing a lot of time and money into it. For this reason, it is common in the design of games to look at ways in

which players can feel as if they are influencing the story (i.e., effectance) but keep the branching to a minimum and try to converge different paths back into one (closed branches). The method which uses a main argumentative outline with moments of interactivity is called *string of pearls approach* (see Fig. 1): the pearls represent moments in the game where the player is given freedom and control while the string represents the story which follows a main outline. In this type of approach, one may think that the possibility of a player feeling agency is low since the story follows a straightforward path with leads (commonly) to one ending. However, one study found that in the context of an IS there is not a difference between the players reported feelings of agency between a linear story that acknowledges the player choices and a branching narrative (Fendt, Harrison, Ware, Cardona-Rivera & Roberts, 2012). This is important because it tells us that when the player has the ability to choose something in an IS this has to be acknowledged by the game in order for the player to have the feeling of agency. However, these choices do not have to lead necessarily to branching. This suggests that the feelings of having control over something does not need to correspond to the actual player's ability to enact their own will in the game.

Along with effectance there are other dimensions used to evaluate the user experience of IS. Roth (2016) identifies 12 dimensions which are: System usability, Effectance, Flow, Presence, Character believability, Identification, Aesthetic pleasantness, Curiosity, Suspense, User satisfaction, Emotional state, Enjoyment.

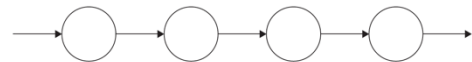


Fig. 1. String of pearls (Schell, 2008)

III. METHODOLOGY

The goal of the present study is to test whether narrative choices have an impact on the player's feeling of agency and other related constructs. To test the hypotheses a serious game was chosen and modified to have a narrative. This section starts by describing the game that was used in the experiment and the narrative that was created for it. Then, the experimental approach, in which two experimental conditions were compared, is explained, along with the tools used for data collection and sampling.

A. The Game

The game used in the study is *Pocket Odyssey*, a mobile game developed for cognitive training, which was adapted to be a browser game for the purposes of this research. The game's premise has the player buying an old boat and embarking on a journey. To advance in the story, the player has to restore the boat, which is done by treasure hunting for coins in a submarine mini-game. The game thus, has three elements: the submarine mini-game, the boat, and the story chapters. These areas are explained further below.

In the submarine mini-game the player directs a submarine through a maze (see Fig. 2). In each level, the player tries to collect a maximum of three coins. The submarine moves at a continuous speed, while the player navigates the maze by directing it up and down by click and dragging the mouse or using the arrow key. All the while they need to avoid obstacles, such as the boundaries of the maze and seaweed. The coins collected on the levels are used to progress the game by unlocking the individual elements on the boat in a linear manner.



Fig. 2. Submarine mini-game

The player’s boat is shown on the main game screen (see Fig. 3). The player returns to this screen whenever they finish a level in the submarine mini-game. The player uses the collected coins to unlock new decoration options on the ship. There is a total of 10 rooms, each of which has a customizable wallpaper and three objects. In total, this means there are 40 steps of progression until the ship has been fully restored. The story is presented to the player at certain pre-defined steps in the progression of the ship. As the story is the primary focus of this study, this is described in more detail in the next section.



Fig. 3. Player’s boat on the main screen

B. The Story

While Pocket Odyssey already existed as a game, the narrative was added for this study. The story passages were written in Twine (Klimas, 2009), which was designed as a tool to aid in the creation of hypertext, by allowing the users to track their work using a story map. Through its tree-like

structure, Twine makes it possible to keep an overview, even in a branching narrative (see Fig. 4). However, the actual implementation of the story inside the game was done using Ink (Inkle, 2011).

The story was created using a string of pearls approach thus, following a simple structure, composed of a main argumentative outline with closed branches. The outcomes following the narrative choices were designed to acknowledge the player’s immediate decision. The story is written from a second person point of view, making the player feel as if they are taking part in the narrated events. The player is put in the shoes of a person who has decided to quit their job, find a boat and travel the seas. The narrative is composed by a sequence of events that happen during the player’s journey. Along for the journey is the player’s guide who, in the story, plays the part of the caretaker of the boat and accompanies the player on their trip. Throughout the story, the player gets to meet him and know his background. The story incorporates themes of family and missing home, making the tone of the experience slightly melancholic. The setting of the story was influenced by the elements already present in the game which are the boat, submarine mini-game and guide while the content was inspired by common themes used in storytelling (see Appendix A for the story passages).

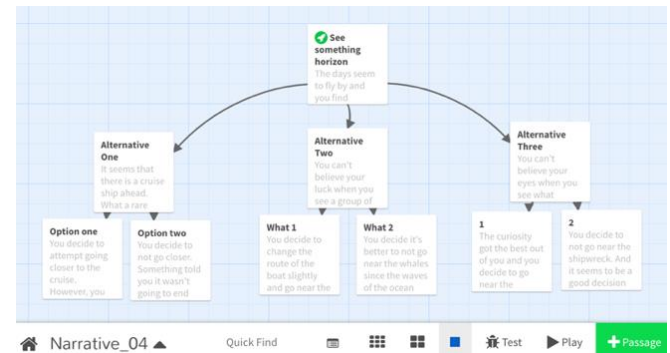


Fig. 4. Twine work environment (Story map of the “See horizon” chapter)

The story has a word count of approx. 5000 words and is divided into 14 chapters (see Fig. 5).

- Prologue: The player must find someone willing to sell them a boat. Once they buy it, they can choose where they want to go. There are three destination options: an island, a port city, or sailing without direction.
- Destination: Different activities present themselves based on the location the player chooses in the prologue. For the island, the player sees actions related to exploring nature. In the port, the player can choose to do city-like activities. Sailing with no direction takes the player to warmer waters, where they can choose between swimming or diving.
- Activity boat: The player is inside the boat and can choose between organizing things inside the boat, sunbathe, or rest.



Fig. 5. Example of a chapter (chapter "Prologue")

- Guide event 1: The guide talks to the player and asks for their help in carrying some supplies. In this conversation, it is revealed that the guide hasn't contacted his family during the trip.
- See horizon: There is something on the horizon. The player can choose what it is and if they want to go closer or not. The player can choose between seeing: a cruise ship, a group of whales, or a shipwreck.
- Finding something: The player finds a box under their bed. They can choose whether it contains a journal or a map, and whether they want to open it or not.
- Guide event 2: The guide asks the player for help again and more of the guide's background is revealed. He tells the player how before going on this trip he and his wife went to sail but got caught up in a storm.
- Nostalgic event: The player feels nostalgic and can choose between seeing a photo album or reading the last letter their family sent. Both objects lead to the player choosing to remember something about their life: their childhood, their first time sailing, or the day they quit their job.
- Fishing event: The player decides to fish and can choose between doing it with a magnet or with a worm. The former option leads to the player finding a piece of a shipwreck. The latter ends with a fish coming up on the surface.
- Guide event 3: Once again, the guide asks for the player's help. The guide tells the story of how, during the storm, he told his wife it was best to split up to secure the things inside the boat.
- Contact family event: The player feels that they should contact their family since a long time has passed. They decide to write a letter.
- Storm: The guide warns the player about an incoming storm and asks for his help. He wants the player to come with him and not split up. During this event, the guide prevents the player from getting hurt.
- Final guide event: The guide talks to the player and explains why he didn't want to split up during the storm. The guide explains how the last time he got caught in a storm, his wife did not want to split up, but he insisted. While they were securing the boat supplies, the waves caused things to fall down and his

wife got hurt as a result. He blames himself and hasn't contacted his wife since. After talking to the player, he realizes he should talk to his wife as soon as the trip is over.

- Resolution: The journey has come to an end. The player decides to go back home.

C. Conditions

An experimental approach with two conditions was used. The independent variable is the level of interactivity the player has inside the game, i.e., their ability to make choices within the narrative. As a result of this change, it is then observed whether the dependent variables, in this case the feeling of agency and related constructs, also change between conditions. In the following discussion, the two conditions are labeled as CHOICE and NO-CHOICE.

In the CHOICE condition, the player is able to choose the path in which they want to take the story (see Fig. 4). On the screen, a maximum of three choices are presented at key moments in the narrative scenes. In the NO-CHOICE condition, the text is the same, but the player cannot choose. The first possible (default) option is the only one presented to the player. Thus, while they need to press the option to advance the narrative, they have no other options to choose from.

The game requires a login ID when first starting the game. A login ID is randomly assigned to the players and determines whether they receive the CHOICE or NO-CHOICE version of the game.

D. Sampling

In this research, random sampling through a recruitment website was used. Since there are some requirements people needed to meet to take part in the experiment, purposive sampling was considered a good option. The participants needed to: have a computer (with internet connection), be fluent in English and over 40 years old. The age requirement was used to gather participants who were more likely to have an interest in a game that trains cognition.

E. Data Collection

Two types of data are collected: game metrics logged from the players' in-game behavior, and self-reported scores through an online survey. The survey consisted of four parts: Study Information, the Game User Experience Satisfaction Survey (GUESS), the Agency Questionnaire, and Demographics.

1. Game metrics

Game metrics is data collected from the game that describes the player's actions. In addition to other qualitative or quantitative measures, it can provide insight into how much time players spend with the game, what actions they take, how they interact with the interface, etc. In the context of this research, it provides insight into the choices a player makes in the narrative, how far they progress in the game, how much they interact with the ship decoration mechanics (e.g. whether they try out different options before committing to their

choice), whether they attempt levels multiple times in the submarine mini-game, and their overall performance.

Game data is logged to the server at specific game events. Data is encrypted and sent securely over the participant WIFI. No identifying information is logged, only that describing game actions, which are tied to the participant's ID provided by the researchers. The game logs two types of data: user data and loglines.

User data is updated each time a data entry is synchronized to the server and represents the player's overall game state. For example, this data includes their overall progress (from 0 to 40), the amount of coins they have at that moment, and the amount of coins they've collected in total.

Loglines are submitted sequentially and form a 'log' of the player's entire gameplay experience. They are logged at specific points in the game. Each logline has a timestamp, a type, and a data entry. The type denotes what kind of logline it is (e.g., story, interface, level), while the data entry varies depending on what is being logged.

The events include:

- Login: Every time the player opens the game. This happens first when the player enters their participant ID and logs in.
- Scene transitions: Every time a player switches from the ship, to the mini-game, or to the story
- Interface interactions: Every time the player opens or closes a menu (e.g., to decorate the ship)
- Ship progress: Every time the player progresses the game and decorate the ship, their decision is logged.
- Level completion: Each time the player finished a level in the submarine mini-game their amount of coins collected is logged, as well as the amount of coins on the previous attempts (0 if it is the first attempt).
- Story: At every story scene, the beginning and end are logged with the name of the scene. Additionally, each narrative choice made by the player is logged as well.

2. Study Information and Demographics

The first section informs participants of the study's purpose and the questions they are about to answer. This section also provides the contact details for the researcher. Players are asked to input the participant ID they use to log into the game, in order to connect their survey data to their game metrics.

The survey also has a section consisting of demographic questions (i.e., age and gender) as well as questions on game literacy (i.e., type of game experience and average time spent playing per week). Both game experience and average time spent on games was rated on a 1 to 5 scale. Below are the two lists showing the choices presented to the player:

Game experience

1. Novice
2. Casual
3. Moderate
4. Advanced
5. Expert

Average time spent on games

1. Less than 1 hour per week
2. 1 - 4 per week
3. 5 - 10 per week
4. 10 - 19 per week
5. 20+ hours per week

Participants were also asked how much different elements of the game (i.e. collecting coins, fixing and decorating the ship, seeing the story) motivated them to play. Participants rated their motivation on a scale from 1 to 5, having the following choices: Not at all (1) Slightly (2), Moderately (3), Very (4), Extremely (5) (see Appendix B for the list of questions).

For the pilot study the questionnaire was not as exhaustive. Changes in the questionnaire are described in the Pilot Study section.

3. GUESS

The Game User Experience Satisfaction Survey (GUESS) (Phan, Keebler & Chaparro, 2016) is based upon multiple previously developed questionnaires that aim to measure the subjective gameplay experience. The GUESS combines nine factors of the player's game experience, each of which consist of several statements (e.g., I enjoy the game's graphics) that are scored on a seven-point Likert scale (see Appendix C for the list of statements used). The choices presented to the participants are Strongly Disagree (1), Disagree (2), Somewhat Disagree (3), Neither Agree nor Disagree (4), Somewhat Agree (5), Agree (6), and Strongly Agree (7).

The factors include: Usability/Playability, Narratives, Play Engrossment, Enjoyment, Creative Freedom, Audio Aesthetics, Personal Gratification, Social Connectivity, and Visual Aesthetics. In this study, the GUESS is included to get a general sense of the participants' gameplay experience in order to establish the overall quality of the game. Low scores in certain dimensions can indicate that the game design is lacking and might impact other findings.

Depending on a game's design, not every factor is equally relevant. For the purposes of this study, only the factors of Usability/Playability (i.e., ease of use), Play Engrossment (i.e., feeling engaged), Enjoyment (i.e., positive experience), Personal Gratification (i.e., a sense of accomplishment), and Visual Aesthetics (i.e., appreciation of the game's graphics) were included. The other factors were either not relevant to the Pocket Odyssey game (e.g., it had no sound), or were assessed through other means (i.e., the narrative was examined with a more extensive, dedicated questionnaire).

4. Agency Questionnaire

Agency is tested with a validated questionnaire, which was developed as a way to measure user responses to IS in a quantitative rather than qualitative manner (Roth, 2016). To create this questionnaire, the Vorderer's Entertainment Framework (2004) was used as a guide. The full questionnaire consists of 102 items and is composed of the following 12 dimensions: System usability, Effectance, Flow, Presence, Character believability, Identification, Aesthetic pleasantness,

Curiosity, Suspense, User satisfaction, Emotional state: positive/negative, Enjoyment. Each of these dimensions consists of several statements that are scored on a five-point Likert scale.

Out of this questionnaire, the following dimensions were the ones deemed to be of interest because of their relationship with the narrative experience of the player:

- Effectance (6 items): refers to agency and measures the players' feeling of being able to influence the story.
- Presence (6 items): measures the feeling of being spatially present in the story.
- Character believability (4 items): measures the players' perception of the characters in the story. To be believable, the players need to be able to empathize with the characters and feel that they have: emotions, goals, and the ability to understand the user.
- Identification (3 items): refers to the change of the player's self-perception to feel as if they are the main character of the story.
- Aesthetic pleasantness (5 items): measures the meaning that both the content and presentation of an IS have on the player.
- Curiosity (10 items): measures curiosity, intended as a transitory emotional state.
- Suspense (10 items): measures the suspense created by emotional involvement in the characters and plot of the story.
- Enjoyment (13 items): measures players' enjoyment regarded as an affective outcome.

All the dimensions above were used in the pilot study (see Appendix D for the complete list of items used in this research). However, for the main experiment the number of items had to be reduced since the survey had 90 items (33 from the GUESS and 57 from the agency questionnaire) and the length of the survey could negatively impact the quality of the answers. It was decided to leave out the dimensions of Enjoyment and Curiosity. Enjoyment was left out because it is also measured by the GUESS questionnaire. Curiosity was left out because as a dimension it is fairly similar to Suspense, however, Suspense has the added value of also relating to the emotional involvement of the player and the items used to measure it were worded more targeted towards narrative elements.

IV. HYPOTHESES

In this section the hypotheses concerning each one of the dimensions is detailed briefly below.

- Agency: Reported levels of agency should be higher when users' choices affect the narrative. Interactivity should increase agency since narrative choices give the player the ability to influence the story.
- Presence: Should increase with narrative choice since the possibility of influencing the game-world should lead to a perception of the world being alive (Murray, 1997).

- Character believability: Being able to interact with the characters inside the story may increase or decrease the characters' believability. Interacting with the characters (e.g. by choosing dialogue options) should increase character believability if the player has a positive perception of the characters' actions. However, if the characters' answers are perceived as limited and artificial this may break the suspension of disbelief leading to feelings of less presence (Roth, 2016).
- Identification: Should increase with interactivity because the player is more likely to put themselves in the place of the character they are controlling. Studies have found that players in interactive narratives tend to make choices following their own motivations and thus projecting themselves into the story (Green & Jenkins 2014).
- Aesthetic pleasantness: Relates to the appreciations of the narrative. Players that participate in an interactive environment can have an increase in emotional involvement which can increase their appreciation of the narrative (Roth, 2016)
- Suspense: The feeling of suspense is based on two elements: the uncertainty about future events in the story and the emotional involvement the player has with the characters (Roth, 2016). Narrative choices can make the uncertainty decrease but the emotional involvement to increase (Roth, 2016). This makes it unclear whether suspense would increase or decrease with the implementation of narrative choices.

V. PILOT STUDY

The pilot study served to test for bugs, as well as test the overall quality of the game assessed using the GUESS. This was important, since bugs may prevent or hinder the ability of the person to play the game and poor quality of the game could influence the game experience and therefore the findings of the experiment. The pilot study also served to test the measurement instruments and the procedure of the experiment. With the results from this study, it is possible to fix issues and limit problems during the actual experiment. The following sections describe the procedure of the pilot, its results, and a reflection on the findings.

A. Procedure

For the pilot the game was tested in its mobile version. Participants were recruited using convenience sampling and purposive sampling. Participants needed to have: a mobile phone running Android version 5.0 or later, fluency in English and sufficient technical abilities to download and play the game. People were contacted through WhatsApp and asked if they would be willing to participate in a study concerning game user experience. Once they accepted, they were provided with a more detailed set of instructions. Firstly, the participants were given a link to download the game, as well as a link to an installation manual. Both the game and the installation manual were in a Google Drive folder.

Participants were randomly given a login ID, which determined the version of the game they got (CHOICE or NO-CHOICE). They were asked to play the game for two days and advance in it as far as possible. After the two days passed, the link to the questionnaire was sent to them via WhatsApp.

For the pilot study game experience was rated on a 1 to 4 scale: Novice (1), Casual (2), Midcore (3), Expert (4).

B. Results

There were 6 participants, all female, ranging from 22 to 39 years old (mean = 27.5, SD = 5.96). In game literacy, half of the participants (1 CHOICE, 2 NO-CHOICE), considered themselves novices, two (1 CHOICE, 1 NO-CHOICE) casual players, and only one a midcore gamer. Three participants (2 CHOICE, 1 NO-CHOICE), reported playing less than 1 hour a week, two (both CHOICE) played between 1 and 4 hours, and only one participant reported playing between 5 to 9 hours a week. Overall, the sample gathered was composed of people who do not spend much time playing games.

1. Game metrics

For the purposes of this research, game metrics were used to assess whether players ran into technical difficulties, if there were any issues with data logging, and to see how far players progressed in the game.

Game metrics showed that three participants (1 CHOICE, 2 NO-CHOICE) finished the game completely. This means they gathered all coins necessary to fully upgrade the ship and see the entire story. Two people, both in CHOICE condition, finished the game up to progress step 36, which means the last scene they saw was the Storm. One participant completed the game up to step 39 and therefore saw the entire story except for the last scene. Therefore, we can conclude that the participants made considerable progress in the game and most of the content was tested.

Data logs show that some data was lost. In particular, certain story events (e.g., the Prologue) were not logged at all. While logging functioned properly while testing the game from the Unity Editor, certain data was not logged on Android. These issues were fixed for the main study. Other data did appear complete and there were no reported issues with syncing data.

2. GUESS Questionnaire

Overall, the results from the GUESS indicate that the quality of the game is not likely to negatively impact other findings (see Table 1). Means in each category are above the mid-point (i.e., 4 points on a scale from 1-7). Lowest are Enjoyment and Play Engrossment. This makes sense, as the game was still in an unfinished state at the time of the pilot. Additional challenges had not yet been implemented and the game had not been thoroughly tested. Despite this, the scores were still above the mid-point, which is encouraging. Usability, Personal Gratification, and Visual Aesthetics were all well above the mid-point.

The standard deviation suggests the widest range of answers was in Play Engrossment, while participants were mostly in agreement on Visual Aesthetics. Interestingly, the game was consistently rated higher across all factors by

participants in the CHOICE condition. Whether this difference is significantly relevant requires a larger sample size and is a point of interest in the experiment.

These results were encouraging as a first pilot test of the game. However, they are not conclusive enough to assume sufficient quality of the game for the experiment. Especially since the game was still actively being developed between the time of the pilot and the experiment, these measures were maintained in the experiment to provide a baseline of the player experience.

TABLE I. GUESS: RESULTS PILOT STUDY

Factor	Total (n=6)		CHOICE (n=3)		NO-CHOICE (n=3)	
	M	SD	M	SD	M	SD
Usability	5.53	0.58	5.94	0.57	5.12	0.65
Play engrossment	4.38	0.89	4.92	1.07	3.83	0.89
Enjoyment	4.83	0.73	5.13	0.90	4.53	0.65
Personal gratification	5.39	0.49	5.67	0.42	5.11	0.66
Visual Aesthetics	5.83	0.17	6.44	0.19	5.22	0.19

3. Agency Questionnaire

Most dimensions presented a difference between conditions (see Table 2). Means in the total and CHOICE category are above the mid-point (i.e. 2.5 on a scale from 1 to 5). On the NO-CHOICE condition, Effectance and Aesthetic Pleasantness are rated lower than 2.5. This makes sense for Effectance, since players had no way of changing the path of the story in NO-CHOICE. It is not so clear why this was the case on Aesthetic Pleasantness.

Overall, the CHOICE condition was rated as higher consistently throughout the dimensions. Only Character Believability and Curiosity had higher reported values in the NO-CHOICE condition. Out of these two dimensions, Character believability showed the most difference.

The biggest difference between conditions was on Aesthetic Pleasantness, where the difference between the means exceeded one point. Curiosity showed the least amount of difference with less than 0.05.

The standard deviation shows that players' answers varied the most in the NO-CHOICE condition. In particular, Presence and Identification had the highest range of answers. Players had the most agreement in the CHOICE condition in the Suspense dimension.

TABLE II. AGENCY QUESTIONNAIRE: RESULTS PILOT STUDY

Dimension	Total (n=6)		CHOICE (n=3)		NO-CHOICE (n=3)	
	M	SD	M	SD	M	SD
Effectance	2.78	0.79	3.11	0.63	2.44	0.92
Presence	3.19	1.06	3.50	0.67	2.89	1.44
Character believability	3.38	0.59	3.00	0.43	3.75	0.50
Identification	2.89	1.19	3.22	0.84	2.56	1.58
Aesthetic pleasantness	2.93	0.72	3.47	0.42	2.40	0.53
Curiosity	3.23	0.42	3.70	0.52	3.73	0.40
Suspense	3.23	0.49	3.50	0.26	2.97	0.57
Enjoyment	3.38	0.60	3.59	0.65	3.18	0.60

C. Pilot Study Discussion

The pilot served its purpose in testing the game, as well as identifying potential issues with the methodology. The results suggest that the study can be an effective way to test the players' different feelings of agency and related constructs. They also show that the game is of sufficient quality to use in a larger experiment. The following section discusses the results from the questionnaires and the changes to the game, and changes to the procedure in which they have resulted

The players answers appeared to be different between conditions. Whether these differences are significantly relevant require further testing with a larger sample size. The CHOICE condition appeared to have a higher rating for six out of the 8 dimensions. It was expected that Effectance would show the biggest difference between conditions since the ability of the player to make narrative choices inside the game was taken out of the NO-CHOICE condition. However, this seemed to be not the case. Interestingly, the dimension with the biggest difference was Aesthetic pleasantness in this case, the result suggests that making narrative choices can make people feel an experience to be more meaningful to them. Overall, the pilot's results suggest that a small change in the amount of interactivity inside a narrative context can change the overall player experience.

Similar to the agency dimensions, the GUESS was rated higher consistently among the CHOICE participants as well. Interestingly, the biggest difference was found in Visual Aesthetics with a small SD that suggest agreement between participants in both categories. The second biggest difference was in Play Engrossment, yet the SD shows more disagreement between participants.

1. Game changes

The game was in a preliminary state during the pilot study. The story was fully integrated but lacked any visuals or sound. While the addition of sound might not be experience by all participants in the experiment, as people may play mobile games with the sound turned off (e.g., when in a public setting), the addition of both sound and a visual is expected to enhance the experience. Therefore, both are added to the final version of the game.

A particular issue was the loss of data in the loglines, particularly for story scenes. We theorized that the implementation of the story by exporting it from Twine and using a third-party plugin, as well as a combination of switching scenes and coroutines when starting a story chapter, interfered with the syncing of the data on mobile phones. To remedy this issue, the final version of the game instead uses Ink, a scripting language for interactive narratives with Unity integration. The story scenes are also displayed as part of the main Unity scene (i.e., the ship) to limit scene switching.

1. Sampling and Procedural changes

The sampling for the pilot study consisted of only females that had a relatively low game literacy. We can, therefore, assume that they most likely haven't played similar games, which could have impacted their expectations. Moreover, all of the participants knew the researchers personally, which

could have made them biased. For the main study, a larger sample size is needed that is less homogeneous making it possible to analyze the statistical significance of the results.

VI. MAIN EXPERIMENT

For the main experiment we used Prolific (www.prolific.co), a website focused on recruiting research participants which gives monetary compensation with a minimum of 5 GBP or 6.50 USD per hour. This section describes the procedure of the study and its results.

A. Procedure

Participants were recruited using Prolific. For the screening process we selected people who were 40 years and older and fluent in English. With these restrictions, Prolific had a pool of around 17,500 possible participants. The system functions by inviting participants randomly and then they can choose to claim a spot in the study. In case they decided not to participate (e.g. after reading the instructions), they can return their participation. If this happens, a new person is invited until all the spots are claimed. The study consisted of two parts. Part 1 explained to the participants that they would need to play a browser game for 5 minutes per day, for 3 days. After the participants had played the game they were invited to a second Prolific study (Part 2), which consisted of a survey. The total amount of time people was expected to spend on the study was estimated at 28 minutes (i.e., 3 minutes for Part 1 and 25 minutes for Part 2 (playing 15 minutes + 10 minutes for the survey), with an average monetary compensation of 7.20 GBP per hour.

At the beginning of the study participants filled in the demographic survey on Qualtrics and read the experiment instructions. The instructions told people they would be playing a casual browser game for which no extensive gaming experience was needed. Participants were asked to bookmark the game page for easy access during the study. After finishing the survey, participants were automatically directed to the website with the game. Participants were asked to login with their Prolific ID code so that their game data could be connected to their survey data. The experiment instructions are repeated on the web page (underneath the game) as a reminder for people once they have begun playing and no longer have access to Part 1. The web page also included a reminder of known issues and the contact details of the researcher. The participants are given a code after they login for the first time into the game that they can fill in on Prolific to complete Part 1.

Participants played for three days and their progress was monitored by one of the researchers in the database. The game saves their progress every 2 seconds or at specific events in the game (e.g. on finishing a level or a story segment). Logging in with the same ID on following days allowed them to continue where they had left off previously. The server kept track of whether a player logged in on a new day and increased the day counter accordingly. Participants did not need to login on consecutive days, but they did need to login on unique dates for the game to count it as a new day (i.e., logging in twice on the same date did not increase the counter).

Once participants had reach day 4, the researcher invited them manually to the Part 2 of the study on Prolific. Only participants invited by the researcher (i.e., added to an ‘allow-list’ of Prolific ID’s that can access a particular study) could participate.

The Part 2 of the study referred the participants to the final survey on Qualtrics. Here, participants needed to fill in another code (4 digits and 2 capital letters) that the game gave them on day 4. This was done to ensure only people who had played long enough could do the survey. The code also was different per conditions and changed which questions were displayed. This is only relevant for future research — in the case of the two conditions used for this research (i.e. CHOICE and NO-CHOICE) the survey was the same for all participants.

Once participants had completed both Part 1 and Part 2 successfully (and therefore have played enough days, as can be seen from their gameplay data), their compensation was paid out. Players received 0.27 GBP for Part 1 and 3 GBP for Part 2. Participants who completed Part 1, but who did not finish the 3 days of playing (and therefore did not take the final survey) were only compensated for Part 1.

Data logs and user data were downloaded from the server upon completion of the study and survey data was downloaded from Qualtrics. This data was then merged for analysis. The statistical analysis of the data was conducted in JASP (JASP Team, 2020). To check for difference between conditions independent sample t-test were conducted.

B. Results

There were 70 participants, 36 in the CHOICE condition and 34 in the NO-CHOICE condition. The sample was composed of 26 females and 44 males, with a mean age of 48,4 (SD = 8,29). More than half of the sample (58%) was composed of people who considered themselves to be Casual (21) or Moderate (20) players (mean = 2.71, SD = 1.16). Of the remaining participants, there were: 11 Novices, 13 Advanced players and 5 Experts. On average the participants reported playing between 1 and 4 hours per week (mean = 2.41, SD = 1.30).

When it comes to the different elements in the game and how much they motivated the participants, it appears that collecting coins was more motivating for the participants than decorating the ship and seeing the progression of the story (see Table 3). The biggest difference between conditions was on collecting coins while the smallest difference was on decorating the ship. Participants on the CHOICE conditions rated their motivation higher across all elements. However, there was no significant difference between conditions on how much players said that the story motivated them ($t = 0.61$, $p = 0.55$).

TABLE III. MOTIVATION FOR CONTINUE PLAYING: DESCRIPTIVE STATISTICS

	Total (n=70)		CHOICE (n=36)		NO-CHOICE (n=34)	
	M	SD	M	SD	M	SD
Motivation						
Collecting coins	3.57	1.11	3.69	1.09	3.44	1.13
Decorating ship	3.10	1.24	3.14	1.15	3.06	1.35
Story	2.69	1.30	2.78	1.35	2.59	1.26

1. Game metrics

Game metrics showed that 80 percent of the participants advanced on the game past the mid-point (i.e. showed a progress of 20 or more on a scale of 40) (mean = 27.57, SD = 8.59). Participants on the CHOICE had a mean of 27.36 (SD = 8.26) while the NO-CHOICE had a mean of 27.79 (SD= 9.04). Out of the 70 participants, 11 completed the game (6 CHOICE, 5 NO-CHOICE). Overall, most participants made a considerable amount of progress in the game, being able to interact with the contents of it. There was no significant difference between groups on game progression ($t = 0.2$, $p = 0.83$).

2. GUESS Questionnaire

The results from the GUESS indicate that the participants considered the game to be of good quality, as seen by all categories being rated above 4 which is the mid-point (see Table 4). Usability was rated the highest while Enjoyment and Play Engrossment were rated the lowest. Interestingly these were also the categories which were rated the lowest on the pilot study. The standard deviations show that people disagree the most on Visual aesthetics while they were mostly in agreement on Enjoyment. Almost all categories were rated higher on the CHOICE condition being Enjoyment the only exception. The biggest difference in means was on Visual Aesthetics while the smallest was on Usability and Enjoyment. However, the differences between conditions were not significant in any of the factors.

TABLE IV. GUESS: DESCRIPTIVE STATISTICS

Factor	Total (n=70)		CHOICE (n=36)		NO-CHOICE (n=34)	
	M	SD	M	SD	M	SD
Usability	5.54	0.97	5.55	1.13	5.53	0.79
Play engrossment	4.41	1.01	4.52	0.94	4.29	1.07
Enjoyment	4.61	0.91	4.60	0.95	4.62	0.89
Personal gratification	5.19	1.06	5.23	0.94	5.14	1.18
Visual Aesthetics	5.13	1.27	5.32	1.29	4.93	1.25

3. Agency Questionnaire

Results from the Agency Questionnaire show little change between means in almost all dimensions with the exception of Effectance (see Table 5) which interestingly is also the only dimension that shows a rating above 3 (CHOICE condition). The only dimensions which showed a rating below 2 was Identification (CHOICE condition).

Identification and Aesthetics pleasantness were rated the lowest while Effectance was rated the highest. The standard deviations indicate that players agree the most on

Identification while the widest range of answers was on Character believability.

Effectance was the only dimension that showed a significant difference between conditions (see Table 6). A Bayesian independent sample t-test was also done and from the results (see Table 7) we can see that there is a moderate evidence to suspect that implementing narrative choices wouldn't make a difference in the players reported feelings of Presence, Character believability, Identification, Aesthetic Pleasantness and Suspense.

TABLE V. AGENCY QUESTIONNAIRE: DESCRIPTIVE STATISTICS

Dimension	Total (n=70)		CHOICE (n=36)		NO-CHOICE (n=34)	
	M	SD	M	SD	M	SD
Effectance	2.75	0.95	3.04	0.96	2.45	0.85
Presence	2.23	0.96	2.18	0.96	2.27	0.96
Character believability	2.75	1.00	2.77	1.00	2.72	1.00
Identification	2.00	0.90	1.98	0.90	2.03	0.91
Aesthetic pleasantness	2.24	0.91	2.16	0.89	2.33	0.92
Suspense	2.57	0.95	2.60	0.94	2.54	0.97

TABLE VI. AGENCY QUESTIONNAIRE: INDEPENDENT T - TEST

	t	p	Cohen's d
Effectance	2.736	0.008*	0.654
Presence	-0.408	0.684	-0.098
Character believability	0.210	0.835	0.050
Identification	-0.221	0.826	-0.053
Aesthetic pleasantness	-0.775	0.441	-0.185
Suspense	0.244	0.808	0.058

Note: * significant difference at $p < .05$

TABLE VII. AGENCY QUESTIONNAIRE: BAYESIAN INDEPENDENT T - TEST

	BF ₀₁	error%
Effectance	0.181	0.001
Presence	3.783	0.010
Character believability	3.988	0.010
Identification	3.980	0.010
Aesthetic pleasantness	3.142	0.008
Suspense	3.962	0.010

VII. DISCUSSION

Looking at the results it is possible to see that giving narrative choices within a game has an effect in the feeling of effectance of the player. This means that narrative choices could serve as an important tool if the purpose of a game is to increase the player's feeling of effectance (e.g. a game that focus on the responsibility of one's actions and the consequences that come with them could benefit from implementing an interactive story). It is to notice that this was the case even considering the fact that the design of the choices in this implementation didn't lead to a lot of branching and was mostly focus on providing local effectance, which is in accordance to previous findings (Fendt, Harrison, Ware,

Cardona-Rivera & Roberts, 2012). This is encouraging since it shows that the design of an interactive story doesn't have to be complex, with multiple branching that lead to different endings. However, it is also true that in this experiment the players in the CHOICE condition had no chance at playing the game more than once or go back and chose another option which made it not possible for them to realize how much the story was designed to be linear. How much replayability can impact the results is something that can be taken into account for future research.

Results on the agency questionnaire indicate that providing players narrative choices is unlikely to change the feelings of Presence, Character believability, Identification, Aesthetic Pleasantness and Suspense. This means that if a game wants to have the player experience the narrative differently in any of these dimensions then implementing narrative choices may not be the best course of action. Moreover, when looking at the results from the GUESS, all the factors, most importantly Play Engrossment and Enjoyment, showed no significant difference between conditions which also suggests that implementing narrative choices doesn't lead to an overall better game experience.

However, this also means that when considering ways in which to make for a better narrative experience (and more narrative engagement) a game designer can spend more time and resources on creating a strong storyline, rather than on adding interactivity into it. Other findings have shown that the greater the influence of the player is on the narrative of the game the weaker the storyline gets (Brand, Knight, & Majewski, 2003). It would be interesting to conduct further research in this "sweet spot" between interactivity and strong emotional impact when it comes to the storyline of a game.

It is necessary to consider that the results from this research may have also been influenced by the way the narrative was implemented separated from other game elements. This particular integration of the narrative (common in serious games) could have influenced the player's perception and made them think of the story as being somewhat external to the gameplay, which could have lessened the impact of the narrative choices on the players' mind (CHOICE condition).

When looking at the different elements that could motivate the players (i.e. collecting coins, decorating the sip and the story) there was not a significant difference with how much players found the story to be motivating between conditions. This suggests that the implementation of narrative choices doesn't lead to players having more interest in seeing the progression of the story. To notice is also that players found collecting coins more motivating among the other options which could mean that, when designing a game, giving rewards (which in this case were the coins) could be of particular importance for the players motivation.

VIII. CONCLUSION

This research examined whether providing player with narrative choices changed their feelings of agency (measured as effectance) and related constructs (i.e. of Presence,

Character believability, Identification, Aesthetic Pleasantness and Suspense). The goal of this study was to see whether the players experienced the narrative different when they are able to make choices that influence the game narrative. A study was conducted where a narrative was added into an already existing serious game with two implementations: one where the player got narrative choices (CHOICE condition), and another one where they didn't (NO-CHOICE condition). Participants were randomly assigned to a group and instructed to play the game over the course of 3 days for 5 at least minutes per day.

Results showed a significant difference between groups on Effectance which indicate that implementing narrative choices does indeed increase the players' sense of agency in the game. However, the other dimensions related to measure the narrative experience are unlikely to change with the implementation of narrative choices. Therefore, a serious game may benefit from narrative choices only if the purpose of the game relates on increasing the players feeling of effectance.

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Appendix A

Story passages

Chapter 1: Prologue

Prologue

Finally, the time has come! You decide to quit your job and do what you have always dreamed about, buy a boat and travel the world. First, you will need to find a boat, but where do you look for someone who is willing to sell you one?

[[Walk alongside the beach | Location 1 - Prologue]]

[[Go to the port | Location 2 - Prologue]]

[[Go to a sailor's bar | Location 3 - Prologue]]

Location 1 - Prologue

You decide to go to the beach and see if you can find someone. You spot what appears to be a group of sailors and you decide to go over and talk to them. There are three people. Who would you like to approach first?

[[Man with a beard | Guide boat]]

[[Man with a hat | Guide boat]]

[[Man with a drink | Guide boat]]

Location 2 - Prologue

You decide to go to the port and it doesn't take long for you to spot what appears to be a group of sailors. You decide to go over and talk to them. There are three people. Who would you like to approach first?

[[Man with a beard | Guide boat]]

[[Man with a hat | Guide boat]]

[[Man with a drink | Guide boat]]

Location 3 - Prologue

You decide to go to a bar known to be a meeting point for sailors. You spot a group of men who are talking about buying and selling boats. There are three people. Who would you like to approach first?

[[Man with a beard | Guide boat]]

[[Man with a hat | Guide boat]]

[[Man with a drink | Guide boat]]

Guide boat

You walk over to the group and introduce yourself to the man. He, then, presents you to his friends. One of them is willing to sell his boat but he warns you that it is a boat in dire need of repairments. You accept the offer and seal the deal. You got yourself a boat! Now, where do you want to travel to?

[[Let's go to an Island | Destination A]]
[[I want to go to a famous port | Destination B]]
[[Let's just travel with no direction | Destination C]]

Destination A

Now that you have a destination, let's sail!

Destination B

Now that you have a destination, let's sail!

Destination C

Now that you have a destination, let's sail!

Chapter 2: Destination A

Activity A1

You decide to go to the beach and walk alongside the seaside. You feel a sense of peace and calmness invading you. After a while you decide to sit on the sand and look at the horizon. Some hours pass, the sun is setting down and you decide to get back to the boat. On your way, you see something shiny from the corner of your eye laying on the ground.

>[[You pick it up |Choice 1]]
>[[You don't pick it up |Choice 2]]

Activity A2

You decide to go for a hike. It has been a while since you have done something of the sort so, you decide to go at a reasonable pace and focus on admiring the landscape. You slowly start to feel tired and after a while you take the path back to the boat. On your way, you see something shiny from the corner of your eye laying on the ground.

>[[You pick it up |Choice 1]]
>[[You don't pick it up |Choice 2]]

Activity A3

You decided to go inside the island and explore the flora and the fauna of the place. You are a person who has always loved nature so, you hope you get to see some wildlife. While walking you see so many different types of flowers and some insects, but unfortunately it seems that most animals won't come near you. You slowly start to feel tired and after a while you take the path back to the boat. On your way, you see something shiny from the corner of your eye laying on the ground.

>[[You pick it up |Choice 1]]
>[[You don't pick it up |Choice 2]]

Choice 1

You decide to pick it up. What is your surprise when you discover it is a beautiful seashell. You turn it around and examine it closely. You decide to put some pressure to see its strength and are surprised by how hardy it seems. You feel like you have found a small treasure, so you decide to pocket the seashell and go on your way.

Choice 2

You are too tired to bother to pick it up and you decide to leave the object where it is. You imagine it would have probably been some sort of shiny rock or a piece of seashell. While walking back the thought of it being some sort of coin crosses your mind, but you are already too far to go back and check.

Levels 1-4 A

After weeks of traveling you have finally arrived to the island. It's a beautiful place, everything you ever imagined and you can't wait to explore it. Now, you have to decide how to spend your time in the island.

```
>[[Walk in the beach | Activity A1 ]]  
>[[Hike | Activity A2]]  
>[[Explore fauna | Activity A3]]
```

Chapter 2: Destination B

Activity B1

You think the best way to get to know the place will be talking to some of the people you see on the local market and ask for their suggestions. They tell you about the history of the port and how a fortress was built to protect it. You decide to go and check it out for yourself. Afterwards you are hungry so you decide to try some of the local food. Eventually, you feel tired and decide to walk back to your boat. There are two paths you can choose from.

```
[[Take a short path |Choice 3]]  
[[Take a longer route |Choice 4]]
```

Activity B2

You decide the best way to spend your time is buying some supplies like food and tools that you think may help you in your trip. It doesn't take you long to find the best street to shop. There are tons of stores and you decide to take your time in checking everything out. Hours later, you are pretty proud about the amount of food you have gathered. Eventually, you feel tired and decide to walk back to your boat. There are two paths you can choose from.

```
[[Take a short path |Choice 3]]  
[[Take a longer route |Choice 4]]
```

Activity B3

You decide the best way to spend your time will be to admire the boats that are in the port. There are so many different types of them from small ones to larger ones, simple and luxurious. You have always loved the sea and you can't believe that now you have a boat of your own. However, you wish your boat would be as nice as some of the ones you are walking by. Eventually, you feel tired and decide to walk back to your boat. There are two paths you can choose from.

```
[[Take a short path |Choice 3]]  
[[Take a longer route |Choice 4]]
```

Choice 3

You are too tired to take the long route so you decide to take a shortcut and just go back to the boat quickly. On your way a man stops you and asks for directions. You tell him you are also a tourist, but he insists so you end up helping him. You take out a map you had in your pocket and try to figure it out the both of you. When the man is finally on his way you realize time has flown by

Choice 4

Even if it has been a long day you decide to take the long route. You feel it's worth it because you get to see the scenery and feel the warmth of the sun. Even better you get to feel the cool ocean breeze gently caressing your face.

Levels 1-4 B

After weeks of traveling you have finally arrived to the port. Beautiful! It's everything you ever imagined and you can't wait to explore it. Now, you have to decide how to spend your time.

[[Go talk to local people | Activity B1]]

[[Buy supplies | Activity B2]]

[[Walk and admire the boats of the port | Activity B3]]

Chapter 2: Destination C

Activity C1

You decide to scuba dive. You think it will be more interesting if you are able to submerge yourself to the bottom and look at the animals that may be there. You are not in deep waters so is not difficult to reach the ocean floor. While you are there, you see an octopus that is crawling on a rock. You are fascinated by the way it changes its color to camouflage itself and you are tempted to go closer.

```
[[ Go closer |Choice 5]]  
[[ Don't go closer |Choice 6]]
```

Activity C2

You decide to take a swim with no equipment. After all, these aren't deep waters and even without gear you can still submerge yourself and reach the ocean floor. On one of your immersions, you see an octopus that is crawling on a rock. You are fascinated by the way it changes its color to camouflage itself and you are tempted to go closer.

```
[[ Go closer |Choice 5]]  
[[ Don't go closer |Choice 6]]
```

Choice 5

You decide to go closer to the octopus. However, even moving slowly doesn't prove successful and the octopus is quick to go inside a rock formation and disappears from your sight.

After some time you get back to the boat and you have to go to a nearby port to buy supplies for the next weeks.

Choice 6

You decide to not go close to the octopus but remain nearby him. You are surprised when the octopus actually comes closer to you and you can observe him better. Wow, it seems that the little fellow trusts you.

After some time you get back to the boat and you have to go to a nearby port to buy supplies for the next weeks.

Levels 1-4 C

After weeks of traveling you have arrived to warmer waters. It's a beautiful day, the sun is up in the sky and you can feel the refreshing ocean breeze. You can't wait to dive under and refresh yourself. You have two options, you can scuba dive or just swim with no equipment. So, what will you choose?

>[[Scuba dive | Activity C1]]

>[[Just swim | Activity C2]]

Chapter 3: Activity boat

Thing 1

You decide to organize the canned food. You go to the pantry and start ordering them by their date of expiration. You are surprised by the amount of food you find. You shouldn't need to think about buying more food for a while.

Thing 2

You decide to organize your belongings. You open up your luggage and start sorting out your things. You have a lot of clothes for warmer days, but it seems that you have little clothes to protect yourself from the wind and rain. You hope you don't find yourself in the middle of a storm any time soon.

Thing 3

You decide to organize the tools that the boat has come with. You realize quickly how little knowledge you have about most of them. There are even some instruments that you don't know the function of. You hope you won't need to use these tools in the future. Nonetheless, you think is a good idea to do some research just in case.

Option 1

You decide to organize things on the boat before they get to messy to deal with. So, what will you do first?

```
[[Organize the canned food |Thing 1]]  
[[Organize your possessions |Thing 2]]  
[[Organize the tools |Thing 3]]
```

Option 2

You decide to take the sun in the upper level of the boat. While being there you think it may be a good idea to:

```
[[ Take out your binoculars |Action 1]]  
[[ Just lay down |Action 2]]
```

Option 3

You decide to rest but it seems that sleep won't come anytime soon. You think that reading a few pages of a book or drinking a cup of tea can help so, you decide to...

[[Read a book |Doing 1]]
[[Prepare a cup of tea |Doing 2]]

Action 1

You decide to take out your binoculars and check if you can spot anything on the horizon. You see something grey that seems very strange. You start getting curious. Could that be a boat? Maybe an island? You take out your binoculars and realize it was just a smudge in the lens.

Action 2

You go and decide to rest. You lay down and close your eyes. The slow movements of the boat and the sun transmits you a sense of peace and relaxation. Your mind starts drifting and you let it go.

Doing 1

You go to your suitcase and take out a novel you were planning to read. You start and can't stop yourself. You become so engrossed in the plot that you forget you were tired in the first place. Maybe next time it would be a good idea to choose a boring book.

Doing 2

You go to the kitchen, boil the water and chose your favorite tea mixture. The cup of tea works like a charm and after taking it you fall asleep almost immediately.

Activity boat 1

After your activities you are back to the boat. You are exhausted and decide to sail with no direction. But first you want to

[[Put some order in the boat |Option 1]]
[[Take some sun |Option 2]]
[[Rest |Option 3]]

Chapter 4: Guide event 1

Guide event 1

Hey, I hope I'm not bothering you but I'm wondering if you could help me with something.

[[Sure | Guide event 1A]]

[[No | Guide event 1B]]

Guide event 1A

Great! I would really appreciate your help with moving some of the boat supplies since it's way too heavy for me.

[[Can I ask how did you ended up as the guide of this boat? | Guide event 1AA]]

[[Stay silent | Guide event 1AA]]

Guide event 1B

Oh, but it would be really nice of you to help me. I can assure you it won't take long. So, what do you say?

[[Okay, fine | Guide event 1A]]

[[I guess I can't refuse | Guide event 1A]]

Guide event 1AA

You know, just like you I have always loved the sea but didn't have enough savings to buy a boat for myself. I have been around sailors for many years and I heard about your plans so I offered to come along and guide you.

[[What about your family? | Guide event 1AAA]]

[[Won't your family miss you? | Guide event 1AAA]]

Guide event 1AAA

Ah, well, maybe I'll tell you someday about that. Is a long story and I think we are already done here. Thanks for your help!

Chapter 5: See horizon

Alternative One

It seems that there is a cruise ship ahead. What a rare sight! You would have never imagined to encounter one in the route you are now. You are very curious and would like to go closer to see the name of the cruise. However, you know it can be dangerous to do so.

```
[[Go closer |Option one]]  
[[Don't go closer |Option two]]
```

Alternative Two

You can't believe your luck when you see a group of whales. Their movements are mesmerizing and you wish you could see it from closer. After thinking for a while you decide to:

```
[[Go near |What 1]]  
[[Don't go near |What 2]]
```

Alternative Three

You can't believe your eyes when you see what appears to be the remains of a shipwreck. For it to be above the water must mean that those are very shallow waters and you should probably try to avoid going in that direction. However, you are also tempted to go near.

```
[[Go near |1]]  
[[Don't go near |2]]
```

1

The curiosity got the best out of you and you decide to go near the shipwreck. Luckily the boat doesn't get stuck in the sand and you are able to watch the shipwreck closely. You can only see the very top of the structure but from that you can tell it is a very old ship.

You decide to not go near the shipwreck. And it seems to be a good decision because even just passing nearby the boat came very closely to get stuck in the sand.

Option one

You decide to attempt going closer to the cruise. However, you don't make it far when you start feeling your boat moving in a dangerous manner. It seems that the waves caused by the cruise ship are stronger than what you expected. You decide to stop when the waves become too dangerous. From your position, you can now clearly see the pattern that is on the side of the cruise. However, you can't read the name of the boat.

Option two

You decide to not go closer. Something told you it wasn't going to end well. Cruise ship can create ocean waves that can make a boat, such as the one you are in, unstable.

What 1

You decide to change the route of the boat slightly and go near the pod. However, it seems the movements of the whales are making the boat move in a dangerous manner so you stop when it seems that it is becoming way too risky.

What 2

You decide it's better to not go near the whales since the waves of the ocean may cause the boat to move and things to fall. Still, you are curious to see them and luckily you have a pair of binoculars that help you. Whales are majestic creatures and seeing them even from afar fills your heart with joy.

See something horizon

The days seem to fly by and you find yourself most of the time just sitting and watching the horizon, enjoying the sun and the calm movements of the sea. One day you see something that surprises you.

[[You see a cruise ship |Alternative One]]
[[You see whales |Alternative Two]]
[[You see a shipwreck |Alternative Three]]

Chapter 6: Finding something

Object 1

Inside the box there is a journal. It looks quite old but still you are not sure if it would be appropriate to open it or not.

```
[[ Open it |Decision A]]  
[[ Don't open it |Decision B]]
```

Object 2

You see a map wrapped up. It seems to be a very old one and you aren't sure if you should leave it or unwrap it.

```
[[ Unwrap the map |Decision C]]  
[[ Leave the map |Decision D]]
```

Decision A

You decide to open the journal and you can tell the owner took great care of it. Most of its pages are filled to the brim and luckily it is in English so you decide to read some of its passages to see who may be the owner. The journal talks about the struggles of an old sailor who found himself on a journey across the globe with a dog as his only company.

Decision B

You decide to not open the journal. However, you are curious and decide to examine it closer so you pick it up and turn it around. There is an inscription on the cover but it's so worn out the only thing you can see is "Travel journal". It must have been forgotten and left here many years ago. You think it's better to left it where you found it.

Decision C

You decide to unwrap the map and see what it's inside. It's filled with marks, from crosses to circles and arrows pointing to different places all over the world. You think it may be the property of an avid traveler and wonder if you

could ever recreate such an adventurous trip. You decide to hang it up as inspiration.

Decision D

You decide to just leave the map where you found it. You are afraid taking it out and unravel it may break it because of how old it looks.

Find something

While cleaning your room you find a cardboard box that was under your bed. You take out the box and examine it. It appears that it has been there a long time

and you don't remember bringing something like this, so you decide to open it and see what's inside. You see...

[[A journal |Object 1]]

[[A map |Object 2]]

Chapter 7: Guide event 2

Guide event 2

Hey! I hope you don't mind but could you help me clean the upper levels of the boat? I feel that with the both of us we can get it done quickly.

[[I don't want to| Guide event 2A]]

[[Sure! | Guide event 2B]]

Guide event 2A

Oh, well ... I would really appreciate some help because my back is hurting but if you really don't want to then, I'm sorry to have disturbed you.

[[Wait, I can help| Guide event 2B]]

[[If you back hurts, I guess I have no other option| Guide event 2B]]

Guide event 2B

Great! So now, you go over there and start with the left side, I'm going to do the other one.

[[How is your family? | Guide event 2AB]]

[[I have never seen you write letters or call anyone | Guide event 2AB]]

Guide event 2AB

Well, I guess I can tell you a little bit about it. I grew up in a small port city and there I met my wife and had two children. As a family we loved the sea and even had a boat of our own. Sailing was a joyful experience that as a family we enjoyed doing. Before coming on this trip with you, me and my wife decided to go out and sail. However, we suddenly found ourselves in the middle of a storm and everything went downhill from there... I'll tell you more some other day. Thanks for your help.

Chapter 8: Nostalgic event

Act 1

You open the album. You feel content when seeing all off the photos. You have photos from your childhood and teenage years, you also have photos from the first time you went on a boat and even one from the day before you quit your job. However, the most prominent memory involves.

[[Your childhood |Memory 1]]

[[Your first time on the ocean |Memory 2]]

[[They day you decided to quit your job |Memory 3]]

Act 2

You read the letter your family wrote to you and you feel deeply emotional. Your family has always been very close and you feel very connected to them. While reading the letter your remember so vividly:

[[Your childhood |Memory 1]]

[[Your first time on the ocean |Memory 2]]

[[They day you decided to quit your job |Memory 3]]

Memory 1

Your childhood was the moment of your life when you truly develop a love for the ocean and traveling in general. You told your parents how you would love to travel the world by boat and they always supported and encouraged you to fulfill that dream.

Memory 2

The first time you took a trip into the ocean was with your grandfather. In that day he show you how to steer the boat and even lend you his captain hat. He was a man who you deeply admired and whose memory to this day you cherish.

Memory 3

The day before you quit your job you were so nervous but also incredibly excited to finally be able to accomplish your dream. You were going to miss some of your co-workers but you felt the time had come. If it wasn't now, then, When?

Nostalgic event

You start to feel particularly nostalgic. It has been a while since you have gotten to see your family or really had any form of communication with them. You want to remember the good times spent together so you decide to

[[See a photo album |Act 1]]

[[Read the last letter they sent you |Act 2]]

Chapter 9: Fishing event

Fishing event

You are suddenly filled with the desire to do something different for once so you decide to go fishing.

```
>[[ Fish with a magnet| Fishing event A ]]  
>[[ Fish with a worm | Fishing event B ]]
```

Fishing event A

You feel particularly adventurous, so you decide to fish with a magnet and see if you catch anything interesting. After a while of moving your magnet around you start feeling something.

```
>[[ It's heavy | Fishing event AA ]]  
>[[ It's not really heavy | Fishing event AA ]]
```

Fishing event B

You decide to fish with a worm and see what you can catch. You put down the bait and wait. After a while you feel something pulling.

```
>[[ It's strong | Fishing event BA ]]  
>[[ It's not really that strong | Fishing event BA ]]
```

Fishing event AA

You start pulling the line and you see a metal piece coming out of the water. Seems like it is from an old shipwreck. You don't really know what to do with it so you decide to just put it back on the water.

Fishing event BA

You start pulling the line and you see a fish coming up on the surface. You take it out of the water for a brief moment to see it properly but then you put it back where it belong.

Chapter 10: Guide event 3

Guide event 3

Hey! Would you help me with ...

>[[Fine!| Guide event 3A]]

>[[Sure!| Guide event 3A]]

Guide event 3A

Awesome! I guess we are slowly becoming friends. Now, come over here. I need your help with sorting out our food.

>[[Will you tell me more about your family? | Guide event 3AA]]

>[[Could you continue your story? | Guide event 3AA]]

Guide event 3AA

I guess I left you wondering the other day. So, during the storm I told my wife the best thing to do was to split up and try and secure everything because I didn't want our supplies to fall. There was a possibility of our food falling down into the ocean or some of our belongings falling into the ground and destroying themselves. For that reason, I thought it was for the best to divide the workload but that was the most stupid decision to make. Anyway, that's it for today. Thanks for your help.

Chapter 11: Contact family event

Contact family event

You think it would be a good idea to contact your family after all this time. You decide to write to them but you are indecisive whether to use a pen or a quill.

```
[[ Use a pen      | Family event A ]]  
[[ Use a quill   | Family event B ]]
```

Family event A

You take out your pen from the drawer but before writing you wonder whether is a good idea to write a long or short letter.

```
[[ Long letter | Family event AA ]]  
[[ Short letter | Family event AA ]]
```

Family event B

You take out your quill. However, while taking the ink from the drawer you almost spilled it all over your desk. What a disaster that would have been!

```
[[ Switch to a pen | Family event A ]]  
[[ Use the quill | Family event AA ]]
```

Family event AA

You sit down on your desk and start writing. You write about your feelings, the way in which this trip is changing you and how much you miss them. There are so many more things you would like to talk about. You want to write about your adventures but you also would like to see their faces when you tell them in person so you decide to keep some stories for yourself.

Chapter 12: Storm

Decision 1

Wait! It's not a good idea to split up! Listen to me, if things start falling down one of us can get seriously hurt! It's better if we do it together.

```
[[ That will waste time!|Election 1]]  
[[ It will be too slow! |Election 1]]
```

Election 1

Wait! I'm telling you, it's not a good idea!

```
[[ Okay, we'll do it your way | Election 1A ]]  
[[ No! We aren't going to be able to finish on time | Election 1B ]]
```

Storm event

Hey, wake up! A storm is approaching! Quick, help me! There are things that must be secure in the front and back of the boat.

```
[[I'll go to the back |Decision 1]]  
[[I'll go to the front |Decision 1]]
```

Election 1A

I'm so glad you decide to listen to me. Let's secure the back first and then go to the front.

```
[[Go to secure everything together| Election 1AA]]
```

Election 1B

How stubborn can you be! Do it your way, then, but I'm going to keep an eye on you!

```
[[Go to secure things| Election 1AA]]
```

Election 1AA

I told you to be careful! You could have gotten yourself seriously hurt! You are lucky I was close enough this time around to push you and prevent that pole from hitting your head. Let's continue and this time let's help one another.

[[Thank you | Election 1AAA]]

[[I'm on board with that idea | Election 1AAA]]

Election 1AAA

Seems like we finally have everything accounted for and now we just have to ride the storm out. Thanks for listening to me.

Election 1AA

The storm is upon us, look at the clouds. I can feel the movement of the boat getting worse by the second. Be careful! Don't distract yourself even when carrying things around!

Hey! watch out!

[[What? | Election 1AA]]

[[Huh? | Election 1AA]]

Chapter 13: Final guide event

Final Guide event

Hey, our trip is coming to an end and I have to say that I'm really going to miss the time we spent together.

[[It has been great | Final Guide event A]]
[[It has been dreadful | Final Guide event B]]

Final Guide event A

I'm glad to hear it! You know I just wanted to apologize for how insistent I was on doing things together during the storm.

[[It had to do with your past, right? | Final Guide event AA]]
[[Was it because of what happened with your wife? | Final Guide event AA]]

Final Guide event B

Well, I'm sorry to hear that. I honestly thought we were getting along. I do want to apologize for how insistent I was on doing things together during the storm.

[[It had to do with your past, right? | Final Guide event AA]]
[[Was it because of what happened with your wife? | Final Guide event AA]]

Final Guide event AA

I guess, I owe you the full story now. That day of the storm it was my idea to split up and my wife argued with me but I was adamant. When the storm hit our boat she was alone and ended up being badly hurt. She recovered quickly but her mobility was affected. Even if she forgave me I couldn't forgive myself, so I have been avoiding talking to my family ever since.

[[You should talk to them | Final Guide event AAA]]
[[You are dumb | Final Guide event AAA]]

Final Guide event AAA

I know. I've been running away from this issue. I think as soon as we are back I will visit her and fix things. It has really helped me to talk about it with you.

Chapter 14: Resolution

Resolution

Your journey has come to an end. When you started this trip you would have never imagined the course it would have taken. But too much time has passed since you last saw your family and you feel that it is time to go back home and tell the story of this trip. You don't know where the future may take you. However, there are two things you have gained for sure in this trip, a boat you can be proud of and an unlikely friend.

Appendix B

Demographics and Game Literacy Questions

Demographics

What is your age (in years)?

What is your gender?

Game literacy

How would you describe your experience with video games?

How much do you play video games on average per week?

Motivation

You could collect three coins per submarine level (15 pieces). How much did **collecting all coins** motivate you to play?

You could fix up your ship with the coins you collected. How much did **fixing and decorating the ship** motivate you to play?

You could see more of the story when you fixed up your ship. How much did **seeing the story** motivate you to play?

Appendix C

GUESS Questionnaire

Rated on a 7-point Likert-scale

N = negatively scored

Usability/Playability

1. I think it is easy to learn how to play the game.
2. I find the controls of the game to be straightforward.
3. I always know how to achieve my goals / objectives in the game.
4. I find the game's interface to be easy to navigate.
5. I do not need to go through a lengthy tutorial or read a manual to play the game.
6. I find the game's menus to be user friendly.
7. I feel the game trains me well in all controls.
8. I always know my next goal when I finish an event in the game.
9. I feel the game provides me the necessary information to accomplish a goal within the game.
10. I think the information provided in the game (e.g., onscreen messages, help) is clear.
11. I feel very confident while playing the game.

Play Engrossment

1. I feel detached from the outside world while playing the game.
2. I do not care to check events that are happening in the real world during the game.
3. I cannot tell that I am getting tired while playing the game.
4. Sometimes I lose track of time while playing the game.
5. I temporarily forget about my everyday worries while playing the game.
6. I tend to spend more time playing the game than I have planned.
7. I can block out most other distractions when playing the game.
8. Whenever I stop playing the game, I cannot wait to start playing it again.

Enjoyment

1. I think the game is fun.
2. I enjoy playing the game.
3. I feel bored while playing the game. (N)
4. I am likely to recommend this game to others.
5. If given the chance, I want to play this game again.

Personal Gratification

1. I am in suspense about whether I will succeed in the game.
2. I feel successful when I overcome the obstacles in the game.
3. I want to do as well as possible during the game.
4. I am very focused on my own performance while playing the game.
5. I feel the game constantly motivates me to proceed further to the next stage or level.
6. I find my skills gradually improve through the course of overcoming the challenges in the game.

Visual Aesthetics

1. I enjoy the game's graphics.
2. I think the graphics of the game fit the mood or style of the game.
3. I think the game is visually appealing.

Appendix D

Agency Questionnaire

Rated on a 5-point Likert-scale

N = negatively scored

Effectance

1. My inputs had considerable impact on the events in the story.
2. I had the feeling that I could directly affect something on the screen.
3. The consequences of my inputs were clearly visible.
4. I could recognize which events in the story I have caused with my inputs.
5. My decisions clearly influenced how the story went on.
6. I discovered how my earlier actions influenced what happened later in the story.

Presence

1. I felt like I was a part of the environment in the presentation.
2. I felt like I was actually there in the environment of the presentation.
3. I felt like the objects in the presentation surrounded me.
4. It was as though my true location had shifted into the environment in the presentation.
5. I felt as though I was physically present in the environment of the presentation.
6. It seemed as though I actually took part in the action of the presentation.

Character believability

1. I could feel what the characters in the environment were going through.
2. I had the impression that the characters in the environment responded in a thoughtful way to what I did.
3. I noticed when the characters in the environment displayed strong emotions.
4. The characters in the environment seemed to have a strong will of their own.

Identification

1. I felt like I was in the main character's skin.
2. I sometimes forgot about myself because I was so focused on the actions of the main character.
3. I felt more like the character than like myself.

Aesthetic pleasantness

1. The experience made me think.
2. The experience made me think about my personal situation.
3. The experience told me something about life.
4. The experience was inspiring.
5. The experience moved me like a piece of art.

Suspense

1. At some moments I was anxious to find out what would happen next.
2. I was really hoping that the choices I made would work out well.
3. I did not care how the story developed. (N)
4. I found myself staring at the screen in anticipation.
5. Sometimes I was worried about how the story would develop.
6. Some moments were rather suspenseful.
7. At some points I breathed a sigh of relief.
8. I found myself wishing for a particular story outcome.

9. The story did not affect me. (N)

Curiosity (only used in the pilot)

1. During the experience, I felt like exploring my environment.
2. During the experience, I felt curious.
3. During the experience, I felt interested.
4. During the experience, I felt inquisitive.
5. During the experience, I felt eager.
6. During the experience, I felt in a questioning mood.
7. During the experience, I felt stimulated.
8. During the experience, I felt disinterested. (N)
9. During the experience, I felt mentally active.
10. During the experience, I felt bored. (N)

Enjoyment (only used in the pilot)

1. The experience was pleasant (general)
2. The experience was gratifying (general)
3. The experience was rewarding (general)
4. The experience was amusing (amusement)
5. The experience was exhilarating (amusement)
6. The experience was thrilling (suspense)
7. The experience was exiting (suspense)
8. The experience was melancholy (melancholy)
9. The experience was moving (melancholy)
10. The experience was appealing (aesthetics)
11. The experience was pleasing to the senses (aesthetics)
12. The experience made me feel proud (achievement)
13. The experience made me feel competent (achievement)