



The Engagement Effect of Players' Agency over their Characters' Motivation

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Abstract. Story-rich games are increasingly popular, and with this popularity comes the demand for more engaging narratives in games. This paper investigates how the players' engagement is affected by providing them with agency over the player character's motivation through a game mechanic, which we call Hover-text. An experiment was conducted in which a test- and control group played through a visual novel with or without the Hover-text. Using questionnaires to measure their engagement in the three categories of agency, empathy and roleplay, it was found that players who were exposed to the Hover-text reported that they felt more involved with the player character's feelings. These findings suggest an alternative to the way games can encourage empathic engagement. More research is necessary to clarify the role of the player character's personality, and whether using the Hover-text on a blank-slate character differs from using it on a fully-fleshed character.

Keywords: Video games · Narrative · Agency · Engagement
Player character · Character motivation

1 Introduction

Video games are a digital medium which surpasses other digital media, such as audiovisuals and music, when it comes to interactivity and agency. With the introduction of player agency come the challenges of the Narrative Paradox: the trade-off between providing the player with more agency and providing the author with more power to create immersive narratives [1]. The player character (PC) reflects this paradox by either being a pre-described character, aiming to induce readerly pleasure, or a blank-slate character for the player to apply their own traits, which instead gives the player agency. Games have a tendency to compromise back and forth between these two extremes when it comes to designing the PC. Lankoski [2] proposed that engagement within a game can be derived from goal-related and empathic engagement. Goal-related engagement is an "I" experience, where the player acts to reach their goals. Empathic engagement happens when the player reacts to a character's actions: recognition, alignment and alliance.

We propose that by providing the player with agency over the PC's motivation and personality, it is possible to shift a player's engagement from goal-related to empathic. We also propose this as a way to give the author some power to tell an immersive story, while still providing the player with some feel of agency. We developed a prototype, in order to test this hypothesis. The prototype is of the visual novel genre, in which players choose their actions from a menu of options in order to progress. The test group was given extra text in the form of an inner monologue describing the character's feelings about that particular choice. The inner monologue text, referred to as the Hover-text, was written to fit within three different tones: sneaky, no-nonsense and social-butterfly, allowing the player to base their choice not only on the action itself, but on what kind of character they wanted to be. The control group could only choose based on the action they wanted to perform. We evaluated the prototype in an online experiment with 184 participants playing the game and evaluating it with a questionnaire. We measured the players' engagement on three main categories: agency, empathy and roleplay, where roleplay items are items asking whether the players felt they were acting "in-character" or on their own accord. The questionnaire consisted of ten 5-point Likert scale items.

The results from our test showed a significant difference in players' feel of being involved with the feelings of the PC, when exposed to the Hover-text.

2 Related Work

The relationship between player and PC has been well investigated. Besseire et al. [3] found that players in the online game World of Warcraft sculpted their avatars to reflect their ideal selves, and they would act in this role when playing. Blake et al. [4] took another approach and investigated the tendency for the player to shift their self perception to fit the character they were playing. These are instances where players are either given a character with defined motivations, or a blank-slate character to fill out themselves. Our research expands on this and investigates players' reaction to a PC, when they have agency over their character's motivation. We want to see how a mechanic that gives the player the ability to pick from different motivations affects their experience within the parameters of agency, empathy, and roleplay.

The illusion of agency was tested by Fendt et al. [5] in a scenario where players interacted with different story structures, namely the branching tree against the flowchart. It was found that by giving specific feedback it was possible to give an illusion of agency, a conclusion they based upon feedback in the form of questionnaires. Another test, which used questionnaires to measure agency, was conducted by Thue et al. [6]. They tested their prototype PaSSAGE, and found that arranging the way in which available interactions are presented (based on what the player was most likely to choose) was sufficient to create an illusion of agency. Our motivation for looking into agency stems from our design, in which we add more context to a player's choice. The additional weight to the choice does not give them more agency over the story, but it is interesting to see if it creates an increase in perceived agency.

When talking about the emotional affection of games, research is quick to focus on the effect of violence on players, however, Belman et al. [7] argue in their paper, that games can also be used to foster more positive reactions, such as empathy towards marginalized groups. For measuring empathy, Davis' [8] questionnaire is often used. He divides empathy into four categories, one of which is fantasy, i.e., a person's ability to empathise with fictional characters, which makes it relevant to our research.

Games often provoke feelings towards the self: excitement, frustration, relief, and curiosity. Even if the game story does involve emotions such as love or jealousy, those are not the emotions motivating the player to rescue the princess [9]. Combining emotional immersion with interactivity is problematic, because it requires players to feel empathy towards a computer-controlled character, which also serves a purpose in the interaction, either as a messenger, helper or hinderer of the player's objective [9]. If, however, the player's lucid interest in the character, as a means to an end, can be combined with the narrative interest of the character as a person, then it elevates the character from being a game object, into a human being [10,11].

The PC's motivation and players' ability to recognize it is part of the emphatic engagement defined by Lankoski [2]. He also defines goal-related engagement as the player's goal being the same as the goal of the game. Empathic engagement and goal-related engagement does not have to cancel each other out, but it is quite clear that a lot of games rely on the goal-related engagement. With our research, we want to explore whether providing the player with knowledge and agency over their PC's motivation could provoke empathic engagement.

Summary. We propose that providing the player with knowledge and agency over their character's motivation influences the player's feel of agency, empathy, and roleplay.

3 Experimental Design

In order to test our hypothesis, an experiment was conducted. A game was developed with a specific mechanic designed to give the player access to, and agency over, the PC's inner thoughts. This mechanic was named Hover-text and was mainly inspired by the game Dreamfall Chapters [12]. The new game was put online for testing, and evaluated using a questionnaire.

3.1 The Game

The game was designed as a visual novel, in which players had to solve a murder mystery by interacting with different characters. It features purposeful-selective interaction [9], where the player picks from menus with options to decide how they wish to respond. An example can be found in Fig. 1. The crime theme was picked due to it being what-suspense [9], which in itself does not encourage empathy, but rather indulge the player with the intellectual satisfaction of

solving a puzzle. A setup was needed which allowed for the possibility of a difference between the PC's motivation and their actions. This setup was inspired by Cluedo [13], because this interaction is inherent to the game. The characters all wear masks to symbolize that the game world is one of deception. The structure of the narrative is a flowchart [9], in order to ensure that every player gets approximately the same content, and to avoid combinatorial explosion by having a true branching tree.

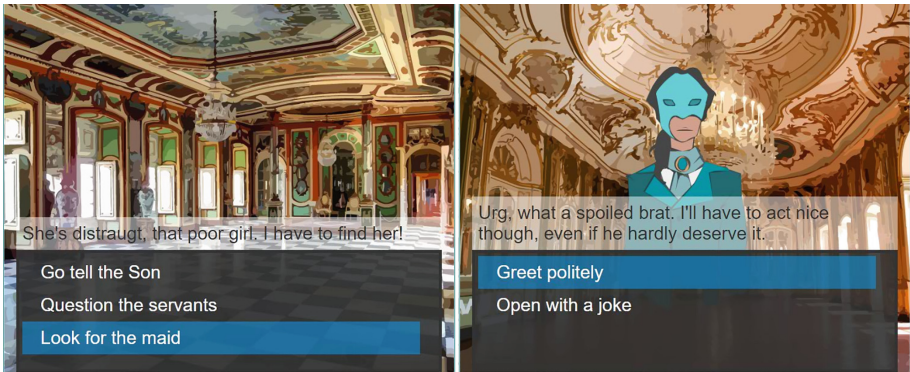


Fig. 1. Screens from the game Court of Madness, showcasing the Hover-text.

The Hover-Text. The player interacts with the game through menus. Each option has an action-text describing the action the PC will perform, if that option is selected. The Hover-text refers to a text that appears when the player hovers over an action. The text is an inner monologue, written as if spoken by the PC, and gives context to the action. For some options, the Hover-text will reflect the action of the PC, but other times they can be contradicting. For example, a player could pick the action “Greet politely” to act nicely toward a person, while the Hover-text would reveal that the PC in fact does not like the other character. The Hover-text is written so that the player may choose between three distinctive personalities: sneaky, no-nonsense and social-butterfly. The player will be able to then base their choice on not only the action they wished to take, but which of the three personalities they might wish to roleplay. A control group was also tested, which were given the action-text but not the Hover-text.

3.2 Online Test

The online model was chosen due to a number of reasons. The game needed to be a certain length, in order to get a proper dramatic arc, and give the player enough time to get familiar with the characters. Having the test online would

make it possible to run multiple tests, unsupervised, at the same time, making testing more time efficient on our part. This was necessary due to the length of a play session and because the expected required sample size is too large to realistically achieve in a supervised setting. The test environment was also more representable for how the participants would usually play such a game, since they were allowed to play it however they felt comfortable. Finally, by reaching out online, it was possible to get a more diverse test group, although the participants fall into the demographic of being users of the social media used to recruit them.

Quality of Data. Several measures were taken to ensure the quality of the collected data. The user’s IP was logged to make sure they did not appear in the data several times. A player’s choices during play was also logged, making it possible to trace how they navigated the game world. The entries were sorted to ensure a balanced sample, first by gender, then by current sample size, and lastly gaming experience. Gaming experience was chosen above other features, due to the experiment by Thue et al. [6], where they found that player experience had an influence on their data. When asked about gender, the players were able to fill out “other”, in addition to male and female because participants who do not identify as male or female, might not be proper representatives for either. All actions were logged with time stamps, making it possible to check if players rushed through the game, or spend days completing it. The layouts of the questionnaires were made to look the same as the game, in order to create continuity, and make the ending of the game less of an exit point. We wanted to mitigate the number of participants who left the test before completing the post-test questionnaire. Players were recruited through social media: Facebook, Twitter, and in various game- and narrative oriented groups on Reddit.

3.3 Questionnaire

The player experience was measured using a questionnaire with items in three categories: agency, empathy, and roleplay. The three categories were chosen based on previous research, summarized in the related work section, and from the results of a pilot test, where participants played an early version of the game followed up by an interview. The two first items were taken from Fend et al.’s questionnaire [5] for the illusion of agency. For empathy, items 3–6 were taken from Davis’ questionnaire [8]; however, the original items were meant for literature, and therefore had to be reformulated to fit a game. Finally, the remaining four items were formulated to measure the player’s self-perceived role when playing:

1. When playing the game, I was able to see the results of my actions.
2. I felt that the story would have been different if I had made different choices.
3. While playing the game, I could relate to how the player character was feeling.
4. I did not get involved with the feelings of the main character in the game.

5. When playing the game, it was difficult for me to view things from the player character's perspective.
6. I tried to imagine myself in the player character's shoes when making a choice.
7. I made choices based on what I felt the player character would do.
8. I made choices based on what I felt I would do.
9. I made choices based on what I felt would yield the best result.
10. I felt, I was not part of the story, but rather someone off screen, guiding the player character to the right path.

4 Results

The test was online for two weeks and at the end of the test, 263 IPs had been logged, while there was a total of 184 completed entries by unique IPs, meaning 70% of participants played the entire game and filled out the post-questionnaire. Out of the 184 participants, 4 participants were excluded because they admitted in the comment field of the post-test questionnaire that they did not read the text. The 7 participants who chose "other" as gender were also removed. Participants who were major outliers in terms of finishing the game too fast were removed, due to the likelihood of them not having taken proper time to read the text. It was decided to look at the 12 participants from the pilot test as a reference for finding outliers, as these entries were recorded without breaks. In the results from the final test, players were able to take long breaks, effectively increasing the median of the data set, and thus making a bad representation for what the minimal time would be for someone who did not take any breaks. The threshold was found by using John Tukey's outlier filter, with IQR times three and this gave a threshold of 10 min and 57s. 32 outliers were found by players who finished the game in a time below the threshold, leaving a total of 143 samples. Out of all the entries removed, 27 were found in the control group and 9 in the test group, which ended up skewing the sample sizes a bit, leaving the test group larger than the control group. A summary of the demographics of each group can be found in Table 1.

Table 1. Summary of demographics.

	Test group	Control group
Gender	59M/21F	46M/17F
Mean age \pm SD	25.20 \pm 6.77	23.70 \pm 4.15
Mean game experience \pm SD	2.62 \pm 1.76	2.59 \pm 1.47
English as first language/other	33/47	21/42
Total participants	80	63

4.1 Questionnaire Data

The questionnaire data was tested using the Mann-Whitney U test and significant differences were found in item 4 and 8. A graphical visualisation, using diverging stacked bar charts, can be found for each of these items in Figs. 2 and 3. Red is used for those who strongly disagree, orange for disagree, grey for neutral, light blue for agree, and dark blue for strongly agree. In addition to looking at the test- and control group, we also investigated the differences when looking at each specific gender and when looking at whether the players spoke English as their first language or not.

The differences in the answers to the remaining 8 items were not found to be significant. There were other items which showed a trend towards being significant, and all of the *p*-values can be found in the Table 2.

Table 2. All *p*-values across the ten items, calculated using the Mann-Whitney U test. Bold numbers in the table indicated a significant result. For gender and first language, the Bonferroni correction was considered for the results, meaning the significance level was divided by the number of tests, in this case 3.

	Item	1	2	3	4	5	6	7	8	9	10
Gender	All	0.565	0.593	0.398	0.035	0.105	0.457	0.837	0.732	0.386	0.662
	Male	0.249	0.494	0.452	0.015	0.356	0.325	0.947	0.600	0.602	0.805
	Female	0.383	0.925	0.730	0.990	0.068	0.765	0.500	0.745	0.483	0.184
First language	English	0.097	0.870	0.823	0.017	0.158	0.639	0.442	0.005	0.222	0.808
	Other	0.718	0.673	0.298	0.287	0.471	0.671	0.922	0.120	0.613	0.912

4. I did not get involved with the feelings of the main character in the game.

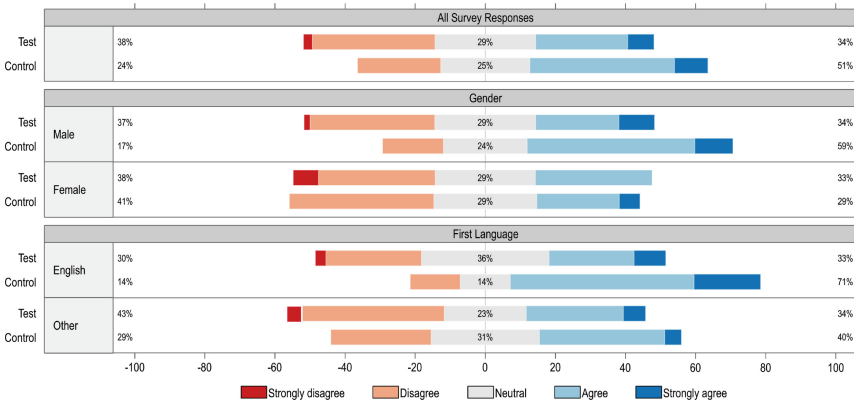


Fig. 2. The *p*-value for the difference between the answers to item 4 of the test- and control group is 0.035. If only looking at male participants, the *p*-value is 0.015, and if only looking at participants who have English as their first language, the *p*-value is 0.017. (Color figure online)

8. I made choices based on what I felt I would do.

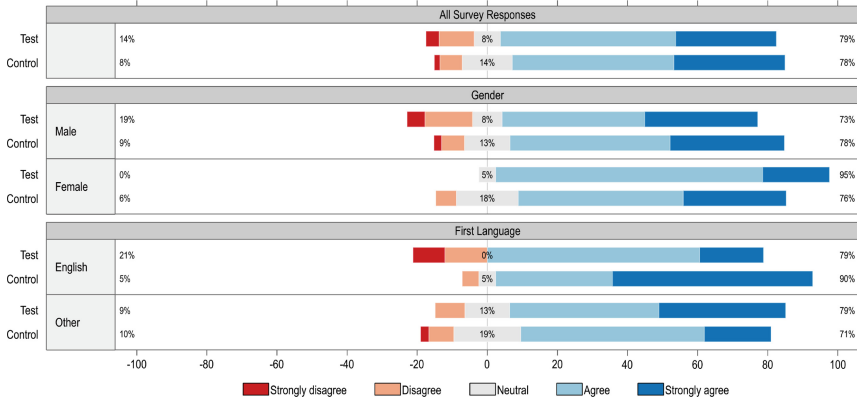


Fig. 3. p -value for the difference between the answers to item 8 of the test- and control group is 0.732. When only looking at participants who had English as their first language, the p -value becomes 0.005. (Color figure online)

5 Discussion

From the data gathered in the experiment, we can conclude that in this particular game, players who were exposed to the Hover-text expressed that they were more involved with the feelings of the PC, and native English speakers expressed that they made choices based on what they themselves would do, to a lesser degree. We observed no significant differences in the two groups' expressed feel of agency, which suggests players felt neither more or less in control of the game, by having the Hover-text.

The fact that players expressed that they were more involved with the feelings of the PC suggests that by allowing players to make decisions based on the inner thoughts of their character, they will be more aware of the fact that the PC has inner thoughts, and perhaps that leads to the feeling of involvement. This would reflect the proposal by Lankoski [2], that empathic engagement is linked to the knowledge of a character's alignment. We did not observe any difference in the other empathy questions, which prompted us to look more into the formulation of these items. Item 3 asks the player if they could relate to the PC's feelings. If the player was not roleplaying a character, is it then possible for them to relate to it? Item 5 asks about the player's ability to view things from the PC's perspective, which also requires that the player perceives the PC as a character. This can also be argued for the case of item 6, which asks players if they were imagining themselves in the PC's shoes, when making a choice. It can therefore be argued that giving the player agency over the PC's motivation, does not provoke empathy, if the player does not perceive the PC as a character. By having the 3 different personas to chose from, it is possible for the player to change the motivation of their character quite drastically, and participant No.

154, from the test group, wrote the following in the comment field: “That the player character starts quite malicious but can change his mind and become sympathetic so easily makes him hard to identify with, a bit wishy washy.”

It is possible that the results would be different, had the PC only had one distinctive personality, and the different motivations written to fit that particular persona. This would then mean that players would have to roleplay a character they do not necessarily find likeable, but that does not necessarily have to influence whether the player can empathise with the character or not.

From the data it would also appear that the player’s spoken language has a stronger influence than other features, such as gender. With the data gathered there appears to be no difference correlated to the player’s gender, but the sample size between male and female is too far apart to make a proper conclusion. When only looking at native English speakers, item 8 becomes significant. Here the sample size is 54, which is 38% of the data set. Item 8 is in the roleplay category, suggesting native speakers are either more likely to not base choices on what they themselves would do, or they are better at self-asserting when they are doing it. It is possible that non-native speakers would have rated roleplay the same way native speakers did, were it not for potential language barriers.

6 Future Work

There appeared to be a correlation between players being native speakers, roleplay, and the use of the Hover-text. For further studies it might be interesting to look into how native speakers perceive a narrative differently from non-natives speakers, and this might be useful for reducing noise related to language barriers.

It is also interesting to dig further into the role of the PC, either as a blank-slate character or as a more fleshed out character. By writing all Hover-text to match the most popular persona in our experiment, one could diminish the number of players who did not perceive the PC as a character, due to irregular motivation. Then the player will have to play as a set, but fully-fleshed, character, while still being able to base their choices on this character’s motivations. In this way, significant differences might be found in more of the empathy items, between the test- and control group.

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