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'Sure, I Would Like to Continue'

A Method for Mapping the Experience of Engagement in Video Games

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“Sure, I Would Like to Continue”: A Method for Mapping the Experience of Engagement in Video Games

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Abstract

In order to explore one aspect of the engaging nature of computer games, this study will propose a method that aims at classifying the experience of engagement in video games. Inspired by a literature review, we will focus on the fundamental causes of engagement that motivate a player so much that he or she wants to continue playing. By organizing this willingness to continue playing into six broad types of causes of engagement—intellectual, physical, sensory, social, narrative, and emotional—we describe a typology of player engagement and a method that is intended to map players' experience of engagement while playing video games. The engagement mapping method is inspired by card sorting found from a perspective of usability testing, and in order to exemplify the use of the method, occurrences of the six types of engagement were investigated during gameplay in *Angry Birds* and *Wii Sports*.

Keywords

engagement, continuation desire, card sorting, engagement mapping method, video games, player experience

Introduction

Engagement in video games is a multifaceted concept that can be related to a variety of other conceptions—for example, immersion (Adams & Rollings, 2007; Brown & Cairns, 2004; Douglas & Hargadon 2001; Ermi & Mäyrä, 2005; Jeanett et al., 2008; Murray, 1997; Ryan, 2003), flow (Chen, 2007; Csikszentmihályi, 1991; Sweetser & Wyeth, 2005), presence (e.g., Lombard & Ditton, 1997), fun (Eglesz, Fekete, Kiss, & Izsó, 2005; Koster, 2005; Lazzaro, 2004; Malone, 1980), general motivations for playing (Przybylski, Rigby, & Ryan, 2010; Rigby & Ryan, 2011; Yee, 2006), game and user engagement (Brockmyer et al., 2009; O'Brien & Toms, 2008), involvement and incorporation (Calleja, 2011), as well as enjoyment (Ijsselsteijn, de Kort, & Poels, 2008; Klimmt, 2003).

In this study, we will focus on one fundamental aspect of engagement: the desire to continue playing, which is a prerequisite for the experience of other conceptualizations such as engrossment, flow, fun, enjoyment, immersion, involvement, and incorporation, because a player first needs to *want to continue* playing, before these other aspects of the player experience can be experienced (e.g., Brown & Cairns, 2004; Douglas & Hargadon, 2001; Schoenau-Fog, 2011; Calleja, 2011).

In order to propose a method that can be used to focus on an empirical investigation into the experience of wanting to continue playing, we first classify the causes of engagement into six broad types intended to embody the main reasons

related to the player's willingness to continue playing. Our categorization of engagement is therefore more detailed than the Brown and Cairns (2004) study, and whereas other studies investigate games with virtual game environments (e.g., Calleja, 2011) and multiplayer online role-playing games (e.g., Yee, 2006), we attempt to cover all game genres, so the choice of the following terms was made in order to be as general as possible. We have chosen the terms intellectual, physical, sensory, social, narrative, and emotional engagement to cover the various causes of the desire to continue. This study proposes a method intended to investigate the basal level of engagement through the willingness to continue playing, and it therefore does not attempt to explore the next levels or phases of the player experience such as, for example, engrossment, total immersion (comparable to presence; Brown and Cairns, 2004), flow (Csikszentmihályi, 1991), incorporation (Calleja, 2011), or enjoyment (Klimmt, 2003). By evaluating the desire to continue aspect of the player experience, we can determine the most fundamental requirement of a successful player experience, as it is can be argued that it is not possible to immerse or involve oneself,

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experience the flow state, feel incorporated in the game world or have fun without wanting to keep playing.

We explore the first minutes of a player's experience, which are crucial for initially engaging said player. Whereas the experience of, for example, immersion, flow, and incorporation may need more time to be encountered, the experience of the willingness to continue is on the one hand instant, while on the other hand it will quickly fade away if the game is not engaging.

It is important to state that the six types of causes of engagement can be dependent on one another—for example, sensory stimuli can support narrative engagement, and social interaction with other players can evoke emotional engagement. Also the various causes of engagement will most likely change during gameplay, thus creating a dynamic, fluctuating experience for the player. For instance, players might become more sensorily engaged in the game the first time it is encountered than after playing it several times. We present each of the six types in the following sections while relating them to some of the resulting concepts, and then we move on to describe some examples of causes related to each specific type. These causes will later be used as a foundation for the keywords used in the Engagement Mapping Method (EMM).

Intellectual Engagement Causes

Intellectual engagement is concerned with intellectual challenges, activities, and creativity, and it may be the result of a player's desire to keep playing in order to solve puzzles and face challenges that demand the use of intellect. These causes of engagement can result in "challenge-based immersion," which has been described by Ermi and Mäyrä (2005) as related to mental skills "such as strategic thinking or logical problem solving" (p. 8). Adams and Rollings's (2007) "strategic immersion" (2007) is also a related concept and is the cerebral kind of involvement with the game. The strategic immersion can be caused by intellectual engagement when these kinds of challenges become the main motivational factor to continue playing. Calleja (2011) describes ludic involvement, which is related to choices made by a player in the pursuit of a game's goals and related challenges. If these challenges are of an intellectual nature, the desire to keep playing in order to complete such challenges may then result in ludic involvement.

Examples of causes, which can support the desire to continue through intellectual engagement, can be summed up as follows: strategic thinking, problem solving, planning, intellectual challenges leading to rewards, solving puzzles, acquiring knowledge, and creation of in-game content.

Physical Engagement Causes

Experiencing the desire to continue due to physical engagement causes is related to physical activities performed via interaction with the game. The desire to continue in these types of causes is based on the possibility of moving the body

offered by physical input interfaces, which may subsequently result in tactical immersion (Adams & Rollings, 2007). The difference between tactical immersion and physical engagement is that the latter supports the experience of tactical immersion, when, for instance, the player wants to continue in order to become more skilled in using input devices or body moves to achieve better results. This desire to continue playing due to the possibilities of moving the body or parts thereof may result in what Calleja (2011) describes as "kinaesthetic involvement," which includes controlling and moving avatars and miniatures. The desire to continue due to physical action might also result in Calleja's concept of ludic involvement, which includes decision making undertaken in the pursuit of both game and self-assigned goals.

The causes of physical engagement may occur when the game mechanics demands a lot of physical action (from finger tapping to free movements with the full body) and challenges, which require fast and/or precise and timed body moves by the player. Other indicators of physical engagement can be observed when it becomes a desire in itself to continue in order to use intuitive or touch interfaces or to improve controlling the game through the body.

Sensory Engagement Causes

Sensory engagement causes are related to stimulating the senses during gameplay. This form of engagement can become the outcome when sensory inputs mediated by the game support a player's game experience in such a way that he or she wants to continue because they want to experience sensations and explore the sensory elements of the game.

Sensory engagement may result in "sensory immersion" (Ermi & Mäyrä, 2005), which can be experienced when the player is immersed in a gameworld through the audiovisual elements of games. Ryan's (2003) concept of "spatial immersion" may also be supported by sensory engagement; for example, Ryan describes how a reader (in our case a player) can have a "sense of being present on the scene of the represented events" (p. 122). However, players could also feel presence or sensory and spatial immersion in a game without being engaged.

As one of the six types of the player involvement model, Calleja (2011) suggests spatial involvement, which includes the control, navigation, exploration, and learning of the game's spatial domain. However, sensory engagement also includes the desire to continue experiencing the audiovisual and haptic effects of games that do not include virtual environments.

In summary, the causes of sensory engagement are the sensory elements in a game that trigger players' desire to experience more of the game's audiovisual or haptic elements.

Social Engagement Causes

The social engagement causes are correlated with interaction with other players, both during gameplay and in real life. There have been a variety of research studying social aspects

of video games (e.g., Kolo & Baur, 2004; Simon, Boudreau, & Silverman, 2009; Squire, 2002). In this context, social engagement may be the outcome, when a player desires to continue playing with others and to return to a game in order to feel connected with friends and other players.

No matter how strong or real these interpersonal relationships are, the ability to play with other players must be considered as one of the primary motivations to play online games (Yee, 2006). The concept of “shared involvement” (Calleja, 2011), which is based on the player’s interaction with and awareness of other agents (player or game controlled), could be argued to be the result of the desire to continue playing with others. Apart from friendships and interplayer relations, competition or cooperation also strengthens social engagement. Competition may keep players engaged in defeating each other and trying to beat high scores.

Examples of causes that can result in social engagement are quests, and challenges and puzzles that can only be solved when players collaborate. Fame, acceptance from others, belonging, bragging, competing, cooperating, and sharing experiences are further causes of social engagement and the desire to continue playing due to interpersonal relations.

Narrative Engagement Causes

Narrative engagement is related to the story experienced while playing the game and may result in “imaginative immersion” (Ermi & Mäyrä, 2005), “narrative involvement” (Calleja, 2011), and “narrative immersion” (Adams & Rollings, 2007). The desire to know how the story is going to unfold may create curiosity, suspense and excitement, and thus make the player want to continue playing. This type of desire to keep playing might then result in narrative engagement. Characters in the game may support the narrative engagement as well when the player begins to involve him or herself in the character that he or she is playing, as well as how the other characters are developing in the narrative. Narrative engagement could be fueled by the player’s own performance in conflicts and exciting events, using the same methods as in movies such as experiencing curiosity of what is going to happen in the story when the player performs this or that action in order to overcome a challenge.

Using a range of narrative tools such as cues, exciting characters, interesting events, a developing story-arc, and suspense or surprise based on cause-effect chains in relation to the narrative can make a player want to continue and thus cause narrative engagement. An indicator of narrative engagement is thus that players become so curious and interested in the narrative events and conflicts that they want to continue playing to see the outcome of the events.

Emotional Engagement Causes

Entertainment experiences can be seen as multidimensional and highly dynamic during video gameplay, with games potentially eliciting a multitude of different emotions and

cognitions varying across time (Grodal, 2000; Klimmt, 2003; Lang, 1995). Emotional engagement can be the result when the player’s own emotions during gameplay—feelings toward other players or empathy toward nonplayer characters—make the player want to continue. Emotions can be caused by an event, action of other players or nonplayer characters, or the attributes of an in-game asset, which cause an emotion in the player. The event can, for example, be the killing of the player’s character, or a puzzle that is too hard to be solved. Examples of such emotions encountered during gameplay could be: revenge, anger, frustration, affection, remorse, relief, and tension.

Emotional engagement can furthermore be caused by other types of engagement; for example, narrative engagement, when players feel a strong tie to the characters and story of the game. This close relationship between emotional and narrative engagement is also supported by Ermi and Mäyrä (2005), who explain emotional involvement in games by referring to their description of imaginative immersion. The concept of “emotional immersion,” described by Ryan, may also be the result of emotional engagement because it occurs when players are becoming emotionally involved in the destiny of the antagonists or protagonists in a narrative because of identification with them (Ryan, 2003). Calleja’s concept of “affective involvement” (Calleja, 2011), which relates to emotional affect during gameplay, might moreover become a result of the causes of emotional engagement, when players want to continue playing in order to experience a range of emotions and affect.

Indicators of emotional engagement can be observed (and measured in some cases) when players are feeling and showing emotions that are caused by the game. Humor in games and having fun while playing are other causes of emotional engagement.

Method

This study does not attempt to answer the question of to what extent players are engaged. Instead we studied how the six types of causes of engagement are experienced in two different games.

The empirical data collection was carried out in spring 2011 and we used two games, *Angry Birds* (Rovio Mobile, 2009) and *Wii Sports* (Nintendo, 2006). The two games were chosen because of their popularity. *Angry Birds* is available on both mobile OS platforms—iOS (iPhone and iPad) and Android. The mobile device used for this study was an HTC using Android. *Wii Sports* was tested with the Nintendo Wii console and a television screen.

The data collection method was inspired by the Product Reaction Cards found in the Desirability Toolkit (Benedek & Miner, 2002), which originates from a perspective of usability testing. In the original test a series of 118 product reactions cards were made. From our previous experience with the reactions cards it appears that 118 cards are too much for the participants to choose from. In this study, the number of

Table 1. The Words on the Reactions Cards

Intellectual	Physical	Sensory
Intellectual challenges	Reaction	Surprise
Strategic thinking	Freedom of movement	Ambience
Problem solving	Improve control	Visual
Planning	Demanding	Sounds
Rewarding	Intuitive	Music
Completing	Precision	Horror
Creation	Timing	Atmosphere
Acquiring knowledge	Touch	Senses
Solve a puzzle	Physical action	Explore
Social	Narrative	Emotional
Team spirit	Suspense	Affection
Friends	Dramatic	Revenge
Cooperating	Exiting characters	Anger
Chatting	Narrative	Relief
Sharing	Cause-effect	Scared
Community	Development	Tension
Participation	Interesting events	Empathy
Belonging	Conflicts in the game	Joy
Socialize	Curiosity	Thrill

series was thus limited and 49 reactions cards were made. The words on the cards, which are described in Table 1, were chosen based on the causes introduced in the typology of the six types of engagement causes mentioned earlier.

We used convenience sampling (Koerber & McMichael, 2008) to recruit participants for testing and interview. We interviewed 18 people for *Angry Birds* and 12 people for *Wii Sports* (30 interviews in total). Participants were recruited from different universities in the Copenhagen area in Denmark. After playing, we asked the participants to indicate their age and their typical playing time per week based on six predetermined time categories. All the participants were in the age-group of 18 to 43 years (*Angry Birds*, 15 men and 3 women, average age = 25.9 years; *Wii Sports*, 9 men and 3 women, average age = 26.3 years). All the participants were asked to start playing one of the two games, which they could choose. After exactly 1 minute and 30 seconds, we interrupted their game and asked, “Do you want to continue playing?” If the test participant agreed, we asked the test participants to choose five words from the 49 reactions cards that best described “Why are you motivated to continue playing the game?” Then participants were asked to rank the five chosen cards by first selecting which of the cards best described the desire to continue, then the second best card, the third best, and so on. An example of one of the participants choosing from the 49 reactions cards can be seen in Figure 1.

The card sorting method is aligned with the constructivist approach and more particularly to personal construct theory (Kelly, 1955). The theory is based on the premise that people make sense of the world by categorizing it, and that people can describe their own categorization of the world with

**Figure 1.** Example of participant choosing reaction cards in an *Angry Birds* game.

reasonable validity and reliability (Rugg & McGeorge, 1997). The approach to the interviews was performed by a semistructured interview guide (Kvale & Brinkmann, 2009), which covers an everyday conversation with a structured starting point, but structured by different themes. In our study, the themes were the test participants’ chosen words.

Only four participants did not want to continue playing (one playing *Angry Birds* and three playing *Wii Sports*), and the test was stopped, as disengagement was not a part of this study. But for the other participants it was actually quite difficult to stop them (especially some of those playing *Wii Sports*), where some of them exclaimed, “just a few seconds—I just have to . . .” or “ohh no not now!”

Results and Findings

Angry Birds

Angry Birds falls within the genre of puzzle games, where players use a slingshot to launch birds at pigs stationed on or within various structures, with the intent of destroying all the pigs on the playing field. As players advance through the game, new birds appear, some with special abilities that can be activated by the player. It appears from this study that *Angry Birds* causes primarily intellectual and physical engagement when the results are inserted into the player engagement map in Figure 2. The axes in the map depict the six types of engagement and the number of related reaction cards chosen.

The intellectual engagement causes in the game becomes apparent when it is considered not enough to just shoot directly at the obstacles, but instead the player is more likely to succeed after several attempts using creative ways of shooting the birds at the obstacles. It is often necessary to have a mixed strategy when playing *Angry Birds*. The intellectual engagement is primarily present because of the problem-solving causes. It is not enough to simply kill all the birds; the player also aims for high scores (getting the maximum three stars on each stage).

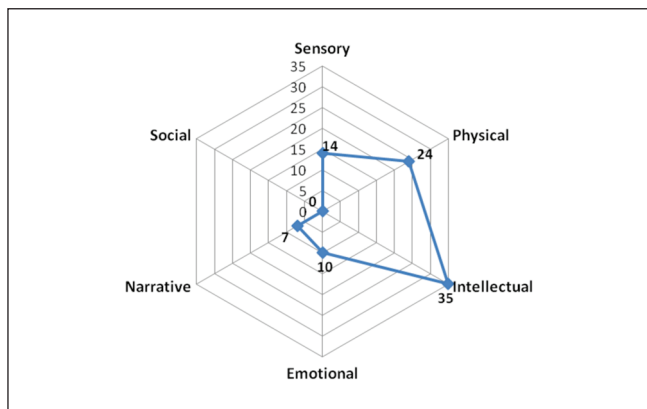


Figure 2. The player engagement map depicting the experience of engagement in *Angry Birds* based on the numbers of chosen words in reaction cards ($n = 18$)

This means that words within the category of the intellectual engagement causes were chosen 35 times, whereas words within physical engagement were chosen 24 times. The most often chosen word within intellectual engagement was “problem solving” (chosen 15 times), and the most often chosen words within physical engagement was “precision” (chosen 9 times). Many respondents mentioned the combination of intellectual and physical engagement, for example,

I really like the balance in this game. It demands some strategic thinking because it is not a good strategy just blindly firing, but also you need to have good control and touch. So good brain and right touch, it is kind of balance and quite difficult sometimes [laughing]. (ID 3, male 26, this participant asked if he could continue playing after the interview)

Physical engagement was rather explicitly mentioned in the interviews, for example,

“The main thing for continuing playing is the perfection, how much control you have with the touch screen, in order to find just the perfect angle and amount of power, when shooting the birds with the slingshot” (ID 14, male 31).

The game does not have a social element as such as it is purely a single player game. The only element that comes somewhat near the social engagement is the ability to watch your rank among other players, and possibly compare this with your friends (out-of-the-game/macro level). None of the participants chose words within social engagement, but from the interviews it appears, however, that the social element is also a factor that should be taken into account for understanding why players continue playing *Angry Birds*:

I have a competition with my friend over who can get the highest score. I am currently more than

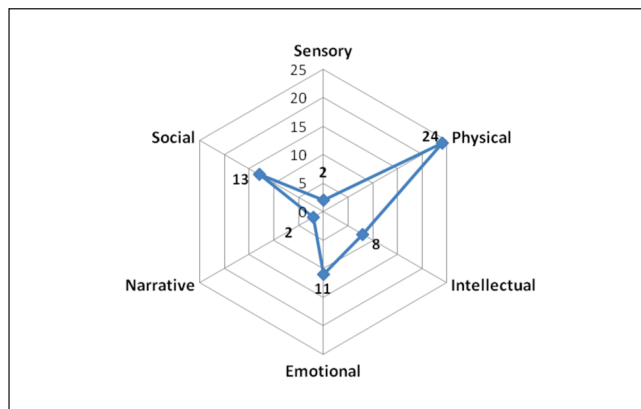


Figure 3. The player engagement map illustrating the experience of engagement in *Wii Sports* based on the numbers of chosen words in reaction cards ($n = 12$)

30.000 points behind. I am a bit lost how to beat him. (ID 4, male 21)

The game has, to a minor degree, a narrative engagement through the back story. The aim of the game is to take control of a flock of birds in order to retrieve eggs that have been stolen from them by evil green pigs. However, this story is not seen to be a central part of the causes of engagement and for continuing playing the game as the narrative element is more like an overall theme. There is no progression in the story as it is more or less a static repetition of the same scenario over and over again, level after level. The only two words chosen within the narrative engagement were “development” (chosen four times) and “curiosity” (chosen three times). It appears from the interviews that participants had the same interpretations of these two words, and they were not related to the narrative, such as with participant: “I can be very curious about the challenge in the next level” (ID 8, female 20).

In general, another indicator, which pointed toward the experience of the desire to continue aspect of engagement was observed. Several of the players did not stop after 1 minute and 30 seconds, and when asked if they were ready to continue with the next part of the test, they asked if they could just play one more level, or have a little time to complete the current level.

Wii Sports

Wii Sports is a sports game, which is a collection of five sports simulations designed to demonstrate the motion-sensing capabilities of the Wii remote controller. The player uses the Wii remote to mimic the motion of the different sport games. The five sports included are tennis, baseball, bowling, golf, and boxing, but we tested only tennis.

It appears from the study that *Wii Sports* primarily causes physical, social, and emotional engagement, as can be seen in Figure 3.

Twenty-four cards were chosen within physical engagement. The most chosen word within this category was “timing”

(chosen six times), but followed by the words “physical action” and “reaction” (both chosen five times).

It is all about the right touch, isn't it. So of course it has something to do with perfectionism. There is also a training program so you can have the right timing and improve control over the racket. (ID 4, male 35)

Physical action, yes. I can tell. I know it is a good idea with some warm up before starting. Actually I have some pain in my shoulder/arm right now . . . but sure I would like to play again. (ID 9, male 23)

The right move, timing and precision. I am almost a pro. (ID 6, male 25)

The most chosen word within the causes of social engagement was “socialize.” Because it was tested at some universities and not in a private context, it might be the case that the social engagement could be higher. Some of the participants also mentioned the private context: “I have played together with my friends when we were rather drunk. It just made it really fun” (ID 9, male 23).

In the test we performed, there were also participants who played as a single player; however, as this participant stated, “You get bored if you play this alone. It is absolutely a multiplayer game” (ID 5, male 24).

Only two cards were chosen within the cause of sensory engagement; however, some of the participants mentioned that visual and graphic elements were not essential for their desire to continue:

The visual and graphic part is really horrible, but that is not the main thing. So for some reason you keep playing even though it has really bad graphics. (ID 11, male 21)

Emotional causes were also reported as fairly important for some of the participants. The methodological framework with the reaction cards does not cover these causes within emotional engagement particularly well. Cards within emotional engagement were chosen 11 times, and the most chosen word was “joy,” chosen 5 times. However, from observations of the participants playing *Wii Sports*, some emotional reactions are evident:

Move, move, move . . . ahhhhh!

Yes, yes, yes—40-0 [forty-love]!

Shit, shit!

After confronting one of the participants (ID 10) about his highly emotional engagement (losing to his fellow student), he stated, “Yes, I was a bit emotional. Actually it is a bit stupid to

be so frustrated. It is just a game after all. But I really like to win, and hate to lose” (ID 10, male 23).

Discussion and Limitations

The card sorting approach was useful both for identifying the categorization of the experiences and for investigating commonality and differences between the games. For further empirical evidence and future work, it might be beneficial to use video observations of the participants. Through video observations, some of the nonverbal communication could be taken into account as well as the participants' own constructions of meaning from their play in a here-and-now/while they play perspective.

A crucial part of the method is when to stop the game, and ask if participants would like to continue. After some pilot testing, it appears that 3 minutes was too much, so we ended up with 1 minute and 30 seconds. But this might differ from game to game. It worked well in *Wii Sports*, but in *Angry Birds* it could also be useful to stop the game after a level and ask if participants would like to try the level again/try the next level. The reaction cards were only made in English, which actually was quite a challenge for some of the participants. From the pilot test, it appeared that there was a major tendency to give some characteristics of the game—and not necessarily answer why participants wanted to continue. Therefore, an essential strategy for this method was to repeat the procedure of choosing cards and answering questions within the “why they wanted to continue playing” theme several times.

Another crucial issue was the chosen words in the collections of cards (Table 1). The categorization and words were chosen on the basis of the research and theories we have described within the typology of the different types of engagement. However, it was a challenge to choose words which were both understandable for the test participant and had the same meaning for the participant as well as us. Future work is needed to further fine-tune the chosen words in order to more accurately map the players' experience of the continuation desire aspect of engagement.

Conclusion

In this study, the desire to continue playing a video game in relation to the concept of engagement has been investigated through a literature review and is classified as intellectual, physical, sensory, social, narrative, and emotional causes of engagement, which may occur when a player wants to continue playing. In each of the six types of engagement, some examples of causes, which are related to the experience of engagement and desire to continue playing, were described and used for reaction cards.

Experiencing engagement in video games is a very subjective matter, as different players who play the same game will experience different types of engagement because

players will not evaluate a game experience on equal terms. Furthermore, the gameplay changes constantly and therefore so do the causes of engagement. The motivations of a player to spend more time playing a game can thus be very different from player to player, as well as from time to time and from game to game. One of the major challenges in the literature on related theories, and in our six types of engagement, is the question of how the experience of engagement can be assessed empirically.

Our typology emphasizes a player's personal and subjective experience of the causes of engagement while playing a game, and one goal of this study was to develop a methodological approach to map the complexity of a player's experience of engagement. Our mapping method can be illustrated by a typology of engagement, which demonstrates the application of how different types of game experiences can be related to six engagement types. Although all the six types can be present at the same time, it appears in the findings that some types are more present than others in the two games we tested.

It is important to emphasize that we have not tested the level of engagement. But we did obtain an indication of how players characterize their experience of their desire to continue by summing up the frequencies of words appearing in each of the six types of engagement causes. One of the problems with the reaction card approach is that many of the types overlapped and could be present at the same time. This provides some difficulties, as some of the words could easily be ambiguous, indicating contradictory engagement in two completely different categories. The proposed mapping method is not meant to be accurate; it is rather introduced as a tool to exemplify the engagement experienced in different games and a player's potential for encountering the various types of engagement.

The map should also be understood as a flexible representation, meaning that a player's experience can shift through different positions in the map depending on the potential of engagement in the gameplay at a certain phase during the game. It is important to note that a player is not fixed in a particular engagement, but is likely to shift between given dispositions.

The desire to continue playing can be a strong indicator for engagement while playing video games and the results of this study suggest that it is possible to explore players' experiences of engagement by investigating the willingness to continue playing in relation to the six proposed types of player engagement.

Declaration of Conflicting Interests

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