Game & Watch: Are "Let's Play" Gaming Videos as Immersive as Playing Games?

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ABSTRACT
Let's Play videos, where players record themselves playing games, are a new and popular way of experiencing game content. To investigate the experience of watching Let's Play videos, we had 40 participants watch a video of someone playing a racing game. The same participants also played the racing game and watched footage of an actual racing event. After each media experience, participants completed a modified version of the Immersive Experience Questionnaire (IEQ). Results show that IEQ scores were highest after participants played the game, and lowest after passively watching the non-gaming content; watching the Let's Play video was in between. When watching the Let's Play video, participants who were familiar with the game had lower IEQ scores than participants who were new to the game. These results show that actively controlling a game generates a deeper immersive experience than passively watching others play — watching is not as immersive as playing.

ACM Classification Keywords
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Gaming; Let's Play; immersion; video; experience measurement

INTRODUCTION
Computer games are an extremely popular form of entertainment, and their profitability has even exceeded the film industry in recent years [7]. Surrounding these games are active on-line communities, where fans can share content for different games. A particularly popular form of fan-made content, the Let's Play video, has emerged, where gamers record themselves playing a game, often while providing a running commentary on what they are doing. These videos have grown in popularity and attract a large number of viewers on video sharing sites, such as YouTube [20]. For example, PewDiePie has the most subscribed channel on YouTube, with more than 52 million subscribers and 15 billion accumulated views since 2013 [20]. Creating a hugely successful YouTube channel with many millions of subscribers is financially rewarding. These rewards in turn encourage the production of yet more Let's Play videos [24].

Given the popularity of the Let's Play video format for sharing gaming content, we wonder what kind viewing experience they produce. This is an important question because enjoyment is linked to the quality of a media experience [32]. For example, Weibel and Wissmath [32] suggested that the quality of a gaming experience (i.e. sense of being situated and involvement in a game), directly affects enjoyment. In a similar way, this may mean that individuals' experience in Let's Play videos may have an impact on their enjoyment in the medium. In the study presented here we investigated the experience of watching Let's Play gaming videos in relation to other media experiences: actively playing the game or passively watching related, non-gaming video content.

Video-sharing sites offer a platform that allows anyone to watch and upload content. Gaming channels have become particularly popular, and their audiences can be categorised into two groups: players and non-players. An individual's experience as a player or a non-player when viewing gaming videos may be different, and it may also be an important factor in determining whether they would choose a particular medium or not. In the study presented here, we investigate whether familiarity with a game impacts the experience of watching Let's Play videos. Is it the case the only those that are already intimately familiar with a game enjoy watching others play (maybe to learn new tricks or techniques)?

In the following, we first review related prior work on understanding immersion in media experiences with different types of media (i.e., digital gaming, TV, and Let's Play videos). After this, we describe the results of a lab study that investigates the experience of watching Let's Play videos compared with other media experiences (actively playing a game, and passively watching related, non-gaming content). The contribution of this paper is in providing an empirical understanding of the gaming experience and how it is changing with the advent of new formats, such as the Let's Play gaming video.

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RELATED WORK

Gaming, Viewing, and Immersion

Given the importance of digital gaming as an entertainment medium, prior research has been conducted to understand how games can be designed to draw people in and make them forget about their worries in their daily life [17]. Among the many established methods for measuring gaming experience, such as Game Flow [30], cognitive absorption [1] and presence [34], the concept of immersion is believed to have incorporated a more extensive and broad view in player's experience than the other constructs [17]. However, despite its advantages over the other measures, the exact meaning of immersion can be unclear. The work of Jennett et al. [17] has been highly valuable by providing a practical tool for measuring immersision through the Immersive Experience Questionnaire (IEQ), which covers several aspects of the gaming experience.

Immersion is also described as a state of high engagement [5], to an extent to which individuals feel like they are "in the game". It should be noted that immersion, and related conceptualisations of high engagement, are not exclusive to digital games, but they are also present when watching films [27] and reading literature [28]. These media involve consuming a scripted narrative, and these experiences may therefore differ from gaming because of the lack of interactivity and agency. Given that measures for immersion have been well-developed and already applied to different forms of media, we therefore chose to use a modified version of the IEQ to measure experiences in the present study. In addition, while immersion and other measures of media experiences have been explored extensively in gaming [3] and TV viewing [27], little research has been conducted on assessing immersion when viewing Let's Play videos.

Media Type and Interactivity

Modern technology offers a number of different entertainment media, such as playing video games, watching gaming footage, and watching TV [19]. Two ways in which these media are distinctive are the absence and presence of interactivity [23] and different types of media environment [14]. In a game, the player actively participates in the control of the game, whereas passively viewed media such as TV and film do not build an interactive relationship between the audience and the media. Let's Play video footage is essentially form of video entertainment that innovatively incorporates digital game elements. Its lack of interactivity naturally resembles the traditional viewing form of media, while revealing the central ideas of digital gaming in the same mediated world.

The three different types of media concerning this study are therefore characterised as follows: digital gaming, an interactive activity in gaming environment; watching Let's Play video footage, a non-interactive activity in gaming environment; and watching TV, a non-interactive activity in a non-gaming environment. These differences and similarities between these media have not been compared in previous research, as Let's Play videos are a relatively new form of entertainment. Let's Play videos provide a bridge between the interactivity of playing games and the passive entertainment enjoyed by many when watching videos.

Immersion and Different Cognitive Activities

Sense of Control

Having a sense of control in a media environment describes the ability to which a person can influence the events of a situation [18]. The different characteristics of the media types determine whether a person can exert a sense of control in a particular media environment. For instance, level of interactivity affects the ability to be in control of the events of a particular media type [14]. In interactive gaming, players are able to experience a sense of control by controlling the movement of the gaming character. However, watching a Let's play video footage and a TV clip are passive activities that sense of control is less tangible than gaming [13]. This is because audiences lack the ability to alter and make decisions about the content of the media.

It has been suggested that sense of control and gaming experience are closely linked together [18, 4]. Klimmt, Hartmann and Tilo [18] found that being in control of a game is indeed a factor affecting the enjoyment of a game, but has a complicated effect associated with how challenging the player thought the game was. Witmer and Singer [33] found that the greater the level of control a player has over an avatar, the higher the level of presence they experience. Furthermore, players, who were qualitatively interviewed in Brown and Cairns's [4] study associated the sense of control they gain during games with how immersed they subsequently feel. The authors also suggest that an immersion is experienced to a higher level of immersion if a player familiarises themselves with the controls to a point where they become "invisible". This supports Witmer and Singer's [33] finding that control and presence.

Role-taking

Role-taking, which is used interchangeably with perspective-taking, refers to a cognitive process by which an individual temporarily imagines themself as another person so as to understand their thoughts, attitudes, intentions, and behaviours in a given situation [23]. In media contexts, the term describes the extent to which a player or an audience is perceptually absorbed, cognitively motivated, emotionally affected and behaviourally engaged with the character(s). In the process of role-taking, the phenomenon of representing oneself as another person can occur to different extents according to different media environments. Cohen [9] suggested that passive visual media such as TV can lead to a low sense of role-taking when the viewer attempts to put themselves in the character's shoes. On the other hand, gaming can enable a player to achieve a higher level of role-taking, as the player actively takes on the role of the avatar, taking on the physical movement control and the mental perspective of the character. Therefore, it is possible that higher levels of interactivity in a medium can lead to higher levels of role-taking.

It has been suggested that strong role-taking could lead to an enhanced media experience. Nicovich, Boller and Cornwell [22] investigated presence experience in relation to the projection of oneself to a view of a virtual character. Their findings suggested that the ability to project oneself is important in order to experience a state of presence, suggesting that

higher levels of perspective-taking can lead to an increased experience. This role-taking seems to be reinforced by the interactivity nature of the media in their study. In the design of their experiment, participants either took control of a flight simulator or they merely viewed a video of it, which controlled for a different level of perspective-taking. In the interactive media environment, where people were able to control the plane, presence experience was enhanced.

Role-taking is involved strongly in gaming because interactivity and active participation blurs the identity between the player and the character, and synchronises their roles perceptually, cognitively and motivationally [23]. Additionally, strong role-taking occurs also because interactive digital gaming requires less cognitive capacity for role-taking to occur than visual media environments. For example, watching Let's Play videos and TV as players cognitively infer the character's thoughts and perspectives while at the same time are motivated by and share goals with the in-game character. Therefore, media experience in digital gaming may differ when compared to passive visual media due to a higher degree of role-taking.

In distinguishing between media experiences in Let's Play and TV, we can consider their difference in terms of user's subjectivity in role-taking. With the perspective of the eyes of the character, first-person point of view (POV) provides a more subjective and personal experience than third person POV. It was suggested that first-person POV enhanced immersive experience when compared to third-person POV in gaming [11]. Hence, it is possible that due to a higher degree of subjectivity in perspective taking that a higher immersion is experienced. The subjectivity in Let's Play video footage is stronger than in TV due to the inherited interactive relationship between a gamer and the in-game character even though it was not a first hand experience. Conversely, traditional television viewing mostly shows objective camera shots that switch between different scenes with multiple camera angles, potentially conveying a lower sense of subjectivity in role-taking.

Game Familiarity and Immersion

The aforementioned concept suggested by Brown and Cairns [4] essentially states that the more familiar a player is with the game controls, the more immersed they can be. Cheung and Huang [8] asked the question of whether audiences who have been exposed to the game (players) would show different level of interest or react differently in viewing another person playing the game compared to those who have not (non-players). Their qualitative research found that people who had played a game themselves found it more interesting to watch pro-players play the same game [8]. However, the kinds of viewers who lacked understanding of the game showed the opposite. Therefore, prior exposure to the mechanics of a game may possibly enhance a person's experience on viewing the game.

GOALS AND HYPOTHESES

The study aims to see if three distinct media types (playing a game, watching a game, and watching TV) lead to different levels of immersion, and explores how different levels of control and role taking may affect this. Furthermore, we explore whether the level of immersion experienced when watching Let's Play videos is affected by prior familiarity with a game (i.e. having played it immediately before).

We make two main predictions concerning the effects of media type and familiarity. First, we expect that immersion scores will be proportional to the cognitive activity required across the different media types. Specifically, we expect immersion scores to be highest after participants have actively played the game, followed by watching Let's Play footage, and lowest after watching TV. This prediction is based on prior work that shows how sense of control and role-taking have been shown to affect media experiences. Second, we expect that higher familiarity with a game will lead to higher levels immersion when watching gaming footage of the same game. This is because participants will have developed a higher level of understanding of the game after playing it.

METHOD

Participants

Forty university students were recruited using opportunity sampling (9 males, 31 females). Age ranged from 18 to 24 years old ($M = 20.2$ years old, $SD = 1.63$). We asked participants about their prior experience of playing *Mario Kart Wii* and with Nintendo Wii controllers. Thirty-one of the participants said that they had played *Mario Kart Wii* before. Of these, one participant reported to be extremely familiar with the game; five participants were moderately familiar with the game; and six participants were somewhat familiar with with the game.

Design

The experiment used a 2×3 (Familiarity $\times$ Media Type) mixed factorial design. The between-subject independent variable was the participants' level of familiarity to the game *Mario Kart Wii* when they were watching the Let's Play video footage. There were two levels: high familiarity, where the participant had played the game immediately before watching the Let's Play; and low/no familiarity, where they watched the footage before playing the game. The within-subject independent variable was the media type, and there were three levels: playing *Mario Kart Wii* (Play), watching a Let's Play video footage of *Mario Kart Wii* (GamingFootage) and watching TV clip of a British Superbike Championship (TV). The dependent variable is participant's level of immersion during each media measured via questionnaire, as well as the subscales therein.

Materials

The game *Mario Kart Wii* was used in the Play condition of the experiment, played on a Nintendo Wii console. This is a racing game where in-game characters compete on various race tracks, and features an especially popular multiplayer mode. In the interests of experimental control, settings for characters and vehicles were the same for all participants. The first and easiest two tracks were selected for participants to play. Participants used the Wii remote controller with a steering wheel attachment, which allows them to manipulate in-game mechanics through gestures movements intended to simulate real-world driving.

A Mario Kart Let's Play video [2] and a British Superbike Championships 2015 [21] TV clip were sourced from YouTube and were used in the GamingFootage condition and TV condition respectively. The Let's Play footage shows a game that was played with identical the in-game characters, settings, and tracks to those in the Play condition. The TV clip shows a motorcycle racing competition from the British Superbike Championship 2015, where there were 36 motorcycle riders competing. It was selected to be similar to playing Mario Kart with motorcycles. These two videos were trimmed to around 4 minutes, which is approximately the same time it takes to play the game. All conditions were displayed on a 32 inch LCD TV.

Modified immersion questionnaire

This study adopts the Immersive Experience Questionnaire (IEQ) [17], a well-established and validated scale for measuring self-reported immersion. It has been used widely in exploring gaming experiences [6, 10, 15], and is a scale that has been applied to passive visual media as well [16, 27]. As the original IEQ [17] was created for measuring immersion in gaming, for our purposes the questions that do not apply to all the media types we used were removed. For instance, the question "Were you in suspense about whether or not you would win or lose the game?" was taken out since there are no win and lose conditions in TV watching.

This modified IEQ (see Table 1) consists of five subscales adopted from the original IEQ, measuring cognitive involvement (5 questions, Q.1-3, Q.10, Q.19), real world dissociation (6 questions, Q.4-8, Q.11), control (4 questions, Q.9, Q.13, Q.18), challenge (2 questions, Q.14-15), emotional involvement (5 questions, Q.12, Q.16-17, Q.20-21). Five questions are scored negatively (Q.5, Q.7, Q.8, Q.9, Q.16). The modified IEQ is therefore composed of 3 personal factors (cognitive involvement, real world dissociation and emotional involvement) and 2 game factors (challenge and control). Questions are answered using a 5-point Likert scale, and total immersion is computed by summing the scores.

We also added questions that ask about initial familiarity with the game used prior to the experiment, e.g. "How familiar are you with playing Mario Kart?" and "How familiar are you with playing Mario Kart with Wii controllers?". The response scales were built according to the Vagias's Likert-Type Scale [31] for measuring level of familiarity, ranged from 1 to 5 with 1 being not at all familiar and 5 being extremely familiar.

1. To what extent did the task hold your attention?
2. To what extent did you feel you were focused on the task?
3. How much effort did you put into completing the task?
4. To what extent did you lose track of time while completing the task?
5. To what extent did you feel consciously aware of being in the real world whilst completing the task?
6. To what extent did you forget about your everyday concerns?
7. To what extent were you aware of yourself in your surroundings?
8. To what extent did you notice events taking place around you while completing the task?
9. Did you feel the urge at any point to stop doing the task and see what was happening around you?
10. How much would you say your attention was focused more on your surroundings than on the task content?
11. To what extent did you feel as though you were separated from your real-world environment?
12. To what extent did you feel that the task was something you were experiencing, rather than something you were just doing?
13. To what extent did you feel as though the events in the tasks were happening according to your expectation?
14. To what extent did you find the task challenging?
15. To what extent did you find the task easy?
16. To what extent did you feel emotionally attached to the task?
17. To what extent were you interested in seeing how the task would progress?
18. To what extent did you enjoy the graphics and imagery?
19. How much would you say you enjoyed the task?
20. When interrupted, were you disappointed that the task was over?
21. Would you like to do the task again?

Table 1. Modified Immersive Experience Questionnaire.

Procedure

Participants were seated in an office. They were then asked to read the information sheet, and to sign the consent form if they agreed to take part in the study. They completed a questionnaire to collect demographic information and their prior familiarity with the game using a laptop. Participants were then required to perform three tasks: play *Mario Kart Wii* (Play); watch the Let's Play video of *Mario Kart Wii* (GamingFootage); and watch the British Superbike World Championship video (TV).

Before each session, participants were informed what to do in the tasks that followed. In the Play condition, participants were given the information about the game, e.g. they were going to play two race tracks where they had to drive 3 laps in each race track to complete the game, and that there were power-up items that assist them to win. Also, they were provided with instructions on how to use Wii controller. They were also told that they were allowed to ask questions. If participants were unclear about the controls, the experimenter explained how they worked. Once ready, participants were asked to position themselves 1.5 meters in front of the TV monitor to play. In the GamingFootage condition and the TV condition, participants were told that they would be shown a gaming video from YouTube that showed the game being played, and a short TV clip of a Superbike World Championship race. Similarly, they were asked to position themselves in front of the TV monitor. After each condition, they were also asked to fill in the modified IEQ.

Participants were exposed to the conditions one-by-one. The order of conditions was organized so that there were four different orders assigned to different participants. First, the order sequences between Play and GamingFootage sessions were

arranged so that they were always shown together in order to try and expose the immediate effect of familiarity as much as possible; participants received either Play then GamingFootage order or GamingFootage then Play order. Second, the TV clip was presented either before or after the Play GamingFootage pairs in a counterbalanced manner. Therefore, the four different orders were:

1. Play - GamingFootage - TV
2. GamingFootage - Play - TV
3. TV - Play - GamingFootage
4. TV - GamingFootage - Play

At the very end of the experiment, participants were asked what they thought the purpose of the experiment was before being debriefed.

RESULTS

Data Analysis

Immersion scores were computed from the modified IEQ results by summing individual question results. Questions 5, 7, 8, 9 and 16 were scored negatively. In addition to analysing the overall immersion scores, the five subscales that compose the IEQ were also assessed separately. Results for statistical analysis of the subscales are presented in Table 3. Effects were considered significant where p values $\leq .05$.

Immersion Score

Media Types

In observing the means and among the Media Types in Figure 1, overall mean immersion score was highest for Play condition, followed by GamingFootage Condition, and lowest in the TV condition. A 2×3 (Familiarity $\times$ Media type) Mixed Factorial ANOVA was conducted, which showed a significant main effect of media type, $F(2,76) = 65.7, p < .001, \eta_p^2 = .634$. No significant media type * familiarity interaction effect was found, $F(2,76) = 0.89, p = .416, \eta_p^2 = .023$.

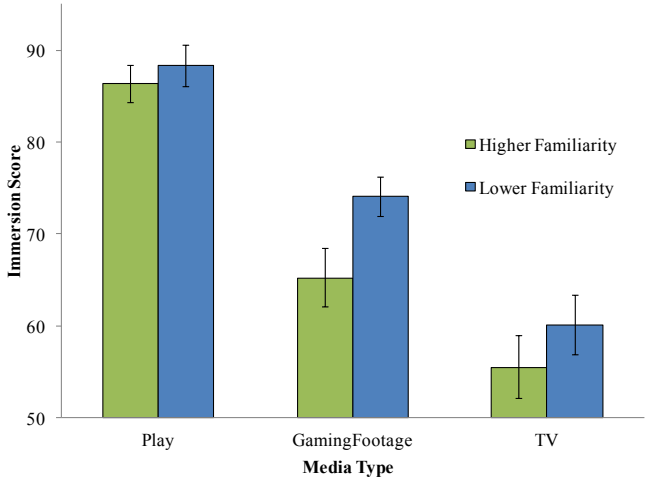

Figure 1. Mean overall immersion scores of different familiarity conditions across different Media type conditions.

Familiarity

We also wanted to see if watching a Let's Play video after playing the same game would result in a higher level of immersion than watching it before playing the game. Results of the GamingFootage condition showed a higher mean immersion score with lower familiarity than with higher familiarity (see Figure 1). A 2×3 (Familiarity $\times$ Media Type) Mixed Factorial ANOVA revealed a significant main effect of Familiarity on immersion scores, $F(1,38) = 4.23, p.047, \eta_p^2 = .10$. Two one-way ANOVA analyses were performed to determine the simple effects of Familiarity at Play and GamingFootage level. No simple effect of Familiarity at the level of Play was found, $F(1,38) = 0.415, p.523, \eta_p^2 = .011$. However, there was a simple effect of Familiarity at the level of GamingFootage, $F(1,38) = 5.44, p.025, \eta_p^2 = .125$.

Two repeated measures ANOVA analyses performed according to familiarity level suggested that there were simple effects of Media Type at both the Higher Familiarity level, $F(2,38) = 27.84, p < .001, \eta_p^2 = .594$ and Lower Familiarity level, $F(2,38) = 44.07, p < .001, \eta_p^2 = .699$. By performing paired t-tests which are shown in Figure 2, it was also found that participants were significantly more immersed in the Play condition than the GamingFootage condition at both Higher Familiarity level and Lower Familiarity level. In fact, all the paired t-tests between pairs of the three Media Type conditions were significant at both familiarity levels except for that between GamingFootage and TV at Higher Familiarity.

	Higher Familiarity		Lower Familiarity	
	$t(19)$	d	$t(19)$	d
Play VS GamingFootage	6.19**	1.38	7.02**	1.57
Play VS TV	8.23**	1.84	7.75**	1.73
GamingFootage VS TV	1.85	.413	4.47**	1.00

Table 2. Paired t-tests between Media Types in Different Levels of Familiarity. *p < .05. ** p < .001.

Subscales

IEQ Subscale Analysis

2×3 (Familiarity $\times$ Media Type) Mixed Factorial ANOVAs were conducted on the separate IEQ subscales, main effects of Media Type were found in all the measures (as shown in Table 3). While most subscales followed the decline pattern of the overall immersion scores with regards to media types, Challenge was the exception.

Challenge

Unlike the overall immersion score, Figure 2 illustrates that the Challenge score was highest in Play, followed by TV and then GamingFootage. Main effect of Media Type in Challenge scores was followed up by pairwise comparisons of different Media Types. Paired tests showed that there were significant differences between each of the three conditions, Play VS GamingFootage, $t(39) = 8.73, p < .001, d = 1.38$; Play VS TV, $t(39) = 5.88, p < .001, d = 0.93$; GamingFootage VS TV, $t(39) = 2.26, p = .029, d = 0.36$.

There were simple effects of Media Type at the level of Higher Familiarity, Play VS GamingFootage, $t(19) = 6.95, p <$

	Media Type		Familiarity		Media Type x Familiarity	
	$F(2,76)$	η_p^2	$F(1,38)$	η_p^2	$F(2,76)$	η_p^2
Cognitive Involvement	57.6**	.602	3.62	.087	0.771	.020
Real World Dissociation	42.4**	.527	1.92	.048	0.679	.018
Control	17.0**	.309	0.145*	.055	0.682	.018
Emotional Involvement	58.8**	.607	0.216	.040	0.412	.023
Challenge	42.2**	.526	3.58	.086	1.56	.039

Table 3. Mixed Factorial ANOVA F ratios of IEQ subscale scores by Media Type condition (Play/GamingFootage/TV) and Familiarity (Higher/Lower). *p < .05. ** p < .001.

$.001, d = 1.55$; Play VS TV, $t(19) = 6.53, p < .001, d = 1.46$; GamingFootage VS TV, $t(19) = 2.22, p = .039, d = 0.50$. Simple effects were only found between Play and GamingFootage and Play and TV at Lower Familiarity level, Play VS GamingFootage, $t(19) = 5.60, p < .001, d = 1.25$; Play VS TV, $t(19) = 2.80, p = .011, d = 0.63$; GamingFootage VS TV, $t(19) = 1.21, p = .243, d = 0.27$.

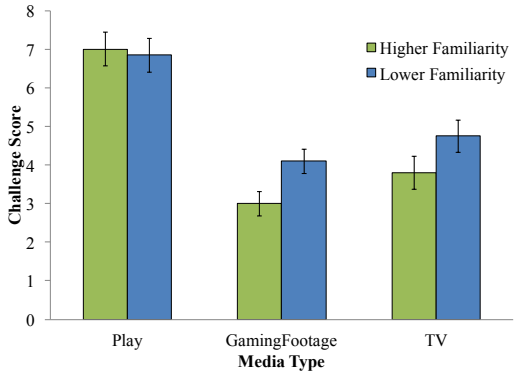

Figure 2. Challenge score means by Media Type conditions and Familiarity levels.

DISCUSSION

This study sought to understand the effect of different types of media and familiarity with the game material on immersion. The pattern of immersion was obtained as predicted – immersion was the highest when playing, then when watching Let's Play videos, and lastly when watching TV clips. However, our prediction that that being more familiar with playing the game would result in a higher immersion when watching the game was not supported by our results. In fact we found the opposite, where higher immersion when watching the Let's Play video was recorded for those who had not played the game immediately before watching than those who had. Therefore, it seems that immersion is moderated by familiarity: immersion in the Let's Play video was only different from that of the two other media types in the lower familiarity condition, but was the same as immersion in TV in the higher familiarity condition.

The first part of our results demonstrated that media types that differed in terms of their characteristics affected the immersion experienced by participants. We suspect that these differences between the conditions are effects of underlying factors including sense of control and role-taking. In line with Witmer and Singer's [33] study, the higher immersion score in game playing as compared to viewing content such as Let's Play gaming footage and TV highlights the importance of the presence of sense of control in relation to media experience. In addition, in the same sense, role-taking was found directly proportional to immersive experience, confirming Nicovich et al.[22] and Denisova and Cairns's [11] studies.

There are several factors that can be explored further in future research. In the present design, only a game with a third person POV where the whole character was shown was used. There might be more complicated effects of role-taking regarding different elements of a game. For example, role-taking in simulation video games where the characters are more realistic may be stronger as it resembles real life more and role-taking in game where first person POV is taken may also be stronger as the perspective is more subjective.

There are improvements that can be made in exploring sense of control. One's sense of control might not exist in an absolute sense but on a spectrum relative to player's skills to the medium [14]. In the present study, participants were given a certain set up of the game, for instance, engine class, character, vehicle and drift. The difficulty of the game, which is mainly governed by engine class and drift here, was set up for the participants as 150cc and manual drift respectively. These two selections are the most difficult to master compared to other options such as 50cc and 100cc for engines and automatic drift for drifts. Therefore, participants might find it less manageable and hence, less in control of the game.

The Wii controller that was provided in the Mario Kart game works by recognising gestures. Unlike traditional controllers where players manipulate character(s)'s movement by keys and control stick, Wii controller is lower in sensitivity to your responses [29] so participants might take longer and find it difficult to get used to the controls, affecting the level of immersion experienced [4]. In consideration of these factors, exploring different levels of difficulties and training participants to use the controls to different levels of proficiency in future research may reveal richer pattern of contrasts in immersive experience.

Mario Kart is a competitive multiplayer game. In our study, participants played and watched a single player game mode of Mario Kart in which the opponents where virtual agents (rather than other gamers). Having this competitive component is one of the factors that makes the game more fun as it increases one's level of adrenaline [25]. Therefore, this might also have affected participants' immersion. It is worthwhile in the future to investigate whether a game is competitive or non-competitive may affect one's immersion. Also, as the TV clip used was from the beginning of the Superbike race,

most of the commentary was not aggressive, which might have a different effect on immersion compared with that of an aggressive commentary. A more aggressive commentary may have been more enjoyable than non-aggressive commentary [26].

With regard to familiarity, we predicted that higher immersion would be experienced when watching Let's Play videos immediately after playing the game. In fact, we found the opposite - immersion was higher with lower familiarity. The issue of difficulty and the interaction between controller and player could explain why the result is inconsistent with the hypothesis. This is because these factors might have affected the level of control participants subjectively perceived they had over the characters. After playing a game with high difficulty and with an unfamiliar controller, participants might perceive that the pro player has played with a greater control of the characters in the footage. Therefore, comparison between their performance and the pro player's performance might have undermined the degree of immersion in the gaming footage.

We found that participants who had played the game first had lower immersion scores when watching the gaming footage. This is in contrast to previous research, which showed that people with prior experience playing a game got more out of watching pro-players play a game [8]. However, the players studied in Cheung and Huang's [8] study must have a certain level of gaming experience. This study made the assumption that participant's level of familiarity was fully controlled by the order of Play and GamingFootage conditions. However, it is important to acknowledge that there were a number of participants who had no experience with Mario Kart prior to the game and most participants were not familiar with playing the game with Wii controllers. One experience of the game in the study is not enough to define one's familiarity level or whether he/she was a 'player' of the game or not. Hence, levels of familiarity with Mario Kart varied among participants. Therefore in future research, participants should practise on Mario Kart with Wii controllers for a period of time before taking part in the actual experiment. Moreover, it might be useful to have tracked participants' level of general knowledge of video games, familiarity with the Wii console, and with racing games, as these differences may also be confounding factors.

Moreover, Peng et al. [23] suggests that a lower cognitive requirement is needed for role-taking to take place in playing games than in viewing passive visual contents. Extracting meaning from information that is passively received requires longer cognitive process. Therefore, when participants immediately switched from playing the game to watching gaming footage, transitioning to the other media type might have created a huge contrast in cognitive requirement of role-taking, hence undermined immersion in watching gaming footage. Moreover, the gaming footage immersion at higher familiarity was not only significantly lower than that at lower familiarity, also it was as low as the TV immersion score, indicating the same high level of cognitive demand in interacting with gaming footage after the transition. Therefore, the levels of cognitive demand in role-taking might have hindered participants' immersion when switched from a highly interactive medium to a less interactive medium.

With regard to the formation of the IEQ, questions that do not fit with all media types were excluded from the original Jennett et al. IEQ [17] which resulted in having as few as two questions in the Challenge subscale. Despite large effect sizes in Challenge , the number of questions is a worrying issue regarding its representative power in the subscales or not. In particular, the Challenge score in the present study did not follow the overall immersion pattern according to different media types. Challenge score was highest in play mode, then in viewing TV and finally in viewing gaming footage This pattern gives us insight into immersion in viewing contents such as gaming footage and TV that they might have lower or greater effects on a certain dimension of immersion. Klimmt et al. [18] suggested that struggle for control (same as challenge), which is often associated with suspense, also affects one's gaming experience. This might also apply to viewing contents as well. The fact that TV resulted in a higher score than gaming footage means that it might have elicited higher excitement in individuals due to uncertainty to the content, and hence increased its competitiveness in involving individuals in its media experience compared to other media.

Limitations

Demand characteristics are one of the limitations of this study. Participants' feedback in regards to the purpose of the study showed that there might be possible bias in their response. For example, one participant stated the purpose of the study was "to assess which form of media people feel more involved with and enjoy more, particularly the difference between playing a game yourself or watching someone else." When different types of media were being put closely with one right after another, the purpose in comparing between the forms and nature of the media might become obvious. This was especially the case when both conditions, Play and GamingFootage were controlled to the same settings, characters and vehicles, revealing the obvious differences between the forms and types of media. Furthermore, another participants made a guess similar to the present hypothesis of the study, for instance, "To see if your interaction with the task/media affects how you perceive the surroundings around you. The more interactive you are with the task the less you are aware of your surroundings". Although participants did not refer directly to immersion or its correct definition, this showed a correct expectation of the pattern of the result where they might have reflected in their immersion response. Future amendments to control this confounding variable can be to insert some unrelated tasks in between the conditions, before the start of the tasks or at the end of the tasks, e.g. mathematics problems or memory tasks, to hide the purpose of the study.

Immersion in this study is a self-reported measure, the issue of demand characteristics is even more of a concern as it is easy for participant's response bias to influence the data. Besides, self-reported immersion was problematic due to issues such that participants might vary in their understanding of the questions or lack introspective ability to accurately view themselves, which would lead to inaccurate results. Direct

measures such as eye tracking data could be used in future studies to control for consistency with the self-reported results.

This study did not account for the fact that viewers may not only enjoy the content of the video, but also the connection that they have with the creator of the content and the wider community of their subscribers and followers [12]. Further research that investigates how these social connection may affect people's immersion in the Let's Play videos may also be interesting.

CONCLUSION

The study reported in this paper investigated the experience of watching Let's Play gaming videos in relation to other media experiences: actively playing the game or passively watching related, non-gaming video content. Results show that the highest levels of immersion were experienced when playing a game, then viewing Let's Play footage. However, watching a Let's Play video was more immersive than watching related, non-gaming TV content. Interestingly, those who were not exposed to the game beforehand reported higher levels of immersion, suggesting that immersive experiences when watching Let's Play are moderated by familiarity.The implications of these results are that Let's Play videos should cater for audiences with differing levels of familiarity with the game, which could allow for the video producers to strategically attract wider audiences In exploring some possible limitations of our study we have also identified potential directions for future research, such as comparing first-person and third-person POV games.

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