The Effectiveness of In-Game Advertising: Examining the Influence of Ad Format

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1   Introduction

Digital games are firmly ingrained in our culture. From the 1970s onwards, they have gradually evolved into an extremely popular entertainment medium. 2.2 billion people from all socio-demographic backgrounds are now spending more and more of their leisure time playing games. As a consequence, revenues from the global games industry are expected to reach $108.9 billion by the end of 2017, making it the largest entertainment sector worldwide (Newzoo, 2017).

In this context, in-game advertising has emerged as a promising new advertising medium, sparking the interest of both the advertising and gaming industry. *In-game advertising* (IGA) concerns the incorporation of advertisements into the environment of a game, a practice similar to the integration of brand placements in movies or television shows (Herrewijn & Poels, 2014a). Aside from the ability to reach a diverse and ever-growing audience, the appeal of IGA for advertisers also lies in the long shelf-life (games typically take between 10 and 200 hours to complete) and high replay value of games (Internet Advertising Bureau, 2007). Moreover, IGA has advanced from a static towards a dynamic advertising medium. Due to the online capabilities of modern games, advertisers do not have to utilize static and unchanging images anymore, but can monitor and update ads in-game based on multiple criteria, such as the players' socio-demographic and gamer profile (Internet Advertising Bureau, 2007; Schneider & Cornwell, 2005). Finally, games offer brands the opportunity to become an integral part of the game experience, reaching out to players in a vivid, interactive and immersive environment (Mackay et al., 2009; Schneider & Cornwell, 2005).

Despite its promising new branding opportunities, however, IGA also faces several obstacles. Most importantly, advertisers are hesitant to fully embrace games as a viable advertising vehicle because of the *continuing difficulties in determining and optimizing the advertisements' effectiveness* (Internet Advertising Bureau, 2007). Academic research analyzing the effectiveness and value of IGA is still in short supply and most existing research to date has produced mixed results. These results demonstrate that the effectiveness of IGA depends on a multitude of factors, such as the *characteristics of the advertisement* that is integrated in the game (e.g. the type of brand or ad that is being used, the prominence of the ad in the game), the *characteristics of the player* (e.g. the player's

socio-demographic information, game experience) and the *characteristics of the context that is offered by the game that is played* (e.g. the physical and social setting in which the game is played, players' subjective experiences during gameplay) (for an elaborate overview, see Herrewijn & Poels, 2014a). Following this, it is evident that in order to come to a better understanding of how advertising inside games works and make IGA a more competitive option, more research will have to be carried out studying the characteristics that might undermine or optimize its effectiveness.

The current article is part of a larger research project looking to contribute to IGA effectiveness research by investigating how several characteristics of the ad, player experience and game context influence people's cognitive (i.e. brand awareness) and affective (i.e. brand attitudes) responses to IGA. For this purpose, three experimental studies were carried out. The results of the studies regarding the effect of the game context and player experience, as well as how they interact with the ad format that is used, have been published separately before (see Herrewijn & Poels, 2014b, 2015, 2017) and will not be discussed here. *The goal of the current article is to bring together and discuss the main effects of the characteristics of the ads that are being integrated within a game on the effectiveness of IGA.* Although the aforementioned articles briefly touch upon the main effects of the format of the used IGA as well, they only do so in relation to brand awareness (not brand attitude), or as a case study. The current article will focus on describing the literature, hypotheses, experimental set up, and findings regarding ad format of all three experiments. Moreover, it will bring together their conclusions, and discuss practical implications.

2   Literature Review

2.1   *The impact of ad format on the effectiveness of in-game advertising*

The effectiveness of IGA highly depends on its intrinsic characteristics. Several IGA studies already showed that certain aspects related to the specific format of the ad can have an impact on its effectiveness such as the type of ad that is being used (Grigorovici & Constantin, 2004; Nelson, 2002), the type of brand it features (Nelson, 2002; Nelson, Yaros & Keum, 2006; Mackay et al., 2009; Mau et al., 2008), and the prominence of the ad in the game world (Grigorovici & Constantin, 2004; Jeong & Biocca, 2012; Lee & Faber, 2007; Schneider & Cornwell, 2005). In our experimental studies, we wanted to further investigate the impact of ad format in different kinds of games, gaming situations and ad implementations, enabling us to test whether or not the findings hold in varying IGA contexts. Ultimately, each of our experimental studies elaborated on the impact of a specific characteristic of the ad in order to validate, oppose or build

on prior results. The first experiment considered the effect of *brand type*, and more specifically, the effect of brands with varying degrees of *familiarity*. The second experiment examined the influence of *brand prominence*, further studying the effects of both *ad size* and *ad location*. Finally, the third experiment analyzed the impact of the *type of ad* that is embedded in the game environment, taking a look at brand placements with different grades of *interactivity*.

2.1.1   Brand type

Several studies have demonstrated that the effectiveness of IGA is highly related to the type of brand that is integrated into a game. This effectiveness can differ according to the (inter)national nature of brands, their personal relevance, familiarity, etcetera (Nelson, 2002; Nelson et al., 2006; Mackay et al., 2009; Mau et al., 2008). In a study of Nelson (2002), for example, it became apparent that when a brand was local or personally relevant (versus (inter)national or irrelevant) to a player, brand recall was enhanced. Nelson (2002) explains these findings by stating that local and personally relevant brands tend to arouse more attention, which makes them easier to remember. Further, research of Nelson et al. (2006), Mau et al. (2008) and Mackay et al. (2009) showed that fictitious and unfamiliar brands score worse on recall measures than real and familiar brands. They explain this by saying that well-known brands are accessible objects that automatically attract attention, making them easier to remember.

Prior research looking at the impact of brand type on brand attitudes is more mixed. Nelson et al.'s (2006) study reveals no significant impact of brand familiarity on brand attitudes. However, the findings of Mackay et al. (2009) and Mau et al. (2008) suggest that unfamiliar (versus familiar) brands may have more to gain from IGA in terms of brand attitude. They found that unfamiliar brands were assessed more positively after playing a game containing ads, while attitudes towards familiar brands deteriorated or stayed the same. They argue that this is because people's pre-existing attitudes towards unfamiliar brands are non-existent and therefore more susceptible to IGA effects (Mau et al., 2008; Mackay et al., 2009). The familiar brands, on the other hand, had already acquired a stable attitude before participation in the studies, causing the influence of additional information through advertising to be low (Mau et al., 2008).

In order to investigate this issue further, we decided to elaborate on the impact of brand familiarity on people's awareness of and attitudes towards brands in a game context. More specifically, we made a distinction between well-known, familiar brands on the one hand, and lesser-known, unfamiliar brands on the other. Following the results of the studies quoted earlier, we formulated the following hypotheses:

H1: Familiar brand will achieve higher brand awareness compared to unfamiliar brands.

H2: Unfamiliar brand will gain more in terms of brand attitudes than familiar brands.

2.1.2   Brand prominence

Brand prominence is mostly defined as a factor that depends on placement characteristics such as ad size, color, attractiveness and spatial position. These characteristics are of considerable importance in an advertising context. Advertising studies investigating effects in film and television have demonstrated that the placement of a brand in a prominent way generally has a positive effect on brand memory, since a prominent ad attracts more attention and is more deeply processed resulting in increased awareness (Law & Braun, 2000; Van Reijmersdal, 2009). However, at the same time, these studies often describe a more complicated relationship between brand prominence and brand attitudes. For instance, a prominent brand placement may attract the audience's attention, but it can also have a negative effect on brand attitude when it is clear to the audience that it is a deliberate placement, which may trigger their cognitive defenses against persuasion (e.g. creating counterarguments) (Van Reijmersdal, 2009)

In an IGA context, several studies have looked at the effect of brand prominence on brand awareness, revealing similar results: prominent brand placements (e.g. large ads, central ads) seem to be better in capturing the player's attention, resulting in a positive effect on brand awareness (Grigorovici & Constantin, 2004; Jeong & Biocca, 2012; Lee & Faber, 2007; Schneider & Cornwell, 2005). However, these IGA studies have focused on the impact of only one placement characteristic (i.e. mostly either ad size or spatial position (Grigorovici & Constantin, 2004; Jeong & Biocca, 2012; Lee & Faber, 2007)) or on the influence of all characteristics at the same time, making it hard to pinpoint the specific impact of each (Schneider & Cornwell, 2005). Additionally, prior IGA research has never investigated the impact of brand prominence on brand attitudes before.

In the second experiment, we therefore elaborated on the effect of brand prominence by examining how both ad size (large versus small) and spatial position (central versus peripheral) are related to both people's awareness of and attitudes towards the brand placements, in different combinations. More specifically, we differentiated between four different placement types, namely large-central, small-central, large-peripheral and small-peripheral placements. In the context of our study, the large-central brands can be considered the most prominent, while small-peripheral placements are the subtlest. Following the results of the studies mentioned earlier, we formulated the following hypotheses:

H3: Large-central brand placements will achieve higher brand awareness compared to small-peripheral brand placements.

H4: Large-central brand placements will achieve lower brand attitudes compared to small-peripheral brand placements.

However, our results will have to point out which placement characteristics (ad size or spatial position) prove to be the most important in light of IGA effectiveness, leading us to formulate the following research question:

RQ1: Which combinations of placement characteristics (size x spatial position) are the most effective in terms of brand awareness?

2.1.3   Ad type

Brands can be embedded in games in a multitude of ways, although the most commonly used forms of IGA are billboards, posters and brand placements. Some of these placements merely appear as part of the game's scenery, serving as passive background props, while other placements can be meaningfully interacted with and constitute a major part of the player's game experience (Nelson, 2005). Prior research already showed that ad interactivity has a significant impact on the effectiveness of IGA. Nelson (2002), for instance, showed that in the context of a racing game, selecting and racing a branded car led to higher brand awareness than driving past passive billboards on the side of the road. Moreover, Schneider and Cornwell (2005) demonstrated that when players directly interact with an ad in a racing game, this leads to higher levels of brand awareness. In their study, direct interaction mostly meant players crashing into the billboards with their racing cars. However, ad interactivity can take many forms in games. Racing and sports games often contain a large range of branded vehicles and/or clothing that the player can customize and compete with. Further, eating or drinking products and observing a certain effect on the player character (e.g. regaining a certain amount of health or energy) is also common in games, as is the integration of products that can be used as tools, accessories or media (e.g. using a certain brand of cellphone to communicate with others).

Moreover, research shows that imagined interaction with a brand also leads to better brand attitudes. Escalas (2004) shows that when people imagine themselves using a product in a narrative context, they are distracted from its commercial nature and do not think critically about it. Further, if the imagined interaction evokes positive feelings, those feelings get transferred to the product as well. Surprisingly, this has never been studied in an IGA setting before.

In the third experiment, we therefore decided to examine the effect of interactive brand placements that can be interacted with and used in-game to gain an

advantage versus passive brand placements. Following the results mentioned above, we expected the following:

H5: Interactive brand placements will achieve higher brand awareness compared to passive brand placements.
H6: Interactive brand placements will achieve higher brand attitudes compared to passive brand placements.

3   Method

3.1   *Experiment 1: brand type*

In order to investigate the impact of brand type, our first experiment examined people's awareness of and attitudes towards *brands with varying degrees of familiarity* in an IGA context. More specifically, familiarity was manipulated as a *within-subjects factor*: the experimental game included in-game ads for 2 well-known (i.e. familiar) brands and 2 lesser-known (i.e. unfamiliar) brands.

121 people (82 male, 39 female), 18 to 24 years of age ($M = 20.69$, $SD = 1.79$) participated in the experiment. Our sample consisted of both casual and avid players, although avid players were in the majority (i.e. most of our participants played games at least monthly).

3.1.1   Materials

The Sony PlayStation 3 puzzle-platformer game *LittleBigPlanet 2* (Media Molecule, 2011) was used in the experiment. We used the game's built-in level editor to create our own game level for use in the experiment. This level had an average play time of 8 minutes.

We incorporated background placements advertising the logos of 4 brands in the game[1]. The utilized brands were real, existing brands from 2 different product categories (i.e. clothing brands and soda brands) that were selected based on a pre-test with 37 people (23 male, 14 female, $M_{age} = 23.52$, $SD = 7.21$). Per product category, we additionally included brands with varying degrees of familiarity, namely one well-known, familiar brand and one lesser-known, unfamiliar brand. For the familiar brands, we selected brands that were known by 100% of the respondents, namely *Sprite* (soda) and *Nike* (clothing). For the unfamiliar brands, we integrated brands that were known by approximately 50% of the respondents, namely *Mountain Dew* (soda) and *Paul Frank* (clothing). As can be expected, the attitudes regarding the familiar brands ($M = 4.03$, $SD = .81$)

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[1] The in-game advertisements that were used in the different experiments can be viewed online: https://goo.gl/uw4go5

were significantly higher than the attitudes regarding the unfamiliar brands ($M = 3.18$, $SD = .42$) ($F(1, 36) = 35.47$, $p < .001$, $\eta_p^2 = .50$).

3.2 Experiment 2: brand prominence

To be able to test the impact of brand prominence on the effectiveness of IGA, we conducted an experiment in which we manipulated the *size* (small versus large) and *spatial position* (peripheral versus central) of in-game ads as a *within-subjects factor*, resulting in 4 different placement types: large-central, small-central, large-peripheral, and small-peripheral.

31 people (24 male, 7 female), 18 to 30 years of age ($M = 22.61$, $SD = 2.99$) participated in the experiment. Our sample consisted of both casual and avid players, although avid players were in the majority (i.e. most of our participants played games at least weekly).

3.2.1 Materials

The Sony PlayStation 3 kart racing game *LittleBigPlanet Karting* (United Front Games & Media Molecule, 2012) was used in the experiment. We used the game's official editor to create our own game level for use in the experiment. This level included a race track that the player had to finish 5 times. The game level had an average play time of 6 minutes.

We incorporated billboard advertisements featuring the logos of different brands inside our level. As we wanted to investigate the impact of ads with varying sizes (large versus small) and spatial positions (central versus peripheral), we combined both ad characteristics into 4 different placements: large-central, small-central, large-peripheral and small-peripheral. The brands that were featured on the billboards were well-known soda and candy brands (e.g. *Twix*, *Snickers*, *Canada Dry*, *Schweppes*). We selected 4 brands that were similar in familiarity and attitude based on the results of a pre-test with 43 people (32 male, 11 female, $M_{age} = 22.23$, $SD = 4.02$).

3.3 Experiment 3: ad type

In order to test the impact of ad type on IGA effectiveness, the *interactivity* of the integrated in-game ads was manipulated as a *within-subjects factor* in the third experiment. The experimental game included interactive brand placements that constituted a central and active part of the player's gameplay on the one hand, and poster advertisements with a passive role on the other.

62 people (57 male, 5 female) between 18 and 37 years old ($M = 22.32$, $SD = 3.21$) participated in the experiment. Most of our participants can be considered avid gamers who played games at least weekly.

3.3.1   Materials

The experiment made use of the computer version of the action role-playing game *Fallout: New Vegas* (Obsidian Entertainment, 2010). We used the game's official editor to create our own game environment. The average play time of the experimental level was 12 minutes.

We included brand placements for 4 brands from 2 different product categories in the game. We included 2 soda brands (i.e. *Mello Yello*, *Vernors*) and 2 candy brands (i.e. *Reese's Pieces*, *Baby Ruth*). The brands were selected based on a pre-test with 43 people (32 male, 11 female; M_{age} = 22.23, SD = 4.02). In contrast to the previous experiments, we chose to work with real brands that were unknown to our experimental population (because they are not promoted and sold in the participants' country) in order to avoid possible effects of prior exposures or pre-existing attitudes. The brand placements furthermore received varying levels of interactivity. The brands *Vernors* and *Baby Ruth* were integrated as passive poster ads, which were put against the walls of the game level. These will be referred to as *passive brand placements* in the remainder of the article. The brands *Mello Yello* and *Reese's Pieces,* on the other hand, were embedded as interactive brand placements that could be actively used by players and that constituted a central and active part of the gameplay. The brands were integrated as bottles of soda and boxes of candy in the game. These brand placements were scattered around the level and were available from *Mello Yello*-branded vending machines. They could be picked up and consumed to gain health (e.g. when the player got hurt). Since consuming these products was the only way to gain health in-game, people had to actively search for them, and use them when needed. However, because the *Mello Yello* placements consisted of both small and large brand visuals (i.e. bottles of soda and vending machines), and the *Reese's Pieces* placements consisted only of small brand visuals (i.e. boxes of candy), we further subdivide the interactive brand placements into *large interactive brand placements* and *small interactive brand placements*.

3.4   Procedure

The experiments took place in a lab room at the University of Antwerp. In this game lab, we had an Alienware M13x laptop at our disposal, connected to an external computer screen, as well as a Sony PlayStation 3 console, connected to a large television screen. During the experiments, participants were asked to play the corresponding experimental game. First of all, they were given time to get acquainted with the basic controls, interface and gameplay of the game by means of a tutorial level. After finishing the tutorial, the actual experimental level (including IGA) started. When participants finished playing the game in each experiment, they were asked to fill in a self-report questionnaire.

3.5   Measures

The questionnaires first of all included IGA effectiveness questions. In all three experiments, participants were asked to indicate their awareness of and attitudes towards the brands that were integrated in the game that they played. *Brand awareness* was measured on three levels. First of all, participants were asked to spontaneously recall the brands they encountered in the game (i.e. *brand recall*). Subsequently, participants were presented with a list of brand names (i.e. *brand name recognition*), and a list of brand logos (i.e. *brand logo recognition*). In each case, participants had to indicate which brand names and brand logos they remembered seeing in-game. For each recognition measure, the four correct options were included, as well as eight filler items and an 'I don't know' option. *Attitudes towards the brands* integrated into the game were measured by the means of three 7-point scales anchored by the adjectives 'bad (0) – good (6)', 'dislike very much (0) – like very much (6)' and 'unpleasant (0) – pleasant (6)' (Cronbach's α values range from .92 to 1.00).

Finally, participants were asked about their socio-demographic (e.g. gender, age) and play-related characteristics (e.g. gaming experience, frequency). Game context and player involvement were also observed and measured (for an overview of these measures, see Herrewijn & Poels, 2014b, 2015, 2017).

4   Results

4.1   Experiment 1: brand type

In order to test the impact of brand type (i.e. familiar vs. unfamiliar brands) on brand awareness, we performed repeated measures ANOVAs. Concerning *brand recall* ($F(1, 120) = 33.81$, $p < .001$, $\eta_p^2 = .22$), results show that the mean scores of the different brands are indeed significantly different, with familiar brands ($M = .35$, $SD = .39$) achieving higher levels of recall than unfamiliar brands ($M = .14$, $SD = .26$). For *brand name recognition*, similar results are found. The mean scores of familiar and unfamiliar brands vary significantly ($F(1, 120) = 30.12$, $p < .001$, $\eta_p^2 = .20$), with familiar brands ($M = .41$, $SD = .40$) being recalled to a greater degree than unfamiliar brands ($M = .21$, $SD = .33$). For *brand logo recognition*, the mean recognition scores of the brands differ significantly as well ($F(1, 120) = 7.57$, $p = .007$, $\eta_p^2 = .06$), although the scores of the familiar brands ($M = .42$, $SD = .41$) and unfamiliar brands ($M = .32$, $SD = .35$) are closer together. As such, these results provide support for **H1**.

Regarding the impact of brand familiarity on *brand attitudes*, results from one-way ANOVAs show that the attitudes towards both the familiar ($M = 3.95$, $SD = 1.19$; $F(1, 156) = .12$, $p = .73$, $\eta_p^2 = .001$) and unfamiliar brands ($M = 3.12$, $SD = .97$; $F(1, 156) = .09$, $p = .76$, $\eta_p^2 = .001$) do not differ significantly from

those observed in the pre-test. As such, none of the brands seem to have gained anything through their integration in the game. We thus have to reject **H2**.

4.2 Experiment 2: brand prominence

In order to analyze the influence of brand prominence (i.e. large-central vs. small-central vs. large-peripheral vs. small-peripheral placements) on brand awareness and attitudes, we performed repeated measures ANOVAs.

Concerning *brand recall*, results reveal that there are significant differences between the different placements ($F(3, 90) = 3.43$, $p = .02$, $\eta_p^2 = .10$). The large-central placement obtains the highest recall rates ($M = .27$, $SD = .28$), followed by the small-central placement ($M = .19$, $SD = .31$), large-peripheral placement ($M = .13$, $SD = .22$), and lastly, small-peripheral placement ($M = .08$, $SD = .19$). Bonferroni post hoc tests demonstrate that the significant differences are situated between the large-central and small-peripheral placements ($p = .003$). Regarding *brand name recognition*, results are similar. The different placement types differ significantly in their effect on brand name recognition ($F(3, 90) = 7.04$, $p < .001$, $\eta_p^2 = .19$), with the large-central placement having the greatest influence ($M = .44$, $SD = .28$), followed by the small-central ($M = .32$, $SD = .35$), large-peripheral ($M = .23$, $SD = .28$) and small-peripheral placements ($M = .13$, $SD = .22$). Bonferroni post hoc tests reveal that the large-central placement is again significantly different from the small-peripheral placements ($p < .001$). Moreover, when looking at *brand logo recognition*, results show that the different placement types also vary significantly in their effect ($F(3, 90) = 7.52$, $p < .001$, $\eta_p^2 = .19$), with the large-central placement having the greatest impact ($M = .50$, $SD = .26$), followed by the small-central ($M = .42$, $SD = .37$), large-peripheral ($M = .27$, $SD = .31$) and small-peripheral placements ($M = .19$, $SD = .25$). Bonferonni post hoc tests demonstrate that the large-central placement varies significantly from the large-peripheral ($p = .03$) and small-peripheral placements ($p < .001$). Based on these results, we can accept **H3**: the most prominent (i.e. large-central) placements obtain significantly higher rates of awareness compared to the most subtle (i.e. small-peripheral) placements.

Concerning *brand attitudes*, however, our results show no significant differences between the different types of placements ($F(3, 90) = 1.96$, $p = .13$, $\eta_p^2 = .06$). As such, we cannot accept **H4**.

Based on these findings, we can answer **RQ1**, but only regarding brand awareness: when looking at the effectiveness of different types of IGA placements in terms of ad size and spatial position, results indicate that especially spatial position is of importance, with the central placements obtaining the highest recall and recognition scores. The effect of ad size is smaller; large placements are not able to lead to significant differences in brand awareness compared to their smaller counterparts.

Experiment 3: ad type

Finally, in order to examine the effect of ad interactivity (i.e. interactive vs. passive advertisements), we performed one-way repeated measures ANOVAs. Concerning *brand awareness*, results show that the interactive brand placements were recalled and recognized significantly better than the passive brand placements (see Table 1). These results are therefore in line with **H5**. Furthermore, there is a significant difference between the large and small interactive brand placements, with the larger placements receiving the highest levels of recall and recognition (see Table 1).

Finally, the interactive placements also attained significantly higher brand attitudes than the passive placements (see Table 1). Participants remained neutral towards the passive brands, but reported slightly more positive attitudes towards the interactive brands. These results are thus in line with **H6**.

Table 1: Table of means and repeated measures ANOVA showing the effect of the interactivity of the brand placements on IGA effectiveness

	Brand recall	**Brand name recognition**	**Brand logo recognition**	**Brand attitude**
Interactivity	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
L interactive (a)	.27 (.43)	.65 (.48)	.73 (.45)	3.37 (1.19)
PHT (Bonferonni)	b, c	b, c	b, c	c
S interactive (b)	.08 (.27)	.44 (.50)	.44 (.50)	3.50 (1.10)
PHT (Bonferonni)	a, c	a, c	a, c	c
Passive (c)	.00 (.00)	.04	.21 (.33)	3.06 (.74)
PHT (Bonferonni)	a, b	a, b	a, b	a, b
F(2, 122)	14.81	40.07	28.08	4.93
p	< .001	< .001	< .001	.009
η_P^2	.20	.40	.32	.08

Note.   The results from Bonferonni post-hoc tests (PHT) are indicated by the letters when means differ significantly (p < .05).

5   Discussion and Implications

The purpose of our research was to examine the influence of several characteristics of in-game ads on their effectiveness. In order to be able to do this, three experimental studies were carried out. The first experiment considered the effect of *brand type (i.e. familiarity)*, the second experiment examined the influence of *brand prominence (i.e. ad size and spatial position)*, and the third experiment analyzed the impact of *ad type (i.e. interactivity)*.

The findings of our first experiment show that familiar brands generate a significantly better brand awareness compared to unfamiliar brands. This result supports **H1**, and confirms what was previously found by Nelson et al. (2006), Mau et al. (2008) and Mackay et al. (2009). The result can be explained by the fact that familiar brands are accessible objects that automatically attract attention, making them easier to remember than unfamiliar brands, leading to higher brand awareness (Nelson et al., 2006). We found no evidence for the hypothesis that unfamiliar brands may have more to gain in terms of attitudes though (i.e. **H2**), as our study reveals no significant effect on brand attitudes.

The results of the second experiment demonstrate that prominent, highly visible ads attain higher awareness than subtler ads. This result is in support of **H3** and in line with IGA studies by Grigorovici and Constantin (2004), Jeong and Biocca (2012), Lee and Faber (2007) and Schneider and Cornwell (2005), which explained this by stating that prominent ads attract more attention and are more deeply processed, resulting in increased awareness. Moreover, the findings show that spatial position is the most important placement characteristic, with the central placements obtaining the highest brand awareness. The effect of ad size is much smaller; large placements are not able to lead to significant differences in brand awareness compared to their smaller counterparts. Again, no significant differences in brand attitudes are found, leading us to reject **H4**.

An explanation for the lack of significant effects on brand attitudes in the first and second experiment may be related to the nature and design of these experimental studies. In both of the projects, games were used that featured advertising for (relatively) well-known, popular brands. As such, these brands had already established a certain place in people's hearts and minds. Moreover, participants in the experiments only played these games for a very brief period of time (i.e. the experimental levels lasted approximately 6 to 8 minutes). Consequently, it might have been difficult for such a limited exposure to the in-game ads to lead to extensive changes in people's attitudes towards the brands.

Finally, the findings of the third experiment show that interactive brand placements (especially those that include large brand visuals and are thus more prominent) that can be picked up, interacted with and have an important function in the game lead to dramatically higher awareness than brand placements that are embedded in the game in a passive way. This finding is thus in compliance with

H5, as well as with the results of previous studies by Nelson (2002) and Schneider and Cornwell (2005). Furthermore, the interactive placements also attained significantly higher brand attitudes than the passive ones. Participants remained neutral towards the passive brands, but reported significantly more positive attitudes towards the interactive brands. This finding is therefore in line with **H6** and the expectations formulated by Escalas (2004). Interacting with a brand in a game context distracts players from its commercial nature, and if this interaction evokes positive feelings, these feelings can get transferred to the advertised brand as well. It is important to note that in this study (in contrast to the previous ones), we integrated real brands that were unknown to our experimental population (i.e. brands that are available and popular in other parts of the world, but not in the participants' country). As such, players had not yet formed a stable attitude towards the brands prior to participating in the experiment, leading to a quicker, more direct impact of the exposure to the ads encountered in the game.

These conclusions emphasize the importance of choosing the appropriate IGA strategy for your brand. Familiar brands will need less exposure to reach their goals, while unfamiliar brands might get away with and benefit from a higher frequency. Furthermore, strategically placing advertisements in the center of the player's viewpoint is a more effective approach than cluttering the game environment with large ads. Lastly, integrating brand placements that can be meaningfully interacted with seems to be a far more potent IGA strategy than embedding brands as a passive poster or billboard.

6   References

Escalas, J. E. (2004), "Imagine Yourself in the Product: Mental Simulation, Narrative Transportation, and Persuasion," in: *Journal of Advertising*, 33(2), 37-48.

Grigorovici, D. M. and Constantin, C. D. (2004), "Experiencing Interactive Advertising beyond Rich Media: Impacts of Ad Type and Presence on Brand Effectiveness in 3D Gaming Immersive Virtual Environments," in: *Journal of Interactive Advertising*, 5(1).

Herrewijn, L. and Poels, K. (2014a), "Rated A for Advertising: A Critical Reflection on In-Game Advertising," in: Agius, H.; Angelides, M. (eds.): *The Handbook of Digital Games*, Wiley-IEEE Press.

Herrewijn, L. and Poels, K. (2014b), "Recall and Recognition of In-Game Advertising: The Role of Game Control," in: *Frontiers in Psychology*, January 2014(4), 1-14.

Herrewijn, L. and Poels, K. (2015), "The Impact of Social Setting on the Recall and Recognition of In-Game Advertising," in: *Computers in Human Behaviour*, 53(December 2015), 544-555.

Herrewijn, L. and Poels, K. (2017), "Exploring Player Responses towards In-Game Advertising: The Impact of Interactivity," in: Rodgers, S.; Thorson, E. (eds.): *Digital Advertising: Theory and Research (Advances in Consumer Psychology)*, Routledge, Taylor and Francis Group.

Internet Advertising Bureau (2007), "In-Game Advertising: The UK Market," retrieved from:
http://kaznowski.blox.pl/resource/IAB_ingame_advertising__the_UK_Market_March_2007_1594.pdf

Jeong, E. J. and Biocca, F. A. (2012), "Are there Optimal Levels of Arousal to Memory? Effects of Arousal, Centrality, and Familiarity in Brand Memory in Video Games," in: *Computers in Human Behavior*, 28(2012), 285-291.

Law, S. and Braun, K. A. (2000), "I'll Have What She's Having: Gauging the Impact of Product Placements on Viewers," in: *Psychology and Marketing*, 17(12), 1059-1075.

Lee, M. and Faber, R. J. 2007), "Effects of Product Placement in On-Line Games on Brand Memory. A Perspective of the Limited-Capacity Model of Attention," in: *Journal of Advertising*, 36(4), 75-90.

Mackay, T., Ewing, M., Newton, F. and Windisch, L. (2009), "The Effect of Product Placement in Computer Games on Brand Attitude and Recall," in: *International Journal of Advertising*, 28(3), 423-438.

Mau, G., Silberer, G. and Constien, C. (2008), "Communicating Brands Playfully: Effects of In Game Advertising for Familiar and Unfamiliar Brands," in: *International Journal of Advertising*, 27(5), 827-851.

Nelson, M. R. (2002), "Recall of Brand Placements in Computer/Video Games," in: *Journal of Advertising Research*, 42(2), 80-92.

Nelson, M. R. (2005), "Exploring Consumer Response to "Advergaming"," in: Haugtvedt, C.; Machleit, K.; Yalch, R. (eds.): *Online Consumer Psychology. Understanding and Influencing Consumer Behavior in the Virtual World*, Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 156-183.

Nelson, M. R., Yaros, R. A. and Keum, H. (2006), "Examining the Influence of Telepresence on Spectator and Player Processing of Real and Fictitious Brands in a Computer Game," in: *Journal of Advertising*, 35(4), 87-99.

Newzoo (2017), "Global Games Market Report," retrieved from: https://newzoo.com/solutions/standard/market-forecasts/global-games-market-report/

Schneider, L. and Cornwell, B. T. (2005), "Cashing in on Crashes via Brand Placement in Computer Games. The Effects of Experience and Flow on Memory," in: *International Journal of Advertising*, 24(3), 321-343.

Van Reijmersdal, E. (2009), "Brand Placement Prominence: Good for Memory! Bad for Attitudes?," in: *Journal of Advertising Research*, 49(2), 151-153.