Did You See That?
In-Game Advertising Retention in Players and Onlookers

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ABSTRACT

The effects of embedding advertising in digital games has been explored in only a few controlled studies. This research provides results of an efficacy analysis of in-game advertising within the controlled environment of a racing car game, an environment in which advertising blends in naturally. The experiment was designed to understand the effectiveness of in-game advertising for both players and onlookers. Examining players in both Europe and the United States, this study measured how in-game advertising works on those who participate in electronic entertainment and those who watch it. The results indicate that such advertising is more effective for onlookers than for players. Implications for designers and researchers is discussed.

Author Keywords

IGA, Advertising, Car Racing, Game Design

ACM Classification Keywords

K.8.0. Games

INTRODUCTION

The video game and mobile game industries have continued to grow sharply in the last decade. As part of this growth advertisers have attempted various methods for integrating advertising content. The most common of these advertising techniques is in-game advertising (IGA). IGA has become a popular means of promoting services and products [13]. Game developers have provided means for embedding advertising in digital game environments for decades. While IGA is not new, there remains little research on its efficacy. Commonly, research focuses on attitudinal studies [11,8]. The limited amount of research on IGA efficacy is

particularly alarming when estimates indicate the expected global market to reach $1 billion USD by the end of 2014[4].

There are a variety of approaches to IGA. The most basic is the interstitial advertisement. Interstitial ads are embedded messages provided as static images or as video content that are clearly distinct from the game experience. The second category of IGA is a form of product placement, in which advertisements are integrated into the game experience, providing a more fluid coupling of advertiser message and game experience. Product placement has existed for more than five decades [9] as a common practice in marketing. Effectiveness of product placement can be linked to prominence in movies and television [12], and is affected by cinematographic decisions that lead the viewer to pay attention to specific elements within the experience of a television scene or other linear media. However games are an interactive medium, often allowing players to control what they see. To date, we merely understand that IGA can annoy players if not properly contextualized within a game world [6]. We also understand visual representation of IGA with verbal mention of the advertised product is more effective than only visual or only verbal [14].

This research seeks to understand if in-game advertising is more effective for players or onlookers and if there are specific factors that effect retention? Research into IGA has demonstrated mixed results. Chaney et al. found that IGA was noticed, but little brand information was retained [2]. They found that engagement has an inverse effect on brand retention - greater engagement meant less retention. Yang et al analyzed the effectiveness of IGA in sports games and found that players had very little recognition, but did retain fragments of the brand message [15].

Borrowing from formal language in the arts, we describe IGA as diegetic or non-diegetic. Diegetic IGA is part of the fiction of the game world. Non-diegetic IGA is content that breaks the fiction of the game environment, typically by inserting content that is not directly related to the game environment. Several researchers have concluded that non-diegetic content is ill-received by game players [11,6]. Interstitial advertising does offer high prominence, but previous research indicates that its high prominence reduces

player response to the ad content [6,7]. The focus of this research is diegetic IGA, where the ads are closely related to the game's fiction and there is obvious potential for players perceiving the intended message positively.

The research seeks to understand the relationship of player and player audience to IGA retention. To do this researchers conducted a cross-continent analysis of game play experiences within a highly controlled environment. Unlike previous studies, the researchers used existing brand advertisements and embedded them in a commercial grade contemporary game environment. Although using fictitious brands is appealing because existing brand preferences are removed, using existing brands increases the rate of recall significantly, creating a more sensitive experiment.

The researchers have executed a similar study using fictitious brands [5]. This study expands that research by using existing brands and non-diegetic IGA. Of the 13 super genres identified by the ESA [3], Car Racing offered some of the greatest accessibility. The super genre's simple rules and fictions offer benefit over first person shooters, team sports simulations, and role playing games. Steering is a commonly practiced action, whether it is a shopping cart or a 2-ton vehicle. Crossing the finish line is also common to school playgrounds and marathons.

Previous research has used existing gaming environments [15] and existing brands [6] but always within quasi-experimental constraints. Also, no published research has been done on a game using non-diegetic integration of IGA. It is important to apply such research to the increasingly rich game environments, as prominence is affected by the density of visual stimuli in the environment.

METHODOLOGY

The same experiment was conducted at a single location in the Netherlands and in the United States and will be referred to as study group NL (Netherlands) and study group US (United States). Sixteen participants were part of study group NL and 17 volunteers participated in group US.

A within-subjects design was chosen for the experiment. Each subject was exposed to both experimental treatments, meaning each subject played and viewed the video game.

An open-source racing game called Torcs (http://torcs.sourceforge.net/) was chosen because it provides an experience that is close to that found in current console and arcade games. The game experience is depicted in Figure 1. The figure provides a sense for the graphics quality and visual complexity of the game environment.

Figure 1. Torcs Game Environment

The researchers edited the game to create three custom race tracks with custom in-game advertising. Advertising for the tracks was selected from a set of more than 100 of the most recognized brands across Europe and North America.

The final list of brands was picked for gender neutrality, cross cultural recognition and visual distinctiveness. The brands and their identifying logos were selected and categorized by product group. The product groups were Scent, Soap, Candy, Internet Giants, Fast Food, Sports Apparel, Energy Drink and Motor Vehicles.

The list of logos includes two sets of brands that would appear in the game, and two sets that were identified as filler brands. The filler brands never appear in the game. Instead they only appear in the post-survey to note false positive identifications by study participants.

The selected brands represent a mix of product groups commonly advertised in games, with the exception of the scent and soap product groups, which are otherwise advertised widely. The logos for each of the brands were inserted into the game tracks. Players were provided the exact same tracks in the study 1 (group NL) and study 2 (group US) locations. An impression of the experience of a race track with IGA is shown in Figure 2.

Figure 2. Visibility of the logos in game. For copyright reasons, the logo images are blurred in this image.

EXPERIMENT DESIGN

The researchers were concerned about diegetic IGA. Logos for products that had less of a relationship to the world of car racing were weighted to make sure that all advertising messages had an equal amount of potential exposure. We aimed to assure that players had an equal opportunity to see any of the eight categories of advertising logos in the game.

Each ad position on the track was first given a sequential number indicating its position on the game track. Next, each ad position was given a score, ranging from 1 (barely visible) to 4 (very prominent). The ad position scores were calculated through repeated play sessions and weighted by its average position on the screen (middle vs periphery) and size. The ad position scores are similar to visibility rankings provided to advertisers for calculating the value of advertising locations within an environment. In total, only eight advertising messages per track were needed (one advertising message for each product category). It is important to note that the least diegetic brand groups are also the most universally familiar. Brands for soap and food apply to wider consumer demographics and advertised

more widely than high-end automotive brands.

As part of the within-subjects design, two different tracks were produced. The first track was designed for play by the first player, while the second track was to be played by the second player (first onlooker). To mitigate the effect of exposure as onlooker or player, each track contained eight different ads from the brand categories. These tracks were labeled track A and track B and contained the specific brands as identified in Table 1:

Product Category	Track A	Track B
Scent	Febreeze	Air Wick
Soap	Nivea	Dove
Candy	Twix	Mars
Internet Giants	Google	Yahoo
Fast Food	Burger King	McDonald's
Sports Apparel	Nike	Tommy Hilfiger
Energy Drinks	Rockstar	Red Bull
Motor Vehicles	BMW	Honda

Table 1. Brand logos shown on each track

STUDY

Thirty-one participants volunteered in a 20-30 minute research session and were asked to bring a friend. Sessions were run at 1024 x 768 screen resolution with a 24-color depth and both participants placed 2.5 meters from the screen.

Once players concluded their play sessions they were asked to complete an online survey where they could identify whether they saw specific logos in the game. The survey displayed the exact same logos from the game. Participants marked whether they noticed the logo or not in the game. The survey included an additional 16 brand logos that were not in the game to identify false positives.

	Group NL	Group US
Group size	16	17
Mean age	20	27
Males : Females	8:8	14:3
Players : Onlookers	8:8	11:6
Own personal computers	16 (94%)	17 (100%)
Played racing game in the last 12 months	5 (31%)	5 (29%)
Play computer games at least 2-3 times a week	5 (31%)	10 (60%)

Table 2. Demographic overview of participants

RESULTS

The researchers ran analyses on several aspects of the data. We looked at recall (spontaneous answers to the question "what ads did you see") and recognition ("circle the ads that were shown in the game", given a sheet with real and filler ads).

For the US data, watchers recalled more ads than players (4.5 vs 3.8 ads recalled) but this difference was not significant, $t(15) = 0.564$, $p = .58$. For the NL data, the same numeric pattern emerges (3.8 vs. 3.0 ads recalled for watchers vs. players), but the difference is not significant, $t(14)=1.16$, $p = .27$. Participants who watched the game in the first round noticed the ads right way (6 noticed in lap 1, one in lap 2, one didn't answer), whereas participants who played the game in the first round did not notice the ads right away (3 noticed in lap 1, 5 in lap 2).

Recall Results By Lap

For the NL group, we have recall data for each lap as participants were asked to recall all ads seen twice. To run an analysis over the two separate laps, we computed a measure of recall improvement. For lap 2, this was the number of ads recalled minus the number of ads recalled in lap 1. For lap 1, a zero baseline was assumed making the recall improvement identical to the actual recall.

A three-way ANOVA with the factors Role (player or watcher), first-role (watching or playing during first exposure, lap 1) and order (lap 1 or lap 2) was conducted. The factor Role borders on significance ($F=4.12$, $p=0.052$), with watchers recalling more ads than players (3.6 new ads vs. 2.4 new ads, SD 1.6 and 1.9). No other effects neared significance.

Results for recall reveal no difference between watchers and players after the first lap in terms of number of brands recalled. The data from the NL group show that once more than one lap has been made, we do find a significant difference between the two roles (watcher vs. player).

Recognition is an easier task and therefore a more sensitive measure of ad visibility. We expected to find more pronounced results with this measure. For the US group we found a difference in number of brands recognized (13.0 vs. 8.1 for watchers vs. players) that was significant $t(15) = 2.63$, $p = .019$. However, we did not find a significant difference for the NL group as the number of ads recalled after lap 1 was much smaller for this group (4.9 vs. 4.1 ads recognized for watchers vs. players; $t(14)=0.89$, ns).

Players were also asked to "write down everything" they remembered about the ads in the game. We compared the results of the playing and watching experience for group NL. Of the seven dimensions of the Core GEQ, we found that Challenge and Flow were significantly different for players and watchers: Challenge was higher for players than for watchers (mean 2.99 vs 2.00 on a 5-point scale, $t(30)=3.79$, $p=.00068$). Flow was also higher for players than for watchers (mean 2.74 vs. 1.99; $t(30)=3.76$, $p= .00075$). The other dimensions (Competence, Immersion, Tension, Negative Affect and Positive Affect) did not show any significant differences.

CONCLUSIONS

In a PC based racing game, we found that onlookers were significantly better at recognizing brand logos presented on in-game billboards than players. We also found an effect in that direction for recall of brand logos. The same finding was obtained for a group of US based participants and a group of Dutch participants.

A qualitative review of the participants' attitudes towards IGA revealed that neutral and positive attitudes set the tone. This finding held across the groups from the two countries. In a standardized evaluation of game content, watchers and players did not differ on five of the seven dimensions, with

players showing higher values for Challenge and Flow.

A possible explanation for why observers might be more likely than players to process and remember ads embedded in games can be found in predictions of the Elaboration Likelihood Model (ELM). ELM is a theory of how message source factors influence persuasion [10]. It proposes that when people are not motivated and/or not able to process (e.g., if they are distracted) key arguments of a message thoroughly, they will instead evaluate the message based on peripheral cues like source expertise/attractiveness, number of arguments (as opposed to quality of arguments), etc. This is referred to as peripheral route processing. Conversely, when people are motivated and able to process key arguments in a message, they will. This is central route processing. Attitudes formed via central route processing will be more resistant to counter-persuasion, more enduring and more predictive of behavior than those formed through peripheral route processing.

Players may be more motivated and focused than observers on core game mechanics (i.e., driving the car as quickly as possible without crashing). Thus, it would make more sense that observers, who are less motivated and less focused, pay more attention than players to non-game essentials (i.e., peripheral cues) like embedded billboard ads. However, advertising effects that occur via peripheral route processing, compared to central route processing, are typically short-lived and susceptible to counter-persuasion.

In conclusion, this research is significant for several reasons. First, while previous research has explored effects of IGA, typically their game environments have been less rich than ours. The high level of realism in our game environment is important because it more closely resembles real gaming contexts, thus adding credibility to the significance of our findings. Second, our research employs a more rigorous experimental design than previous quasi-experimental research in the area. Third, our findings can be explained using a highly regarded psychological theory, ELM, thus adding to the robustness of our work.

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