THE EFFECTIVENESS OF IN-GAME ADVERTISING: THE IMPACTS OF AD TYPE AND GAME/AD RELEVANCE

Jen-Hung Huang[1] and Tzong-Ke Yang[2*]
[1]Department of Management Science
National Chiao Tung University
Hsinchu (300), Taiwan
[2]Department of Information Management
National United University
Miaoli (360), Taiwan

ABSTRACT

The current study examined the effects of ad type and the relevance between the advertised product and the game content on player's memory and attitude toward the billboard placement embedded within a browser game. A 2 (ad type: animated vs. static) $\times$ 2 (game /ad relevance: high vs. low) factorial experiment was employed in the study. Results revealed that animated billboard ads prompt better advertising effects than static billboard ads. The animated billboard ads generated higher ad recognition, and yielded a more favorable attitude toward the ad. It was also found that low game/ad relevance has a more favorable effect on ad recognition, whereas high game/ad relevance yielded a more favorable attitude toward the ad placement. Managerial implications and limitations for the use of these ad execution cues are discussed, and future research is suggested.

Keywords: In-game Advertising, Ad Type, Relevance, Ad Recognition, Attitude toward the Ad

1. INTRODUCTION

Fragmentation of traditional media has driven advertisers and marketers to embrace new advertising methods of reaching their target audience [30]. In-game advertising is one such new method that has been broadly utilized by a wide range of companies, such as Nike, Ford, Coca-Cola, Pepsi, and Nabisco [23,60]. In-game advertising refers to the incorporation of branding messages into existing games and is similar to product placement in movies or television shows [11,34]. According to an industry report by Parks Associates, the spending on in-game advertising in the United States will grow from the $370 million in 2006 to nearly $2.1 billion in 2012 [9]. Although a recent report provided a lower estimate of $650 million in 2012 [10], industrial professionals agree that the growth of in-game advertising will be large and rapid.

Despite the increasing popularity of this technique among marketers, there have been few academic studies regarding how specific features of in-game advertising affects consumers' memory for the embedded messages, and their attitudes toward the placements in such a highly interactive entertainment environment. The findings of Nelson [44] indicated that gamers did not feel negative toward product placements in a console video game and did not consider the practice as deceptive. Moreover, a few studies indicated that exposure to the brands placed in video games have a small effect on gamers' memory for the brands [22,44,62]. For example, Nelson [44] reported that about 30% of in-game brands are recalled in the short term and about 15% at a five-month delay. Scholars have also found preliminary support for the influences of specific features, such as prominence, placement location, types of placement (billboards versus actual products), and thematic relevance, on recall or persuasion of brands embedded in video games [22,34,61]. However, much work is still needed to maximize the effectiveness of in-game advertising. It is important for advertisers to know what mechanisms would be more effective for in-game advertising. More specifically, it would be important to know which factors might contribute to improve game player's memory for the embedded messages. Are some placements more persuasive than others? A better understanding of these issues is critical to the effective use of in-game advertising.

Therefore, the present investigation attempts to test the potential effects of different placement strategies on the effectiveness of in-game advertising.

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*Corresponding author: ckyoung@nuu.edu.tw

More specifically, we are interested in examining the differential effects of ad type (animated versus static billboard) on players' memory and attitude toward the embedded advertisement. In addition, our study investigates the effect of an important factor frequently faced by media planners in deciding which medium is most suitable for their ads — namely, the relevance between the game content and the advertised product category.

The remainder of this paper is organized as follows. In the next section, several important areas of literature are reviewed to provide the theoretical background for the hypotheses. Effects of animation and relevance on memory and attitude toward embedded advertising are hypothesized. We then describe the research methodology and the results of the hypotheses testing. Finally, we discuss the implications of our findings and provide direction for future research.

2. BACKGROUND LITERATURE AND HYPOTHESES

2.1 The Effects of Animated Billboards within the Gaming Environment

Animation is one of the most popular devices widely used by practitioners in the online advertising environment [57]. The increased use of animation is based on the belief that a moving or flashing element is useful for attracting viewer's attention to a specific part of the screen [4,48]. Corresponding to this phenomenon, a growing body of research has emerged to investigate the impacts of animation. In the marketing literature, researchers are interested in the use of animation for banner ads on Websites and have found that animated ads prompt better advertising effects than do static ads. Evidence has suggested that animated advertising has better attention-grabbing capabilities [6,27,65], generates better memory for the advertising [6,7,25,36,65], and more favorable attitude toward the ad (A_{ad}) [27,58,65]. However, most of previous studies have mainly studied the impact of animation in the context of banner advertisements on Web sites. To date, few empirical studies report the effects of animated ads within a gaming environment. The applicability of previous research findings in the Web environment needs to be tested by conducting experiments in the gaming environment. Therefore, this study attempts to examine if previous results on animated banner ads continue hold for the gaming environment.

The limited-capacity model of mediated message processing [31,32] offers a theoretical framework for explaining the possible effects of animated advertisement within the gaming context. This model assumes that processing messages requires mental resources, and people only have a limited amount of mental resources at any given point in time. Within this model, processing information involves three sub-processes: encoding, storage, and retrieval. These three sub-processes occur independently and simultaneously during media use. The encoding sub-process determines which bits of information will be selected and transformed into mental representations in short-term memory. In this sub-process, people engage in both controlled and automatic selections. Controlled selection occurs consciously such that message receivers deliberately pay attention to certain stimuli based on their goals. Automatic selection is activated via orienting responses to either stimulus that is perceived to be relevant to the individual's goals or stimulus that brings an unexpected change in the environment [21,47]. A recognition test is suggested as a measure of whether a message was encoded [31]. This sub-process is particularly important for the current study as the recognition test is used to measure how well the embedded advertisement is being processed by the players during the game play.

The second sub-process, storage, refers to the process of linking newly encoded information to old information previously stored in the brain. The more associations formed between the new and old information, the better this new information will be stored. Storage can be indexed by cued recall techniques. The final sub-process, retrieval, is "the process of searching the associative memory network for a specific piece of information and reactivating it in working memory" [31]. Retrieval is an ongoing process during message reception. When people receive messages, they simultaneously retrieve relevant stored knowledge in order to comprehend and store the new messages. Free recall measures index the retrieval process.

Based on this model, memory for a specific message depends on how resources are allocated to each of the sub-processes. When insufficient resources are allocated to sub-processes, then the recipient's memory for a specific message will suffer as a result [31]. For instance, poor recognition levels indicate that the message has not been thoroughly encoded due to cognitive overload [31].Thus, it is reasonable to speculate that the limited resources game players have available to encode the embedded advertisement will influence their ad recognition. In the context of in-game advertising, the primary task for game players is playing the game [22]. Game players are more likely to devote most of their controlled resources to encoding the game stimulus, choosing to allocate fewer resources to other game-irrelevant stimuli, such as embedded advertisements. Therefore, recognition for the embedded advertisement may simply depend on whether the nature of the stimulus can evoke the automatic selection process or not.

According to Lang [31], orienting responses (OR) are one of the major automatic mechanisms that influence the level of resources allocated to the encoding sub-process. Previous research concerning the physiological effects of ad animation has demonstrated that animated banner ads elicit ORs while static ads do not [25]. The OR, in turn, evokes an automatic allocation of cognitive resources to encode the stimuli that elicit the OR. In the context of digital game, it is also reasonable to expect that an animated billboard would elicit more frequent ORs than a static billboard. Therefore, greater cognitive resources will be unintentionally allocated to encoding the animated ad messages. This rationale led to the prediction that recognition of the animated billboards is expected to be higher than that of the static billboards. Thus, we posit the following hypothesis:

H1: Recognition of animated billboard placements will be higher than that of static billboard placements.

Regarding the effect of animation on user attitude, most previous studies have reported that animated ads generate more favorable A_{ad} than static ads [27,58,65]. The superiority of animated ads on attitude may be explained by the vividness effects. Steuer [56] defines vividness as "the representational richness of a mediated environment as defined by its formal features; that is, the way in which an environment presents information to the senses". A message is considered to be vivid if it is emotionally interesting, concrete and imagery provoking, and proximate in a sensory, temporal, or spatial way [46]. In general, animated ads contains more identifiable visual elements than do static ads, thus animated ads may be perceived as more vivid and more appealing than static ads. The use of vivid information has been demonstrated to produce a more favorable attitude than the use of non-vivid information [12].Thus, it is expected that an animated in-game billboard would also be perceived as more vivid, which in turn, results in more positive attitudes that a static in-game billboard. This rationale leads us to propose the following hypothesis:

H2: Subjects will have more positive attitudes toward animated billboard placements than static billboard placements.

2.2 The Effects of Game/Ad Relevance on Advertising Effectiveness

It was generally recognized that the media context in which the advertisement is embedded may influence advertising effectiveness. During the past few decades, much research has been done on the effects of relevance between advertisements and their surrounding media context on viewers' memory and attitude toward the advertisement. In previous studies, the concept of "relevance" or "congruity" has been conceptualized in a variety of ways to examine the relationships between the advertisement and program-induced mood [28], the involvement types of the advertisement and television program [53], the advertisement style and context style [14], the modality of the product placement and the degree of plot connection [50], and the advertised product category and the media context in which it appears [17,26,42,43,52]. In the current study, we particularly focus on the effect of relevance between the advertised product and the theme of the game as this type of congruity is frequently used in practice and is thought to be the best conceptualization of congruence for the situation of in-game advertising [34].

Regarding the effect of relevance between the advertised product and the content of its surrounding media on memory, most previous studies have reported that people remember low relevant advertisements better than high advertisements [17,24,34,42]. For example, Lee and Faber [34] reported that low relevant brands (e.g., pet foods) were better remembered than high relevant brands (e.g., gasoline) within a car racing game. The superiority of incongruent advertisements on memory may be explained by the contrast effect [40]. When incongruity occurs between the advertisement and its surrounding context, the ad is often considered novel, distinctive, and prominent, thereby drawing attention [38,55]. In addition, the novelty of the incongruent stimulus may lead to more cognitive elaboration in order to resolve the incongruity. On the other hand, the congruent stimulus is processed less elaborately than incongruent stimulus because the stimulus fits well with its surrounding context [38]. Consequently, incongruent advertisements are more memorable than congruent advertisements because they draw more attention and provoke greater cognitive elaboration [24].

Based on the findings of previous research, we argue that the contrast effect of incongruent information in drawing people's attention and triggering cognitive elaboration is particularly important with regard to in-game advertising. In such a highly interactive gaming environment, players need to devote most of their limited cognitive resources to processing the primary stimuli in order to play the game, such as the moving targets in a shooting game or the changing track in a racing game. Thus, a high relevant billboard placement is more likely to be ignored because it is expected and connected to the theme of the game. In contrast, a low relevant billboard placement that is not relevant to the theme of the game may be easily noticed, triggering extra cognitive processing to reconcile the incongruity. Therefore, we argue that game players are more likely

to allocate their attention and processing resources to processing low relevant billboard placements rather than high relevant billboard placements. Thus, the following hypothesis is proposed:

H3: Recognition of low relevant billboard placements will be higher than that of high relevant billboard placements.

Concerning the effect of relevance on user attitude, Mandler [38] proposed that congruent information that fits well with people's category schemas leads to more favorable responses because people like objects that conform to their expectations. Conversely, highly incongruent information often leads to confusion and frustration because the incongruent stimulus cannot be easily reconciled with the existing cognitive structure. Research on product placement in traditional media has also suggested that incongruent placements adversely impact user attitudes by encouraging questions about the brand's presence in the medium; these questions prompt resistance to the placements [1]. Some empirical evidence has been provided to support that the increased elaboration associated with incongruent information has an adverse effect on attitudes. For example, Russell [50] found that incongruent product placements within a television show negatively affect brand attitudes because they seem out of place. Likewise, research on Web site advertising also indicates that banner ads placed in a product-congruent Web site context generated more favorable attitudes toward the ad than ads placed in an incongruent Web site context [42,52]. However, very few studies have ever examined the attitudinal effect of congruity within the context of in-game advertising. As such, this study empirically investigates the effect of game/ad relevance on players' attitude toward billboard placement in a game.

Drawing from the congruity literature previously discussed and extending it to the context of digital games, we would argue that the relevance between the advertised product and the game content is closely associated with players' attitude toward the billboard placement. High relevant billboard placements, in which the advertised product matches well with the theme of the game, make the placements seem more natural; therefore, less effort is spent on thinking why they are there. In this way, high relevant billboard placements will be perceived as more acceptable and are more likely to produce positive affective outcomes [13]. In contrast, low relevant billboard placements, which involve mismatches between the advertised product and the theme of the game, are often perceived as inappropriate and are more likely to prompt players to think about the reason for the billboard's presence within the game. Such

elaboration will result in corrective mechanisms, such as suspicion or counter-argumentation [16]. Thus, it is hypothesized that:

H4: Subjects will have more positive attitudes toward high relevant billboard placements than low relevant billboard placements.

3. METHODS

3.1 Experimental Design and Participants

This study used a 2 (ad type) × 2 (relevance) mixed-factorial experimental design in which participants were asked to play one of the four tested browser games. The independent variables manipulated were ad type and game/ad relevance. Ad type served as a between-subject factor. The animated billboard ads contained three moving advertising items, whereas the static billboard ads had no moving objects. Relevance was also manipulated as a between-subject factor. In the high relevant condition, a "sport drink" billboard ad was placed in a football game; in the low relevant condition, a "hot coffee" billboard ad was placed in a football game. After exposure, participants were asked to fill out an online questionnaire eliciting their attitude toward the ads and their memory of the billboard embedded in the game.

A recruiting message for the survey was distributed via postings in various game discussion forums. It was reasonable to believe that the discussion subjects of these boards were highly relevant to the current study. The invitations stated a fictitious purpose for this experiment and provided a hyperlink to it. To attract participants, the respondents were offered a chance to participate in a drawing for several prizes. A total of 122 participants completed the experiment. No participants had ever previously played the game used in the current study. Participants included 54 males (44.3%) and 68 females (57.7%) ranging in age from 15 to 29, with a majority being students (86.9%). No significant effects of gender, age, or occupation occurred on any measures used in the study.

3.2 Stimulus Material

According to a recent industry report conducted by eMarketer, most of the spending growth in in-game advertising comes from advertising in browser-based casual games, and marketers are increasingly choosing to customize established game franchises with their brands rather than create new custom-built games [10]. Regarding the strategies of brand integration, billboard placements are of particular interest to both academics and practitioners as they add to the realism of the games and mimic the real-world scenario [11,19]. Consequently, this study

specifically focused on the practice of billboard placement within an established browser game.

Researchers have suggested that professionally developed stimuli are better than mock stimuli in evoking more natural responses from subjects [41]. Thus, the modified versions of a professionally developed free browser game (created using Macromedia Flash) called "Free-Kick Football" (available at www.cbs.com until early 2010) was used in this study. This game was selected for several reasons. First, sports games are one of the most popular games used for product placements. Second, this game contained a stadium in its background, which could be used for displaying the test billboard. Finally, we expected that few of the players in Taiwan had ever played this game before as the game resided on a Website located in the United States. This could eliminate any effects from previous game experiences.

To manipulate game/ad relevance, we needed to identify two products — one that would be perceived as congruent and the other that would be perceived as incongruent in relation to the game context of "Free-Kick Football." Twenty-seven undergraduate students were given a list of ten potential products and were asked to rate the perceived relevance of each product on an adapted measure [34]. Subjects were asked if they agreed or disagreed with the statement "an ad for (product) is a good fit for football game events" (1 = strongly disagree, 5 = strongly agree). Based on our pretest results, we selected "sport drink" ($M = 4.30$) as the high relevant ad and "hot coffee" ($M = 2.11$) as the low relevant ad, $t(26) = 12.32$, $p < .001$.

To maintain control over past brand exposure experience, Schneider and Cornwell [51] suggested using fictitious brand names. Thus, the researchers created a fictitious brand name to eliminate any possible effects from previous experience with, or knowledge of, a real brand. To enhance external validity, two modified versions of a professionally developed leader-board ad (728 × 90 pixels) were used in this study. The test ads featured a brand logo, a brand name, and a product as these items have been found to be the most prevalent form of brand identifiers embedded in games [35]. The two test ads were identical in every respect, except for the advertised product. One test ad contained an image of sport drink, while the other contained an image of hot coffee. Two different versions of each advertisement were then developed for manipulating the ad type variable: an animated version and a static version. The animated ad placement contained three moving advertising items, which looped one time each ten seconds, while the static one did not include any moving items. The static version of the same ad was created by disassembling the animated ad and rendering the ad into a static image.

3.3 Experimental Procedure

An online experiment was conducted to test the stated hypotheses. Participants were randomly assigned to one of the four experimental conditions and were asked to read an instruction page about the experiment. To prevent multiple responses, respondents' IP addresses and e-mails were checked to make sure that all the subjects responded only once. Subjects were told that the purpose of the experiment was to evaluate a new browser game. Participants were also asked to read a brief introduction about how to play the game. By clicking the "Next" button, participants were subsequently exposed to the browser game. By clicking the "Play" icon on the screen of the game, they started to play the games. After playing the game, the Web page was redirected to a questionnaire and was programmed to prevent the respondents from returning to the previous game. Once subjects had completed the experiment, they were debriefed on the real purpose of the study and thanked.

3.4 Measures

The questionnaire consisted of three sections. The first section contained questions to keep with the deception of our research purpose (e.g., "The graphic quality was good," "This game was easy to learn"). The second part measured ad recognition and attitude toward the test placements. In this study, ad recognition was used as the sole indicator of a subject's memory performance as previous studies have demonstrated that recognition is more reliable and does not decay over time in the way that recall does [15]. Furthermore, recognition scores are a more sensitive and discriminating measure than recall scores [54,64]. To measure participants' recognition memory for the embedded ads, subjects were asked to select the brand logo, brand name, and product picture to which they were exposed during the experiment [34,51,63]. Each statement consisted of ten choices, including one target and nine foils that were not presented during the experiment. The designs of all choice items for the recognition measure were similar in size and style. The score of each recognition question was coded as a dichotomous variable (1 = correct, 0 = not correct). The scores of the three recognition questions were summed to form the recognition level that ranged from 0 to 3.

A_{ad} was measured with a five-point semantic differential scale composed of five bipolar adjectives frequently used in the marketing literature to measure a subject's overall evaluation of advertisements [8]. The five bipolar adjectives were good/bad, like/dislike, favorable/unfavorable, interesting/un-interesting, and enjoyable/not enjoyable. The five items were averaged to generate the A_{ad} score, which was found to be reliable (Cronbach's alpha= .80). Finally, the second part of the questionnaire contained checks on the manipulations of thematic congruence.

To assess the validity of our manipulations, participants were asked to rate—on a five-point Likert scale—the perceived congruity between the game context and the embedded advertisement.

The third part of the questionnaire measured participants' background variables and whether they had played this game before. In addition, game experience and attitude toward advertising in general were also measured and presumed to be potential covariates as individual differences in experience with digital games might affect the recall and recognition of brand placement in video games [51]. In previous studies, the measure of video game use and experience was often based on an 'hours per week' scale [5,49,51]. Thus, participants were asked to indicate how many hours per week they spent playing digital games. Furthermore, attitude toward advertising in general was also controlled as it was expected to be an important determinant of attitude toward specific advertisements [2,3,37,59]. In the context of computer games, Nelson et al.'s [45] study revealed that those who were negative about ad placement were also negative about other types of ads. Therefore, an established six-item scale adopted from Nelson et al.'s study [45] was used to measure attitudes toward advertising in general. Respondents were asked to indicate their level of agreement or disagreement with each statement on a five-point scale. Mean scores were calculated for attitudes toward advertising in general. The reliability coefficient for this measure was .85.

4. RESULTS

4.1 Manipulation Checks

To verify the manipulation of game-ad relevance, participants were asked to rate the perceived fit of the advertised product with the game context using the same measure as in the pretest. A significant difference occurred between those who saw the congruent ad ($M = 3.80$) and those who saw the incongruent ad ($M = 2.25$; $t(120) = 10.10$, $p < .001$). As a result, the manipulation of game-ad relevance was found to be effective.

4.2 Hypothesis Testing

Hypotheses 1 and 3 dealt with the effect of ad type and game/ad relevance on recognition of the embedded advertisements. The correlation between the dependent variable, recognition score, and attitude toward the ad in general ($r = .21$, $p > .05$) as well as average weekly game playing ($r = .12$, $p > .05$) was not significant and thus was dropped as covariates. The memory hypotheses were analyzed using a 2 (ad type: animated vs. static) × 2 (relevance: high vs. low) ANOVA (analysis of variance) on ad recognition scores. Table 1 presents the ANOVA results.

Hypothesis 1 suggested that respondents' recognition of animated billboards would be higher than those of static billboards. The analysis yielded a significant main effect for ad type ($F(1,120) = 4.09$, $p < .05$, partial $\eta 2 = .03$). Consistent with our expectations, the mean level of recognition for the animated billboards ($M = 2.29$) was significantly higher than those for static billboards ($M = 1.96$). Thus, H1 was supported.

Table 1: ANOVA results for H1 and H3

Hypotheses (dependent variable)	F-value	df	Partial η^2
Ad recognition			
Ad type (H1)	4.09*	1/120	.03
Relevance (H3)	8.27**	1/120	.07
Ad type ×Relevance	.21	1/120	<.01

Note: ANOVA = analysis of variable.
*$p < .05$
**$p < .01$

Hypothesis 3 predicted that respondents' recognition of incongruent billboard placements would be higher than that of congruent billboard placements. As expected, a main effect emerged for thematic congruence ($F(1,120) = 8.27$, $p < .001$, partial $\eta^2 = .07$). The mean level of ad recognition was significantly higher when the advertised product did not fit well with the game context ($M = 2.36$) than when the advertised product matched well with the game context ($M = 1.89$). Therefore, H3 was also supported. No significant interaction effect emerged.

Hypotheses 2 and 4 dealt with the effect of ad type and game/ad relevance on attitudes toward billboard placements. In evaluating these two hypotheses, the correlation between the dependent variable, attitude toward the embedded billboards, and attitude toward advertising in general was highly significant ($r = .33$, $p < .001$) and, thus, was dropped as a covariate. The correlation between attitude toward the embedded billboards and average weekly game playing ($r = -.02$, $p > .05$) was not significant, and thus was also dropped as a covariate. These two hypotheses were subsequently tested using a 2 (ad type: animated vs. static) × 2 (relevance: high vs. low) ANOVA on A$_{ad}$ scores. Table 2 shows the ANOVA results.

The second hypothesis stated that participants' attitudes would be more positive toward animated billboards than static billboards. Consistent with our expectations, we found a significant main effect for ad type ($F(1,120) = 38.00$, $p < .01$, partial $\eta^2 = .24$). The mean level of attitude toward animated billboards ($M = 3.32$) was significantly higher than that of static billboards ($M = 2.62$). Thus, H2 was supported.

The fourth hypothesis posited that participants' attitudes would be more positive toward the congruent billboard placements than incongruent billboard placements. As expected, we found the main effect of

thematic congruence on A_{ad} ($F(1,120) = 62.29$, $p < .001$, partial $\eta^2 = .35$). The mean scores of A_{ad} for congruent billboard placements ($M = 3.41$) were significantly higher than those of incongruent billboard placements ($M = 2.52$). Thus, H4 was supported. Again, no significant interaction effect was found.

Table 2: ANOVA results for H2 and H4

Hypotheses (dependent variable)	*F*-value	*df*	Partial η^2
Attitude toward the ad			
Ad type (H2)	38.00**	1/120	.24
Relevance (H4)	62.29**	1/120	.35
Ad type ×Relevance	.11	1/120	<.01

Note: ANOVA = analysis of variable.

*p < .05

**p < .01

5. CONCLUSIONS

5.1 Discussion and Implications

The current study explores the potential effects of ad type, as well as the relevance between the advertised product and game, on players' memory for the branding messages and attitudes toward the advertisement. Based on the limited-capacity model of mediated message processing, we anticipated that ad type would impact players' attention to the embedded billboards and their attitudes toward the advertisement. As predicted, the results of the analyses offer support for the notion that animated billboards prompt better advertising effects than static billboards. In other words, animated billboards generate higher ad recognition (H1) and more favorable A_{ad} (H2) than static billboards. The results are interesting for in-game advertisers because the ad type that has been widely used for in-game advertising is static billboard [11,19]. However, we found that an animated billboard prompts better advertising effects than a static one. Thus, we suggest that, in order to achieve better efficacy of in-game advertising, advertisers should carefully consider the ad type for billboard placements.

This paper also looked at the effect of relevance between the advertised product and game context on advertising effectiveness. Based on previous studies into the congruity effects on memory, we expected an incongruent in-game billboard to be remembered better than a congruent billboard. As expected, and consistent with Lee and Faber [34], low relevant billboards generated a higher level of ad recognition (H3). This finding supports the notion of contrast effect, which states that incongruent information is often considered novel and prominent and as such draws more attention, which in turn leads to more

cognitive elaboration in order to resolve the incongruity. This result is also interesting for advertising practitioners because selecting media that fit the advertised product with regard to the content of the media is a planning strategy that has been widely used by media planners. However, in this study, people were more able to recognize the billboard ad when confronted with it in a low relevant gaming environment compared to a high relevant game context. These findings suggest that, if advertising awareness is the primary goal for advertisers, low relevant billboard placements might be considered a better media strategy for in-game advertising than high relevant billboard placements. Regarding the effect of game/ad relevance on players' attitudes toward the ad, we found that players reported more favorable attitudes toward the billboard ad under the context of high game-ad relevance (H4). The superiority of congruent placements on attitude found in this study is in accordance with most previous studies on television or Website advertising, suggesting that — if the key concern of advertisers is players' attitude toward the advertisement — high game-ad relevant planning is considered a better media strategy than low game-ad relevant planning.

Overall, this study contributes to the growing body of research investigating the influence that various placement strategies of in-game advertising have on communication effectiveness. Advertisers inevitably face a potential trade-off between high recognition for an ad and unfavorable attitude toward the ad. Results from this study point to some strategies that practitioners can use for in-game advertising, especially for marketers who wish to promote a new brand or product by using an established browser game.

5.2 Limitations and Future Research

A weakness of the current research is that only two levels (animated versus static) of animation were used in this study. Although the manipulation of ad type seemed appropriate for the current study, it is possible that a positive impact of animation on ad recognition and A_{ad} changes when the level of animation is too fast. It has been reported that the relationships between the degree of animation and both recognition rates and A_{ad} takes an inverted U-shaped form [64]. Thus, an additional extension of this research lies in the investigation of the influence of different levels of animation on players' memory and attitudes toward the ad embedded within the gaming environment.

Another weakness of the experiment is that we only used two measures to assess the effectiveness of in-game advertising. Although attitude toward the ad and ad recognition are the measures that have been most widely used and cited by practitioners to represent the product placement effectiveness, they do

not solely determine the success or failure of this advertising strategy. Some other effectiveness measures such as product preference, brand attitude, and purchase intention are also important advertising outcomes that advertisers may wish to achieve through product placement within a browser game. Thus, we recommend that future studies should also examine the effects of different placement strategies on these additional advertising outcomes.

Finally, the current study was conducted in Taiwan with Taiwanese subjects. Thus, the results may not be applicable to gamers in other countries. The effectiveness of product placements in film has been shown to vary across cultures and national characteristics [20,29,39]. For example, Gould *et al.* [20] found that consumers in the United States were more likely to accept product placement compared to Austria and France. In addition, they were more likely to purchase products appearing in the movies. The findings of McKechine and Zhou [39] revealed that Chinese consumers were less likely to accept product placement in movies than their American counterparts. This cultural difference may also be the case within the digital games. Therefore, it would be interesting to investigate the effect of cultural or national differences on the effectiveness of in-game advertising.

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ABOUT THE AUTHORS

Jen-Hung Huang is a Professor in the Department of Management Science at National Chiao Tung University (NCTU), Taiwan R.O.C. His research and teaching interests include Internet marketing, consumer behavior and research methods. His work has been published in *Journal of Economic Psychology, Psychology & Marketing, International Marketing Review, Industrial Marketing Management;* and others.

Tzong-Ke Yang is an associate professor in the Department of Information Management at National United University (NUU), Taiwan R.O.C. He received his Ph.D. degree in Management Science at National Chiao Tung University (NCTU). His current research and teaching interests include Internet marketing, online advertising and consumer behavior.

遊戲內置廣告之廣告效果研究
—探討廣告型態與遊戲/廣告相關性之影響

黃仁宏[1]、楊宗珂[2*]
[1]國立交通大學管理科學系
新竹市大學路 1001 號
[2]國立聯合大學資訊管理學系
苗栗市恭敬里聯大 1 號

摘要

本研究之主要目的在於探討網頁遊戲中廣告置入之廣告效果，本研究利用網路實地實驗法以檢驗廣告看板型態以及廣告產品與遊戲內容之相關性對遊戲玩家之廣告記憶及廣告態度之影響，研究結果顯示動畫式廣告看板所產生的廣告效果優於靜態廣告看板，亦即受測者對於動畫式廣告看板所產生的廣告確認及廣告態度均高於靜態廣告看板；同時研究結果亦顯示當廣告與遊戲內容兩者呈現低度相關時，所產生的廣告確認效果較佳；然而在廣告態度方面，則為相反，受測者對於那些與遊戲內容高度相關的廣告，擁有較為正面的廣告態度。最後根據本研究之實驗結果，提出具體的實務建議，及後續之研究方向。

關鍵詞：遊戲內置廣告、廣告型態、相關性、廣告確認、廣告態度
（*聯絡人：ckyoung@nuu.edu.tw）