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## **Communicating Brands Playfully:**

Effects of In-Game Advertising for Familiar and Unfamiliar Brands

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## **Abstract**

An online experiment was conducted to study the effects of brand placements in computer games on brand attitude as well as game attitude ( $N = 521$ ; between subject design: familiar vs. unfamiliar brands vs. no brand). Results show that particularly unfamiliar brands can achieve a better attitude, while the attitude towards the familiar brand worsens as a result of ad placements. Anyway, the game will lose as a result of the integration of advertising: the attitude towards the game worsens due to ad placements. However, these effects were not moderated by ad skepticism. Concerning the process of attitude formation, the attitude towards the game impacts directly the attitude towards the advertised brand.

*Keywords:* in-game advertising, brand placement, attitudinal effects, brand familiarity

## 1 INTRODUCTION

The very first computer game in history was a huge hit with the public. Developed in 1958 for a Brookhaven National Laboratory Open Day to win acceptance and sympathy among the public for nuclear technology, the game took its audience by storm (Mertens and Meißner 2002; Zentes and Schramm-Klein 2004). All that was necessary for “Tennis for Two” was a movable point, a horizontal line and three vertical lines on an oscilloscope. Since then computer games have grown more realistic, graphically sophisticated and technically demanding. And they are capturing an ever-widening audience. In the US, for example, higher sales have been generated in recent years by computer games (\$11 billion) than by movies (\$9.185 billion) (Gaudiosi 2004; Nelson 2005). That makes for an impressive number of players – an estimated 35 million people took part in online games alone in 2004 (Hopper 2002; Wan and Youn 2004). Computer games have also been discovered for marketing purposes, with a steady rise in the number of companies placing their brands, products or advertising messages in computer games (Nelson 2005; Nelson, Keum, and Yaros 2004; Schmieder 2005; Wan and Youn 2004). Analysts assume that hundreds of millions of dollars were already earned in 2004 with advertising and product placements in computer games (Leeper 2004; Nelson et al. 2004).

There are two kinds of advertisements in computer games: ad-games and in-game advertising. Ad-games are primarily developed with the aim of mediating advertising messages and brand data (Mallinckrodt and Mizerski 2007). In the process, the brand or product takes center stage in the game and the game rules are structured around the advertising message (Chen and Ringel 2001). By contrast, for in-game advertising the products and brands recede behind the game rules, e.g. advertising boards in a stadium (Nelson 2005). The game and its intrinsic activities remain the main focus. This kind of advertising is not unlike the product placement in films or television programs. In fact, certain

similarities can be found between the two forms of communication (cf., Yang et al. 2006 for a more detailed discussion).

Academic research is also increasingly turning its attention to this marketing communication practice. (cf., Daugherty 2004; Glass 2007; Hang and Auty 2007; Schneider and Cornwell 2005). Based on the emerging body of research in this field, our study primarily expands on what is already known in terms of three aspects: *first*, in recent years several studies have been published on the acceptance of advertising in computer games (in-game advertising) and their impact on the (implicit and explicit) recollection of brands (Hernandez et al. 2004; Nelson et al. 2004; Schneider and Cornwell 2005). Despite this, very little is known about how consumers process brands in computer games and the impact that in-game advertising can have on the attitude towards the brand advertised (Daugherty 2004; Nelson et al. 2004; Nelson, Yaros, and Keum 2006; Yang et al. 2006). These findings would not only be relevant in practice but could also broaden our understanding of how in-game advertising works. Consequently, this study will examine the impact of in-game advertising on the attitude towards the advertised brand and the attitude towards the computer game besides brand recall as central impact factors.

*Second*, brand familiarity is a significant influencing variable of the advertising impact: its significance has already been investigated for different advertising forms (Campbell and Keller 2003; Kent and Allen 1994; Machleit and Wilson 1988). Brand positions for real or fictitious brands are also examined in studies on the impact of in-game advertising. Because these studies for the most part do not investigate the impact of brands from the same product group with varying degrees of familiarity, so far there are barely any findings on the influence of brand awareness (Nelson et al. 2006). Consequently, we vary the brand awareness in this study as an experimental factor.

*Third*, the subjective experience of the situation has an influence on the advertising impact (Brown, Homer, and Inman 1998). In conjunction with the subjective experience in computer-mediated environments, the flow concept (the self reflection-free immersion in a continual activity that one still has under control in spite of high stress levels, Csikszentmihalyi and Lefevre 1989) is addressed (Hoffman and Novak 1996). Some authors suspect that above all the subjective experience whilst playing on the computer can be described well using the flow concept (Refiana, Mizerski, and Murphy 2005; Schneider and Cornwell 2005; Zentes and Schramm-Klein 2004). Indeed, this assumption is supported by the findings of Rheinberg and Vollmeyer (2003). Grigorovici and Constantin (2004) and Nelson et al. (2006) have been able to demonstrate the significance of an aspect of the flow experience (namely telepresence) for the impact of in-game advertising. This article thus considers the flow experience to examine the influence of the gaming experience on the impact of in-game advertising.

Consequently, in this experimental design we will examine the impact of advertising positions in computer games and the gaming experience on the brand attitude and attitude towards the computer game.

## **2 EFFECTS OF IN-GAME-ADVERTISING**

Balasubramanian, Karrh, and Patwardhan (2006) are developing a model framework on the effects of the product (or brand) placement (both on TV/in movies and computer games), which summarizes the relevant state of research (cf. figure 1). Its basic consideration is that the impact of in-game advertising depends upon the respective processing type, which in turn is affected by stimuli-based and individual-level variables. The sparse studies on the impact of in-game advertising can also be aligned in the framework:

On the level of stimuli-based variables, primarily the configuration and placement of in-game advertising was the subject of studies (e.g. location of placement in game: low vs. high

proximity, Acar 2007; kind of placement in game: billboard vs. product placement, Grigorovici and Constantin 2004). In addition, however, the influence of the kind of brand advertised was also the object of research (e.g., local vs. national brand, Nelson 2002; familiar vs. unfamiliar brand, Nelson et al. 2006). As for the individual-level variables, primarily the attitude towards placement in general has been examined (Hernandez et al. 2004; Nelson 2002; Nelson et al. 2004; Nicovich 2005). With regard to the processing of in-game advertising, Nelson et al. (2006) for example differentiate between the degrees of involvement in the game. As far as the impact of in-game advertising is concerned, effects on brand memory, effects on attitude towards the advertised brand, and effects on attitude towards the computer game can be discerned.

### *2.1 Brand Memory*

The majority of the studies addressing the impact of in-game advertising examine effects on brand memory. Recently, Yang et al. (2006) succeeded in demonstrating that the participant's implicit memory for brands was influenced by in-game advertising. For explicit memory, it emerges that, on average, about one-third of the brands in computer games can be recalled immediately after playing the game (almost 25 percent, Hernandez and Minor 2006; almost 30 percent, Nelson 2002). Five months after playing, however, only 10-15 percent of the brands can still be recalled (Nelson 2002). The recall effect of in-game advertising will presumably depend on the type of brand placement, with billboards leading to higher recall in a game than product placement (Grigorovici and Constantin 2004). Moreover, prominent placements can be recalled more easily (Schneider and Cornwell 2005). Studies also report a positive correlation between brand recall and arousal (Hernandez and Minor 2006) and a negative correlation between brand recall and the perceived telepresence (Nelson 2005; Nelson et al. 2006).

In response to the question as to the extent to which the recall of an advertised brand depends on the brand's familiarity, the results are inconsistent. In her exploratory study Nelson (2002) found that local brands are recalled more easily than national brands. She explains the result with the novelty of local brands. They arouse more attention and can be recalled more easily as a result (Rothermund and Wentura 2004). However, another study by Nelson, Yaros, and Keum (2006) suggests that more familiar brands can be recalled more easily than their less well-known counterparts. Here, the authors found differences in the recall of real and fictitious brands: well-known brands can be recalled more easily than fictitious ones. They surmise that well-known brands are accessible attitude objects which automatically attract attention and can thus be recalled more easily than fictitious brands (Nelson et al. 2006). Furthermore, Johar and Pham (1999) suggest that consumers have recourse to two heuristics in the identification of sponsors: brand-event relatedness and market prominence. The latter would mean that a brand with high market prominence can be recalled more easily in a later survey following only a fleeting perception of the product category advertised (Schneider and Cornwell 2005). A third explanation for the fact that more well-known brands can be recalled more easily than unknown ones comes from cognitive psychology: a popular memory model suggests that recalled subject matter is stored in the form of mental networks (Raaijmakers and Shiffrin 1992; Rumelhart, Lindsay, and Norman 1972). The retention of two familiar objects already existing in the memory network should thus come more naturally than the retention of unknown brands. For these brands, not only does the connection between the game and the brand have to be established, but also data for the brand. This leads us to the following hypothesis:

**H1** Familiar brands are recalled to a greater extent than unfamiliar brands.

## *2.2 Attitude towards the Advertised Brand*

In addition to the generation of brand awareness, the improvement of the brand attitude is frequently the aim of brand placement in computer games (Nelson 2005). Indeed, the results of some studies also indicate that brands are perceived more positively through their placement in computer games. For example, Glass (2007) recorded implicit brand attitudes by way of an implicit association test directly after playing a computer game with advertising. As a result, the participants evaluated the brands advertised in the game to the more positive than the brands not advertised in the game.

Nelson et al. (2006) recorded the explicit perceived persuasion and additionally distinguished the effects on real and fictitious brands. Their results show that the participants recorded a similarly high perceived persuasion for both real and fictitious brands. Nelson et al. (2006) refer to the mere exposure effect as an explanation; this signifies an attitude improvement towards an object due to the sheer, repeated perception of the object (cf., Fang, Singh, and Ahluwalia 2007). As the contacts with the unfamiliar brands in the game represented the participants' first experiences of the brands in question, their influence could thus have been stronger than for the well-known brands. Furthermore, one can assume that a stable attitude towards the brand already exists for familiar brands before playing the game. Thus, the influence of additional information through further advertising contacts tends to be low. This points to a weak influence of in-game advertising on familiar brands (Grohs, Wagner, and Vstecka 2004; Machleit and Wilson 1988; MacKenzie, Lutz, and Belch 1986). In contrast, for unfamiliar brands the attitude prior to the contact with the advertising is less stable. Consequently, the advertising contacts for unknown brands are an important source of information and a basis for attitude formation (Machleit, Madden, and Allen 1990; Mitchell and Olson 1981). From this follows our assumption that the effect of in-game advertising is greater for unfamiliar brands than for familiar.



**H2** Consumer's attitude towards the advertised brand after playing the game ( $A_{B1}$ ) will improve more strongly in the case unfamiliar brand than in the case of familiar brand

Besides analyzing the attitude change, this study also provides indications as to the process of attitude formation. Seeing as it is a matter of a construct for the attitude which is relatively stable over time and resistant to persuasion (Ajzen 2001), we can assume that the attitude towards the brand *after* playing is largely influenced by the attitude towards the brand *prior* to playing.

In addition, we can assume that the brand attitude also depends upon the attitude towards the game. It is a well-known effect in advertising research that the attitude to the ad has an influence on the attitude to the brand being advertised. Such a correlation is postulated in various attitude-towards-the-ad models (Lutz 1985; MacKenzie et al. 1986; Mitchell and Olson 1981); it has been confirmed empirically in many cases (Batra and Ray 1986; Brown and Stayman 1992; Burke and Edell 1989; Gresham and Shimp 1985). The Elaboration Likelihood Model is often referred to to explain this effect. According to this model, the process of attitude change either takes place on a central route – the attitude change stems from purposeful evaluation – or on a peripheral route, where there is little elaboration and the attitude change does not come from inference but rather through association (Petty and Cacioppo 1981). By this reasoning, advertising is ‘digested’ by its generally little-involved recipients on the peripheral route, i.e. for the most part the attitude towards the ad placements acts as a peripheral cue (MacKenzie and Lutz 1989; MacKenzie et al. 1986; Mitchell and Olson 1981). Lutz (1985) defines the attitude towards the ad as a “predisposition to respond in a favorable or unfavorable manner to a particular advertising stimulus during a particular exposure occasion” (Lutz 1985). In the context of ad placements in computer games, a game containing advertising can be considered the relevant advertising stimulus. These

considerations are supported by a whole series of empirical studies in which the attitude towards a salient context element can produce a similar attitude to the object through the perceived connection with a target object (Murry, Lastovicka, and Singh 1992). Finally, Nelson et al. (2006) also finds the indirect influence of game liking on the attitude towards the brand being advertised in the computer game.

Furthermore, that people's subjective experiences can influence the judgment of objects is suggested by a substantial number of studies (Edell and Burke 1987; Forgas 1995; Gorn, Pham, and Sin 2001). Two explanations for this are given in the literature. First, when assessing an object, people mainly seem to recall contents congruent with their mood at the time (Isen et al. 1978). Second, in conformity with the affect-as-information heuristic, people refer to their affective experiences as information when assessing objects (Schwarz 1986; Schwarz and Clore 2003). Chou and Ting (2003) report that the players' subjective experience during the game can be described as "flow state". One condition for flow is the clash of relatively high demands on just sufficient abilities (Novak, Hoffman, and Duhachek 2003). As precisely this constellation appears to be present in the case of many computer games, we can presume that the subjective experience during the game can indeed reach a flow state and represents a good basis to explain the subjective experience computer games (Chou and Ting 2003; Rheinberg and Vollmeyer 2003). Indeed, Nelson et al. (2006) illustrate that the sensed telepresence, a determinant of flow (Hoffman and Novak 1996; Steuer 1992), positively influences the attitude towards the brand being advertised. Altogether, the following assumption emerges from these considerations:

- H3** Consumer's attitude towards the advertised brand after playing the game depends on the
- a)** brand attitude before playing the game
  - b)** attitude towards the game
  - c)** flow experienced whilst playing the game

Familiarity with the brand also influences the process of attitude formation: seizing on our discussion above, consumers already have varied and solid recollections and attitudes for familiar brands prior to the contact with in-game advertising. In the case of unfamiliar brands, there is only very little recall data and weak attitudes, if at all, prior to contact with the ad. For unfamiliar brands, contact with the in-game advertising serves as more of a source of information than for familiar brands, where the brand attitude before playing the game also influences the brand attitude after the game to a greater extent.

**H4** In the case of familiar brands the impact of

**a)** brand attitude before playing the game *is stronger*

**b)** attitude towards the game *is weaker*

than in the case of unfamiliar brands.

### *2.3 Attitude towards the Computer Game*

Ads embedded in computer games could lead to reactance and hence the rejection of the game by the players. In simple terms, reactance denotes a negative reaction to persuasion and coercion that restricts a person's freedom, although that person expects a degree of freedom (Brehm and Brehm 1981). The attempt to convince people by means of ad placements can be interpreted as such a restriction and consequently trigger negative reactions (Edwards, Li, and Lee 2002; Robertson and Rossiter 1974). Just which reactions the ad placements provoke depends amongst other things on whether the brand placement offers value to the game (Nelson 2002) and the extent to which the brand placement disrupts the flow of the game (Hernandez et al. 2004). In this study, billboards that do not make a substantial contribution to the course of the game are embedded in a computer game. As a result, we expect that:

**H5** Brand placement will decrease the consumer's attitude towards the game

Concerning the process of attitude formation, the attitude towards the game with advertising after playing it should especially depend on the attitude towards the game before playing, as the consumers' attitude is a relatively stable construct,. Besides this, the flow experience during the game situation should also influence the players' judgment on the game, for the reasons discussed above. Our final assumption results from this:

**H6** Consumer's attitude towards the game depends on the

a) game attitude before playing the game

b) flow experienced whilst playing the game

### **3 DESIGN AND METHODOLOGY OF THE STUDY**

#### *3.1 Design*

The aim of this study is to examine the influence of in-game advertising for familiar versus unfamiliar brands on recall, brand attitude and the attitude towards the game. We conducted an online experiment to test the hypotheses (between subject design with the factor brand placement: familiar brand vs. unfamiliar brand vs. no brand placement/control group).

The first-person shooter game "Counter Strike" was chosen for this study as this genre is the most popular in multiplayer games (Chaney, Lin, and Chaney 2004). Moreover, we can assume that the first-person perspective additionally requires the presence and flow experience. Cola brands were selected as familiar and unfamiliar labels. This resulted from the consideration that there is a functional affiliation between cola drinks and the game Counter Strike (Dahlen 2005): preliminary talks with Counter Strike players revealed that they often drink cola whilst playing. We chose Coca-Cola as our familiar brand: it ranks among the most well-known brands in the world with one of the highest communication budgets. Aside from this, most Germans have drunk Coke. For this brand, most people thus have firm, embedded recall contents and there is a clear brand image. Moreover, we can

assume that most people have a strong (positive or negative) attitude towards Coca-Cola. However, the contrary applies to Jolt Cola, which we chose as our unfamiliar brand. It is only sold in selected shops in Germany and does not have a noteworthy market share. In addition, most people have never tried Jolt Cola which leads us to assume that only very few firm recall contents have been embedded with regard to Jolt Cola and only weak attitudes.

As the stimulus for the empirical examination of the hypothetical system, a frequently used Counter-Strike map was modified. The only difference to the original was that six billboards were inserted into the virtual environment (see Figure 2). The locations of the billboards were highly visible in areas where all gamers would pass. Billboards currently represent the most commonly used form of computer-game product placement (Glass 2007; for a more detailed discussion of billboards in computer games cf., Chaney et al. 2004). By this means, three variants of the map to be played emerged: game environments were created with Coca-Cola or Jolt Cola advertising for both treatment groups (Coca Cola vs. Jolt Cola). A map without any advertising was arranged for the control group.

### *3.2 Procedure*

The participants were solicited through an online forum for counter strike players ( $N = 521$ ). The sample reflects the typical players of first-person shooter games (Fattah and Paul 2002): Only 1.4 % were women, participants were rather young ( $M = 19.9$ ;  $SD = 4.9$ ) and had a high level of education. A link on the sites directed them to the questionnaire. Participants were assigned randomly to the experimental groups (familiar brand:  $n = 179$ ; unfamiliar brand:  $n = 152$ ; control group:  $n = 190$ ) and then answered to a questionnaire. Afterwards, they could download the modified map and play. Upon completion of the game, the players filled out a final questionnaire. We controlled for repeat visits via recording the IP addresses of the participants. The procedure and parts of the questionnaire had been tested successfully in a preliminary study ( $N = 162$ ).

### 3.3 Measures

All attitudinal measures (towards both of the brands and towards the game, in each case pre and post questionnaire) were based on Batra and Ahtola (1990) using the adjective pairs valuable/worthless, useful/useless, beneficial/harmful, wise/foolish, pleasant/unpleasant, nice/awful, agreeable/disagreeable, beneficial/harmful. The factor analysis across all items for all attitudinal measures produced one factor according to the Kaiser criterion (at least 67.8 % explained variance; all *Cronbach's*  $\alpha \geq .89$ ). The brand recollection was recorded for each single item statement ("A brand was advertised on the Counter Strike map; can you recall what it was?"; Yes/No. If "yes" was clicked, a text box appeared with the question "please enter which brand you can recall here."). We used the German-language Flow Short Scale (Rheinberg and Vollmeyer 2003) to measure the flow experience (one factor, 62.7 % explained variance;  $\alpha = .88$ ).

Brand familiarity, frequency of use and clarity of the brand imagery (Bone and Ellen 1992) were recorded too. Consequently, the participants entered whether they knew the brand (yes/no) and how often they drank this particular brand of cola (1 never; 6 very often). The brand imagery was recorded by way of three items according to Ruge (1988). We additionally recorded the construct ad skepticism with a translation of Obermiller and Spangenberg's (1998) scale (1 low skepticism, 6 ad skepticism high) as a control variable (one factor, 50.14 % explained variance;  $\alpha = .85$ ). Completing the questionnaire, we asked for the age, gender and profession of the participants via single items.

## 4 RESULTS

### 4.1 Manipulation Check

As expected, Coca-Cola was more familiar in our sample (Coca Cola 99.4 %; Jolt Cola 21.6 %) and is consumed more often (Coca Cola  $M = 5.9$ ; Jolt  $M = 1.2$ ;  $T(322) = 20.26$ ,  $p <$

.001, *cohen's d* = 2.28) than Jolt Cola. Furthermore, the participants' inner brand image of Coca-Cola is clearer, more distinct and more easily accessible than that of Jolt Cola (*distinctness*: Coca Cola *M* = 4.9; Jolt Cola *M* = 1.4; *T* (316) = 27.06, *p* < .001, *d* = 3.17; *clarity*: Coca Cola *M* = 3.7; Jolt Cola *M* = 1.3; *T* (320) = 24.92, *p* < .001, *d* = 3.00; *accessibility*: Coca Cola *M* = 4.7; Jolt Cola *M* = 1.4; *T* (315) = 20.07, *p* < .001, *d* = 2.40).

#### 4.2 Brand Memory

In H1, we suspected that in-game advertising for familiar brands would be recalled to a greater extent than in-game advertising for unfamiliar brands. In all, 68.3 % of all participants could recall the brand correctly. In the condition familiar brand, 71.0 % of the participants recalled the brand Coca-Cola correctly. In contrast, only 60.4 % could recall the brand Jolt Cola correctly. The result of comparing the recall values of both conditions supports hypothesis 1 ( $\chi^2(1) = 3.98, p = .046$ ).

A comparison of the participants who correctly recalled the brand being advertised with those who could not recall did not yield any significant differences in the extent of the flow experience whilst playing the game (correct recall *M* = 3.7, incorrect recall *M* = 4.0; *F* (1, 305) = 3.25, *p* = .065,  $\eta^2 = .011$ ) and in the age (correct recall *M* = 19.7, incorrect recall *M* = 19.4; *F* (1, 302) < 1). Interestingly, however, they differ in terms of ad skepticism: participants who were unable to recall the brand being advertised correctly were more skeptical towards advertising in general (*M* = 4.8) than those who recalled correctly (*M* = 4.5; *F* (1, 300) = 4.56, *p* = .034,  $\eta^2 = .015$ ).

#### 4.3 Attitude towards the Advertised Brand

Following analysis only includes participants who recalled the advertised brand correctly. With regard to the attitude towards the advertised brand, in hypothesis 2 we surmised that unfamiliar brands benefit from in-game advertising to a greater extent than familiar brands.

However, both advertised brands should be perceived more positively after playing the game than before. In order to test this hypothesis, a repeated measurement ANOVA was conducted with the attitude towards the brand as a within-subject factor and familiar vs. unfamiliar brand condition as a between-subject factor (see figure 3). Contrary to our expectations, the main effect was not significant ( $F(1, 295) = 1.01, p = .316$ ). However, the ANOVA revealed a significant interaction effect for the attitude towards the brand and brand familiarity ( $F(1, 295) = 27.00, p < .001, \eta^2 = .085$ ): the effect of a positive attitude which we had expected after playing the game only became apparent for the unfamiliar brand. Instead, the familiar brand was perceived more negatively after contact with the in-game advertising. A within-subject comparison of the brand attitude towards both brands prior to and after playing the game illustrates that both the improvement in the attitude for the unfamiliar brand and the deterioration of the attitude in the case of the familiar brand is statistically significant (see table 1). In order to examine whether these effects are possibly being modified by ad skepticism, in each case a regression analysis was carried out for the unfamiliar and familiar brand with the brand attitude after playing the game as a dependent variable and the independent variables brand attitude prior to playing the game and the interaction of ad skepticism and brand attitude prior to playing the game (Baron and Kenny 1986). The interaction proved insignificant for both of the brands ( $p \geq .637$ ). In other words, the general skepticism towards advertising does not moderate the influence of brand familiarity on attitude changes.

The third hypothesis postulates that the attitude towards the advertised brand after the game depends on the brand attitude before playing the game, the attitude towards the game itself and the flow experience whilst playing. To test this assumption, a regression analysis was carried out with the attitude towards the advertised brand after the game as a dependent variable and the independent variables brand attitude prior to playing the game, the attitude



towards the game itself and the flow experience whilst playing (variance inflation factor  $\leq 1.17$ ; tolerance  $\geq 0.85$ ). The results of this analysis support our assumption with one exception (see Table 2): the largest influence on the brand attitude after playing the game was the brand attitude prior to playing the game. Furthermore, the attitude towards the brand has a moderate influence. Contrary to our expectations, the flow experience did not have any significant influence.

The moderating effect of familiarity on the relationship between brand familiarity prior to playing the game and the attitude towards the brand after playing the game postulated in Hypothesis 4, as well as on the relationship between the attitude towards the game and the attitude towards the brand after playing the game was examined using moderated regression as proposed by Baron and Kenney (1986). In the first step of a hierarchical regression, we entered the brand attitude before the game, the attitude towards the game and brand familiarity (as a dummy variable, 0 = unfamiliar brand, 1 = familiar brand) (cf., Aiken and West 1991). In the second step, we entered the two product terms familiarity and attitude towards the brand prior to playing and the familiarity and the attitude towards the game (variables were first mean-centred and then multiplied, Jaccard, Wan, and Turrisi 1990). As we suspected, the effects are significant for both interactions (cf. Table 3). Indeed, the brand attitude after playing is influenced by that before playing to a greater extent for the familiar brand. In the case of the unfamiliar brand, however, the influence of the attitude towards the game is stronger (Aiken and West 1991). This means that the results support our hypothesis H4.

#### *4.4 Attitude towards the Computer Game*

In Hypothesis 5, we surmise that the brand placement in a computer game will decrease the attitude towards the game. A repeated measurement ANOVA was conducted, with the attitude towards the game as a within-subject factor and the familiar brand vs. unfamiliar

brand vs. control group condition as a between-subject factor (see figure 4). As expected, the ANOVA revealed a highly significant interaction effect for the brand placement condition and attitude towards the game ( $F(2, 217) = 7.21, p < .001, \eta^2 = .062$ ). An additional within-subject comparison of the game attitude prior to and after playing the game for all three placement conditions (placement of familiar brand vs. placement of unfamiliar brand vs. no brand placement) reveals that the game attitude deteriorates significantly through both brand placements (cf. Table 4). This effect is greater for the placement of the familiar brand than for that of the unfamiliar brand. Attitude did not change in the control group. These results thus support our hypothesis H5.

Finally, the sixth hypothesis postulates that the attitude towards the game after the playing it depends on the attitude towards the game prior to playing it and the flow experience during the game. This assumption was tested using a regression analysis with the attitude towards the game after playing it as a dependent variable and the independent variables the attitude towards the game before playing it and the flow experience whilst playing (variance inflation factor  $\leq 1.01$ ; tolerance  $\geq 0.99$ ). The results of the analysis support our assumption (see Table 5): the flow experience during the game has the most significant influence on the attitude towards the game after playing it; the influence of the attitude towards the game which the players have before the experiment is somewhat lower. Thus, hypothesis H6 is supported.

## **5 DISCUSSION AND IMPLICATIONS**

The aim of our study was to analyze the influence of in-game advertising for variably familiar brands on brand memory, brand attitude and game attitude. In doing so, firstly we succeeded replicating effects which had been found in other studies using different methods and, secondly, our results expand the state of research on particular points:

As regards brand memory, the proportion of participants who were able to recall the advertised brands in this study correctly is considerably higher than in previous studies (Hernandez and Minor 2006; Nelson 2002). This is possibly an effect of the kind of computer game: the player in our study moved through the game environment from a first-person perspective. The game environment may have been perceived more intensively as a result. In addition, our results show that ad skepticism influences brand recall: skeptical participants were less able to recall the brands being advertised. Skeptical players possibly evaluate the information content of advertising as lower and thus pay less attention to the brand placements. Obermiller, Spangenberg, and MacLachlan (2005) found a similar correlation in the context of press advertising.

However, the results of this study also illustrate that brands do not benefit from the placement in computer games per se: whereas the unfamiliar brand is assessed as positive after playing the game, the players' attitude towards the familiar brand deteriorates. However, we exclusively recorded explicit attitudinal measures, which could consciously be influenced by people who reject in-game advertising. The finding that general ad skepticism did not influence the effects in our study argues against such an alternative explanation. However, to finally rule out reactance effects, the implicit measurement of brand attitudes would be useful (Glass 2007).

On the other hand, the results regarding the effects on liking the game seem conclusive: brand placement deteriorates players' attitude towards the game. Clearly, this is the case to a greater extent if a familiar brand is integrated into the game. Which other variables influence this effect, however, remains open. Nevertheless, we do know that the perceived congruence between the brand and the event influences the acceptance of the brand placement from the research on sponsoring (Cornwell et al. 2006; Gwinner and Eaton 1999).

Concerning the process of attitude formation, the attitude towards the game impacts directly the attitude towards the advertised brand. Contrary to our expectations, the flow experience had no direct effect on brand attitude. However, there was an influence of the flow experienced whilst playing the game on the attitude toward the game. Thus, an indirect effect of flow on the brand attitude, mediated by the attitude towards the game, could be ascertained.

What are the implications of our findings for the practical use of in-game advertising? Firstly, opportunities and risks become apparent for the communication of brands. Brands for which there are no strong attitudes or inner images for potential consumers can particularly benefit from their placement in computer games. However, our results also suggest that primarily strong, well-known brands cannot readily expect positive effects. That said, the fact that the skepticism towards advertising in general did not influence the attitude towards the brand being advertised in our study (such an effect has also been found for other advertising forms, Obermiller et al. 2005), could prove to be an advantage of this advertising medium.

Secondly, it is also apparent that the manufacturers and publishers of computer games are also taking a risk with brand placements in that their game may be rejected by the target group. Whether this effect can be influenced by a specific selection in the placement of the brands as yet is unclear. The familiarity of the brand at least did not have a notable influence on the negative effect of the brand placement on the opinion of the game. Certainly more knowledge by other empirical studies about moderators for these potential negative implications of adgames is necessary. Nonetheless, even this result leads to the conclusion that brand recall and recognition do not reflect the entire effects of ad placements in computer games.

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## APPENDIX

### FIGURES

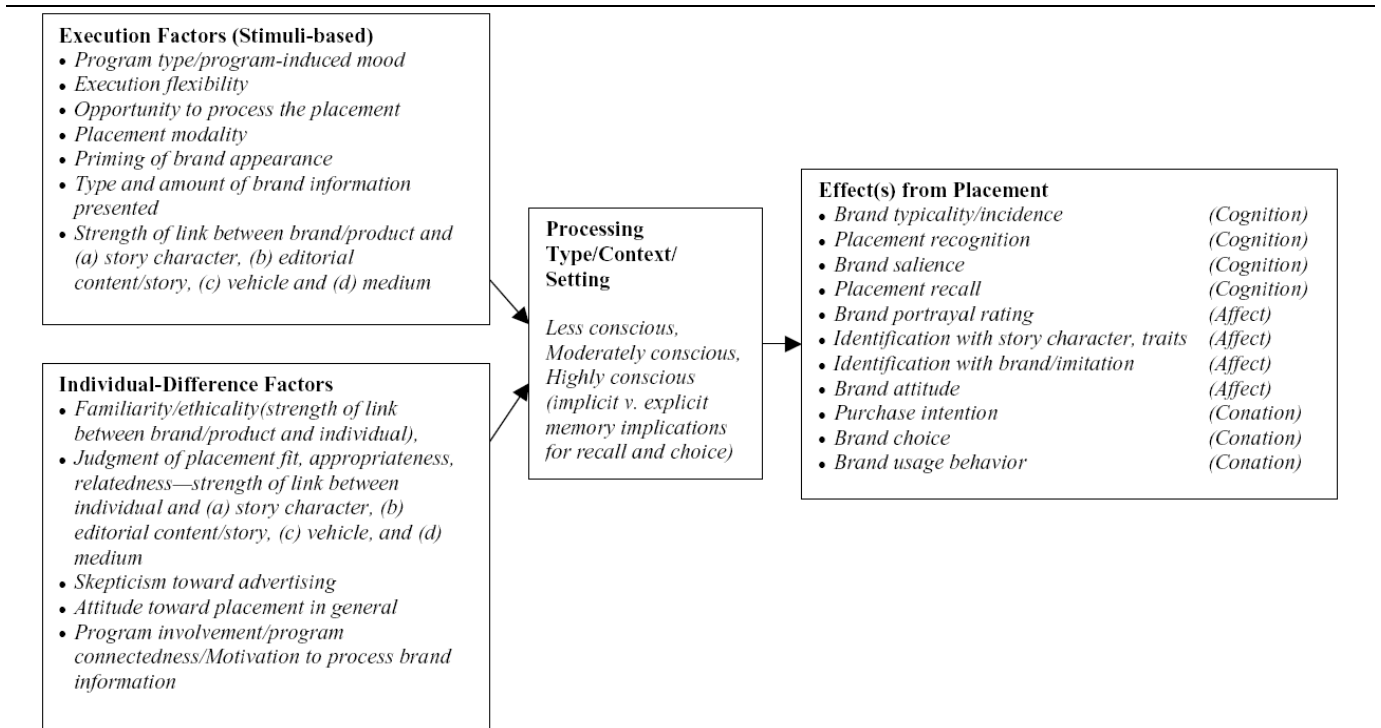
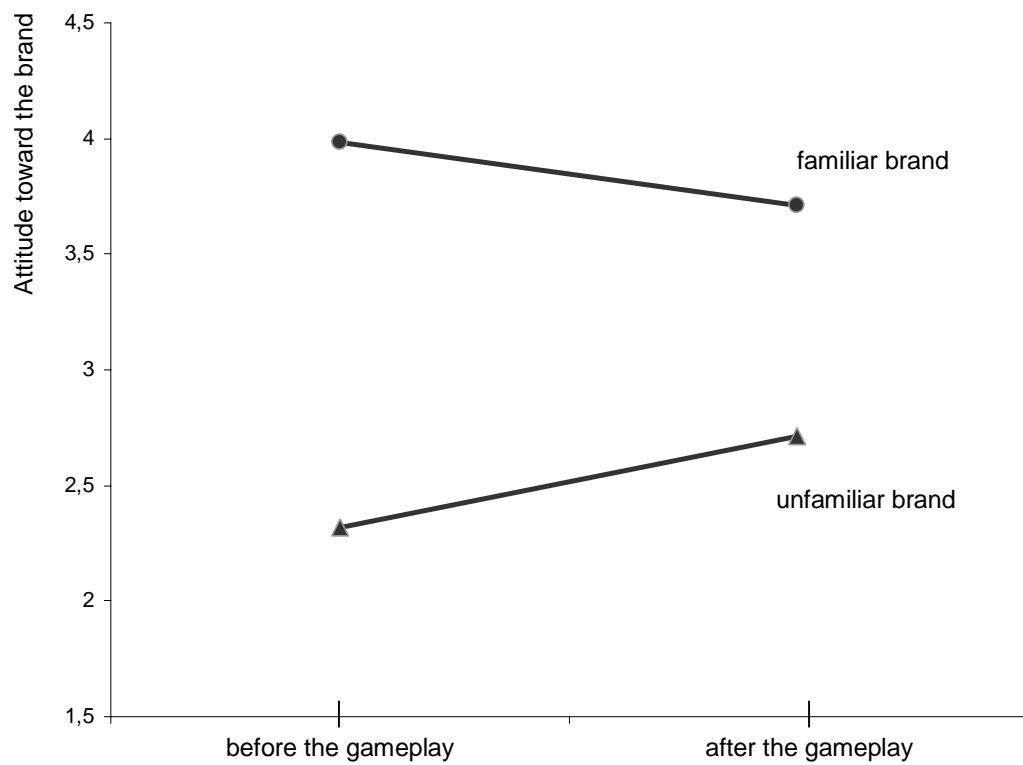


FIGURE 1: Framework for the Analysis of Product Placement Effects Proposed by Balasubramanian, Karrh, and Patwardhan (2006 p. 117)



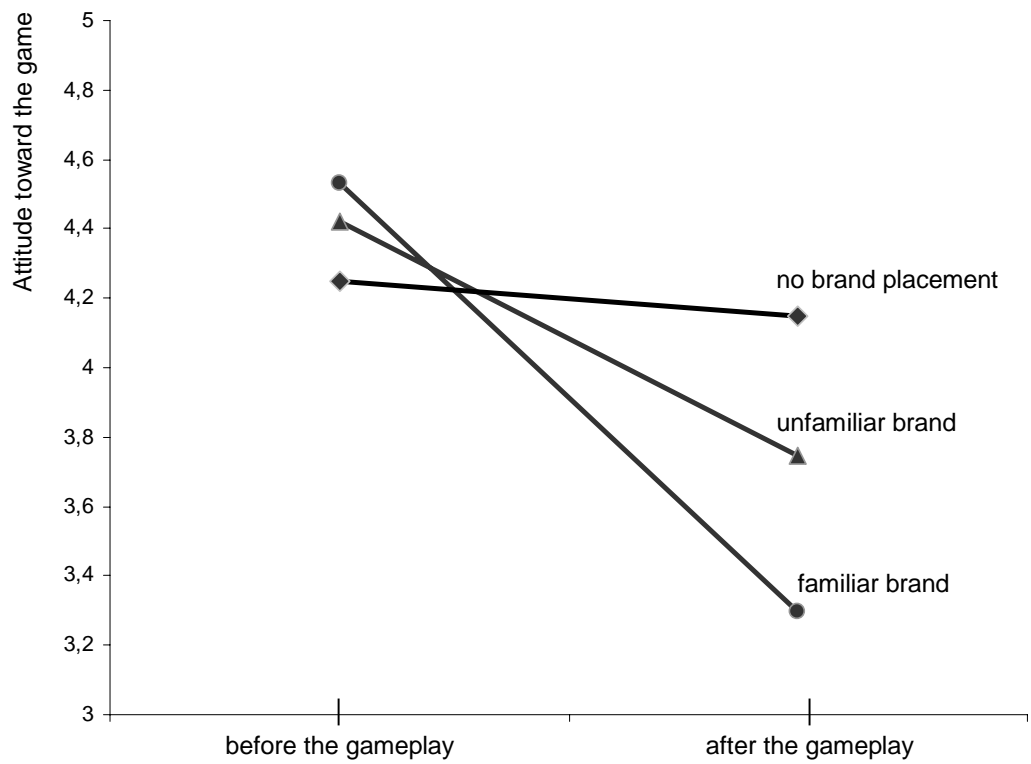
FIGURE 2: Screenshot of the banners placed in the used computer game  
(Condition: (a) Coke; (b) Jolt Cola)



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FIGURE 3: Changes in the attitude toward the brand for the unfamiliar (Jolt) and familiar (Coca Cola) brand





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FIGURE 4: Changes in the attitude toward the game for the two brand placement conditions and the control condition without brand placement

## TABLES

TABLE 1: Comparisons of the changes in the attitude toward the brand for the unfamiliar (Jolt) and familiar (Coca Cola) brand

	<i>AB</i> <i>before game play</i>		<i>AB</i> <i>after game play</i>	<i>T</i>		<i>cohen's d</i>
Familiar brand (Coke)	4.07 (1.06)	→	3.79 (1.30)	3.994	***	.613
Unfamiliar brand (Jolt)	2.69 (1.28)	→	3.18 (1.33)	3.391	**	.607

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ;  $M (SD)$

TABLE 2: Regression analysis to predict the Attitude toward the brand after the gameplay

	<i>B</i>	<i>(SE B)</i>	<i>β</i>	
Brand attitude before playing the game	.590	.057	.584	***
Attitude toward the game	.215	.068	.200	**
Flow	-.027	.089	-.019	
				$R^2 = .394$ ***

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

TABLE 3: Hierarchical regression analysis to predict the attitude toward the advertised brand after the playing the game

	<i>B</i>	<i>(SE B)</i>	<i>β</i>	
<u>Step One</u>				
Brand attitude before playing the game (AB0)	.622	.067	.616	***
Attitude toward the game (ACS)	.193	.062	.179	**
Familiarity (F)	-.163	.185	-.059	
<u>Step Two</u>				
ABO	.265	.092	.263	**
ACS	.513	.111	.477	***
F	.075	.178	.027	
AB0 x F	.633	.125	.416	***
ACS x F	-.444	.130	-.346	**
Step One: $R^2 = .396^{***}$ , Step Two: $\Delta R^2 = .087^{***}$				

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

TABLE 4: Comparisons of the changes in the attitude toward the game (ACS) for the conditions: placement of unfamiliar vs. familiar brand vs. without placement

	<i>ACS</i> <i>before game play</i>		<i>ACS</i> <i>after game play</i>	<i>T</i>		<i>cohen's d</i>
Placement of familiar brand	4.53 (.81)	→	3.30 (1.30)	9.954	***	1.136
Placement of unfamiliar brand	4.42 (.82)	→	3.74 (1.07)	5.226	***	.703
Without brand placement	4.25 (1.51)	→	4.15 (1.68)	.537		.063

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ;  $M (SD)$

TABLE 5: Regression analysis to predict the Attitude toward the game after playing it

	<i>B</i>	<i>(SE B)</i>	<i>β</i>	
Game attitude before playing the game	.395	.089	.266	***
Flow	.491	.079	.376	***
				$R^2 = .204$ ***

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$