Branded entertainment is becoming more popular as the effectiveness of traditional advertising formats declines (Lowrey, Shrum, and McCarty 2005). Besides brand placements in magazines (e.g., Van Reijmersdal, Neijens, and Smith 2005), movies (e.g., Russell and Belch 2005), and television game shows (e.g., Gould and Gupta 2006), digital games have been discovered for brand placements, too (e.g., Garcia and Van Baker 2004). Advergames are “computer games specifically created to function as advertisements to promote brands, where the entertainment content mimics traditional game forms” (Kretchmer 2005, p. 7). The advergame format can be distinguished from “in-game” advertising. The latter more closely resembles traditional product placement, but within a game, whereas for an advergame, the game is specially made to promote the brand. An advergame is usually also less complex than a “real” game in which brands can be placed. Since advergames are rather simple in their design (no complex rules, short playing time, etc.), they can be easily distributed on different platforms, such as on Web sites, via e-mail (tell a friend, viral marketing), on cell phones and on interactive digital television (e.g., during a commercial break).

Integrating brands in games is a growing business. Price-waterhouse-Coopers predicts that in-game brand placements will be a $3 billion business by 2009, which is not surprising given that 69% of the American heads of household claim to play games (Entertainment Video Software Association 2006). According to the Boston research firm Yankee Group, the advergame industry, as part of the in-game industry, is expected to generate $312.2 million by 2009. Strong brands such as Coca-Cola, Honda, Burger King, and Gillette have already invested in advergames (Shields 2006). In the Coca-Cola advergame, for instance, the player has to catch soda bottles that drop off a conveyor belt. Preliminary effectiveness results for the Burger King advergames, for example, indicate an increase of 40% in Burger King’s profits (Wilson 2007). The Dunkin Donut advergame (www.turbo-ice.com) was capable of expanding the time the surfer spent on their Web site to an average of four minutes (http://biz.gamedaily.com).

Academic interest in how consumers react to the persuasive messages in games is increasing (e.g., Farrar, Krcmar, and Nowak 2006; Nelson, Yaros, and Keum 2006; Yang et al. 2006). Although a lot of previous studies investigated the effect of the acceptance of brand placements in games by gamers (e.g., Hernandez et al. 2004), some studies had a more in-depth look at the advertising results of brand placements in games. For instance, brand recall was reported to amount to 30% (Nelson 2002), and through the arousal and valence experienced by the game, brand attitudes were found to be positively influenced (Grigorovici and Constantin 2004; Mau, Kehres, and Silberer 2006).

Most previous studies explored the effect of in-game placements in multiplayer role-taking games (Chaney, Lin, and Chaney 2004; Grigorovici and Constantin 2004; Mau, Kehres, and Silberer 2006; Nelson 2002, 2005; Schneider and Cornwell 2005). However, the purpose of this study is to enhance our knowledge of advertising effects of brand placements in an advergame. More specifically, this study will investigate the effect of varying strength of brand exposure, disentangling the effect of brand prominence and game repetition.
for a low-involvement (coffee) and a high-involvement (car) product. Traditional product placement literature found that placing a brand in the foreground (prominent) or in the background (subtle) can have an influence on brand recall and brand evaluations (e.g., d’Astous and Chartier 2000; Gupta and Lord 1998). In a gaming environment, Schneider and Cornwell (2005) found that placing a brand in the foreground of the game increased brand memory. Whether and how this brand prominence also affects brand attitudes in a gaming context will be investigated in this study. Given that advergames usually have a simple design, requiring only a very short playing time, they can be played repeatedly (Deal 2005). The effect of repeated exposure to the brand as a result of repeatedly playing the game on brand recall and attitudes is a nonresearched aspect of exposure strength that is also explored in this study. In a first experiment, repetitive playing of the game was operationalized by requesting the respondents to play the game twice versus four times. This “forced” repetitive playing can be easily implemented in an advergame campaign—for example, by using a contest in which the best score out of, say, two or four games is stored. However, forcing a respondent to play a game more/less than he or she is voluntarily willing to, may bias the results. Moreover, allowing participants to play as often as they want is also a realistic situation. Therefore, in a second experiment, the respondents could decide freely how often they wanted to play the game.

Past gaming studies found that product type can have an influence on advertising effectiveness. For instance, Nelson (2002) found that recall was higher for local and atypical brands than for national brands placed in games. Grigorovici and Constantin (2004) found a difference in brand recall according to the size of the object (small: mobile phone; large: car). They suggest incorporating the moderating role of product involvement in advergaming research. Given that earlier product placement studies did not investigate the effect of this product type difference (see overview paper by Balsubramanian, Karrh, and Patwardhan 2006), investigating the moderating role of product involvement on placement strength is another contribution of this study.

LITERATURE REVIEW

The (Adver)gaming Environment

When investigating the effect of brand placements in games, the characteristics of the gaming environment should be kept in mind. Brand placements in games differ from traditional product placements in television programs and movies because of their interactive context (Kleeberger and Hummel 2002), which has the capability of evoking cognitively involving experiences (Shrum 2004). Liu and Shrum define cognitive involvement as follows: “the cognitive elaboration that occurs in a communication process” (2002, p. 60). This “situational” involvement is created through active control and two-way communication, two dimensions of interactivity that focus the gamer’s attention to the interactive content (Hoffman and Novak 1996). Hoffman and Novak (1996) approach the focused attention and increased cognitive involvement as an indirect effect of interactivity through the concept of flow, “an intrinsically motivated optimal enjoyable mental state” (Csikszentmihalyi and Lefevre 1989). This flow state extends the sense of playfulness (Hoffman and Novak 1996), a feeling of fun and escapism that is experienced in a gaming environment (Reifiana, Mizerski, and Murphy 2005). To conclude, playing an (adver)game is a pleasurable experience that attracts the attention to the interactive content.

Placement Strength

In product placement literature, placement strength is defined as “the number of brand mentions, visual or verbal inclusions or both, appearance in the foreground or background, actual usage and integration with the content” (Bhatnagar, Aksoy, and Malkoc 2004, p. 108). In this study, the prominence of a brand placement and the frequency of exposure as a result of repeatedly playing the game in which the brand is embedded are considered as two separate aspects of exposure strength with a potentially different impact on brand responses.

Brand Prominence

Gupta and Lord provide the following definition: “Prominent placements are those in which the product (or other brand identifier) is made highly visible by virtue of size or position on the screen or its centrality to the action in the scene. Subtle placements are those in which the brand is not shown prominently, e.g., small in size, a background prop outside the main field of visual focus, lost in an array of multiple products or objects, low time of exposure” (1998, p. 49). Their results showed that in movies, high prominent brands result in higher recall rates than subtle placements. In this study, brand prominence is investigated in a game, and manipulated through the concept of movement, one of the aspects of prominence (Gupta and Lord 1998). In the high prominent condition, the brand logo is a central part of the game, moving on-screen, while in the subtle condition, the brand logo appears static on a billboard in the background of the game. This manipulation can also be defined in terms of the degree of brand integration in the interactivity of the game (Chambers 2005).

As explained earlier, in a gaming environment, gamers focus their attention on the interactive content and therefore process it intensively. Brands that are placed prominently in the game can benefit from this focused attention and will also be processed more intensively. Schneider and Cornwell (2005)
and Chaney, Lin, and Chaney (2004) also found that prominent brands have higher recall rates than subtle placements in a gaming environment. The following hypothesis is advanced:

**H1a:** A prominent brand placement results in a better brand recall than a subtle brand placement in an advergame.

Traditional product placement research attributes the impact of brand placements on brand attitudes to the affect transfer mechanism (Baker 1999), an unconscious mechanism by which the context in which the brands are embedded has an influence on the formation of brand attitudes. Russell (1998) suggested that this association between brand and context will more likely be activated for subtle brand placements than for prominent placements. Consistent with this, the Persuasion Knowledge Model (PKM) (Friedstad and Wright 1994) postulates that consumers use their knowledge about the persuasive goals and tactics of marketers to cope with persuasive attempts. In addition, given that prominent placements have more obvious persuasive goals than subtle placements, their knowledge of the persuasive intention of the brand placement will be higher, and they will generate more negative brand attitudes (Campbell and Kirmani 2000). Moreover, in situations of intensive processing, as for prominent placements, consumers are more likely to rely on negative thoughts about the marketing goals (Shiv, Edell, and Payne 1997). Although the PKM and the study of Campbell and Kirmani (2000) are based on traditional advertising media, their insights can also be applied to interactive, persuasive environments. On the basis of these previous results on the attitudinal effects of product placement, the expectation would be that subtle placements lead to more positive brand attitudes than prominent placements. The characteristics of the (adver)gaming environment weaken these arguments, however. Due to the embedded interactivity, (adver)games induce an experience of fun and escapism (Refana, Mizerski, and Murphy 2005), which is usually stronger than in noninteractive product placement settings. Therefore, it can be expected that the affect transfer mechanism will take place for both subtle and prominent placements.

In the case of the prominent brand placement, the persuasion knowledge is expected to be higher than for the subtle placed brand. Given the advergame format, however, it is likely that the buy-in of commercial content by individuals is higher than in noncommercial entertainment formats, implying that the high persuasion knowledge might not lead to negative thoughts about the advergame. The individuals know the persuasive aim of the advergame, and thus expect the integration of brand information, independent of the brand being placed prominently or subtly. The following hypothesis is advanced:

**H1b:** There is no difference in brand attitude between a prominent and a subtle brand placement in an advergame.

### Game Repetition

The influence of repeated exposure to advertising stimuli on consumer responses to advertisements and brands has received considerable attention in traditional media studies (e.g., Gorn and Goldberg 1980; Calder and Sternthal 1980). Berlyne’s (1970) two-factor model states that in the “wear-in,” or learning, phase, the consumer gets familiar with the advertising message, leading to an increase in recall rates (e.g., D’Sousa and Rao 1995; Newell and Henderson 1998). After a first level of message repetition, the initial hostility and uncertainty toward the message declines and positive habituation increases, and more positive brand responses also develop (Cox and Cox 1988). In the “wear-out,” or tedium, phase, advertising effectiveness declines with continuing repetition due to boredom, irritation, and/or consumer reactance toward the message (Sawyer 1981). Cacioppo and Petty (1979) showed that this inverted-U-shaped impact of advertising repetition could be explained by the difference in the development of support- and counterarguments at different levels of repetition, with support arguments rising at low levels of repetition and counterarguments at high repetition levels, diminishing the positive impact on the brand. Batra and Ray (1986) found that a high motivation and ability to process the message increase the production of support- and counterargumentation in the earlier exposure stages and therefore accelerated the rate at which these patterns of cognitive thoughts occurred relative to less extensive processing. Another aspect that can accelerate both phases is the lack of complexity of the repeated stimulus (Cox and Cox 1988). Repetitive exposure to simple stimuli speeds up the wear-in and wear-out phase.

We apply this wear-in and wear-out mechanism to the (adver)gaming environment. In previous experimental designs in which respondents were submitted to the repetitive exposure to the same stimuli in a short time span, ceiling effects of recall and peak effects of attitude were obtained after three exposures (Krugman 1972; Pechmann and Stewart 1988). The interactive nature of the gaming environment increases the focused attention and the likability of the experience, leading to a high motivation and ability to process the interactive content and to a faster wear-in mechanism. In addition, advergames are rather simple in their design, because they hold no extensive rules, provide no different interfaces (“worlds”), and so forth. Therefore, it can be expected that the wear-out phase is achieved relatively quickly, leading to no further increase in brand recall and to the development of negative brand attitudes even after low levels of exposure. We expect the following:

**H2a:** There is no difference in brand recall between a low level of game repetition versus a high level of game repetition.

**H2b:** Compared with a low level of game repetition, a high level of game repetition leads to more negative brand attitudes.
The Moderating Impact of Product Category Involvement

Product category involvement has been recognized by many researchers to have a substantial influence on consumers’ advertising processing and buying behavior (e.g., Celsi and Olson 1988; Suh and Yi 2006). In general, product involvement is the consumer’s overall evaluation of how important the product is to his or her life, and is often categorized as situational and/or enduring (Celsi and Olson 1988; Rothschild 1978). Situational involvement can be evoked by stimuli and cues from the immediate, external consumer environment, such as promotions, which may activate the personal goals and needs of the consumer. Enduring involvement stays apparent across conditions and situations, however, and can be attributed to the storage of personal information within the knowledge structure of the product category, such as personal experience. In this study, product involvement is operationalized as an enduring involvement with a product category, such as cars are generally a high-involving product category, whereas a detergent to most people is a low-involving product category. This is in line with Zaichkowsky’s definition of product involvement, “product category involvement is a person’s perceived relevance of the object based on inherent needs, values, and interest” (1994, p. 342). Product involvement is related to a person’s centrally held values and self-concept (Houston and Rothschild 1978). Therefore, consumers who are highly involved with a product category will attach more meaning to the product compared to a product with which they are low involved. This implies that product category involvement has an influence on the motivation to process information. For highly involving products, consumers spend more effort to process the information and devote more attention and time searching for information, compared to a low-involvement product.

Given the difference in meaning attached to a low- and high-involvement product and its implication for the processing mechanism, the influence of the two dimensions of brand placement strength, brand prominence, and game repetition on brand outcomes may be different according to the product type. Because prominent placements are more integrated into the advergame (Chambers 2005), thereby having a higher plot connection (Russell 1998) compared to subtle placements, we can expect that the meaning attached to a prominent placement (you have to catch the brand, which is moving on screen) is higher than to a subtle placement (the brand appears in the background, there is no immediate link with the game). Russell (1998) found that a mismatch between two dimensions of meaning (here product involvement and prominence) can increase brand recall due to the incongruence of the stimuli that triggers the cognitive processing. This mismatch might also increase counterargumentation, however, and thus lead to more negative brand attitudes compared to a match (or congruency) in meaningful stimuli. Congruency in the meaningfulness of the stimuli would be a combination of a high-involvement product placed prominently or a low-involvement product placed subtly. In the same vein, incongruence exists when placing a high-involvement (HI) product subtly, or a low-involvement (LI) product prominently in the game. We expect the following:

- **H3a:** For an LI product, a prominent brand placement results in higher brand recall than a subtle placement. For an HI product, a subtle placement results in higher brand recall than a prominent placement.
- **H3b:** For an LI product, a subtle brand placement will result in a more positive brand attitude than a prominent placement. For an HI product, a prominent placement results in a more positive brand attitude than a subtle placement.

The degree of processing has an influence on the wear-in and the wear-out phase of ad repetition, with intensive processing leading to faster wear-in and learning and also to faster wear-out (Anand and Sternthal 1990). For an HI product, which attracts more attention and which is more intensively processed, the wear-out phase may be reached even at low levels of game exposure, whereas for an LI product, the wear-out phase may be delayed. This leads to the following hypotheses:

- **H4a:** For an LI product, a high level of game repetition results in higher brand recall than a low level of game repetition. For an HI product, there is no significant difference in brand recall between a low level of game repetition and a high level of game repetition.
- **H4b:** For an HI product, a high level of repetition leads to a more negative brand attitude than a low level of game repetition. For an LI product, there is no difference in brand attitude between a high and low level of repetition.

METHOD

The hypotheses were tested in a 2 (brand prominence) \( \times \) 2 (game repetition) \( \times \) 2 (product involvement) between-subjects factorial design. In Experiment 1, game repetition was manipulated by requesting the respondents to play the game either two or four times. In Experiment 2, the respondents could freely decide how often they wanted to play the game. The game, prominence, and product involvement manipulations were equal across both experiments. A number of basic assumptions about the nature of the (adver)gaming experience were investigated and confirmed in a separate posttest.1

Stimuli

In both Experiments 1 and 2, the game “Snag” is used, an existing game format that is known by the majority of Belgian
people through its availability on mobile phones. The game has a simple design, and there are no complex rules. The main goal of the game is that the “snag” (which is under control of the gamer) has to catch as many objects as possible that appear at a sudden moment on screen. However, the tail of the snag becomes longer and longer and may not touch the boundaries of the game or itself. In the subtle brand placement condition, a static logo appeared in the background of the game; in the prominent placement condition, the brand was a central part of the game moving on screen, that is, the gamers had to catch the brand logos (see the stimuli in the Appendix).

The game can be played in a few minutes, with different rehearsals, called “lives,” making the repeated playing a natural-looking activity, enhancing the external validity of the gaming experience. Two products with different levels of enduring involvement were selected on the basis of a pretest with 30 respondents. They received a list of 20 products and were asked to indicate their involvement with the products using the 10-item scale of Zaichkowsky (1994). Based on the highest average score, a car for the high-involvement condition (M = 4.08) and a coffee brand for the low-involvement condition (M = 2.77), t(29) = 6.984, p < .001, were chosen. The brands used in this study were fictitious to avoid confusing effects of previous brand knowledge. The size and complexity of the brand logos were kept constant across conditions.

Procedure

The Internet is often used for gaming research because of the nature of the game (Wood, Griffiths, and Eatough 2004). Despite the fact that the degree of control over Internet studies is lower than for studies conducted in a lab environment, researchers (Krantz and Reeshad 2000) found a close match when comparing the results of psychological research in lab situations and over the Internet. In both experiments, e-mails were sent to a convenience sample of Belgian university students of different grades, containing the URL link of the game and the questionnaire, and the note “forward this link to anyone else who may be interested” to distribute the stimuli and the questionnaire. In each experiment, respondents were randomly assigned to the different experimental conditions. Given the possibility to distribute advergames through viral marketing, this snowball technique using e-mail was appropriate. The convenience sample in combination with the snowball method is acceptable, given the difficulty in obtaining the sampling frame representing the universe of the gaming population. The sample obtained in both experiments is appropriate since it meets the demographic profile of the current gamer. In comparison to the profile of the typical gamer of a few years ago—males between 17 and 20 years old (sometimes thought of as being “nerdy” and asocial)—nowadays more females and older people are gamers (Youn, Lee, and Doyle 2003). After the gaming experience, the participants entered a self-administered questionnaire containing the product involvement manipulation check, brand attitudes measurements, attitude toward the game and toward advertising in general, gender, age, and education, and finally, brand recall. At the end of the questionnaire, the participant was thanked for his or her cooperation. As an incentive, he or she received two movie tickets.

Independent Measures

Besides brand prominence and game repetition, product category involvement was also manipulated. The manipulation check for product involvement (five-point × 10-item scale) revealed a significant difference between the LI and the HI product in both Experiments 1 and 2 (Experiment 1: M_LI = 1.66 versus M_HI = 3.79, t[487] = 28.402, p < .001; Experiment 2: M_LI = 2.85 versus M_HI = 3.82, t[86] = 6.217, p < .001).

Covariates

Two variables were measured as covariates, namely, attitude toward the game and general attitude toward advertising. Various attitude-toward-the-ad models (e.g., Coulter and Punj 1999) have stated that attitude toward the ad is an important antecedent of brand attitude. Recent research has demonstrated that attitudes toward creative advertising media have comparable effects on brand attitudes as the attitude toward the ad construct (Dahlin 2005). Therefore, the attitude toward the game in which the brand is placed can have a positive influence on brand attitudes (Mau, Kehres, and Silberer 2006) and was measured in this study by means of an adaptation of the attitude toward the ad scale of Holbrook and Batra (1987) (lovable/not lovable, likable/not likable, positive/negative, good/bad; α = .94). The general attitude toward advertising was measured with the four-item scale of Larkin (1977) (interesting, fun, informative, credible; Experiment 1 α = .82, Experiment 2 α = .87). The attitudes that consumers hold toward advertising in general and toward the game in particular are expected to have a positive influence on attitude toward the brand in the game.

Dependent Measures

Attitude toward the brand was measured using a five-point four-item scale based on existing scales of MacKenzie, Lutz, and Belch (1986) (good/bad, lovable/not lovable, desired/not desired, positive/negative; Experiment 1 α = .87, Experiment 2 α = .96). Purchase intention was not measured as a dependent variable in this study, since we did not expect it to have much added value in addition to the effects on brand.
attitude, given that the brands used were unknown for the respondents and were only exposed to them in the game. To measure unaided recall, respondents were asked an open-ended question about which brand name they could remember having seen in the game.

**EXPERIMENT 1**

**Respondents**

The sampling procedure resulted in a diversified sample of 480 respondents with respect to gender (42% male, 58% female) and age (range 15–40 years, M = 24 years). Slightly more than half of the participants (53%) had a high school degree.

**Game Repetition**

The procedure was designed in such a way that the respondent had to play the game either two or four times before he or she could enter the questionnaire. It was not possible for respondents to play the game more or less than was allowed by the experimental condition. Instead, game repetition was explicitly manipulated at two levels.

**Results**

**Brand Recall**

As expected, placing a brand prominently results in higher recall than placing it subtly (37.1% versus 2.5%; $\chi^2(1) = 90.409$, $p < .001$). H1a is supported. Brand recall rates for low and high levels of game repetition are not significantly different (17.9% versus 21.1%; $\chi^2(1) = 1.063$, $p = .303$). H2a is supported.

As expected, placing an LI product prominently (incongruent) leads to a higher brand recall than placing it subtly (congruent) (subtle = 8% versus prominent = 38.3%; $\chi^2(1) = 53.577$, $p < .001$). However, contrary to expectation, for an HI product, a subtle placement (incongruent) does not lead to a higher brand recall than a prominent placement (congruent) (subtle = 4.2% versus prominent = 35.8%; $\chi^2(1) = 37.604$, $p < .001$). In other words, also for the HI product, placing the brand prominently in the game (35.8%) leads to a higher brand recall than placing the brand subtly (4.2%). H3a is not supported.

Contrary to expectations, for an LI product, a high level of game repetition, compared to a low level, does not lead to better brand recall rates (19.2% versus 20% correct; $\chi^2(1) = .026$, $p = .871$). As expected, for an HI product, there is no difference in brand recall between playing the game two or four times (low repetition = 16.7 versus high repetition = 23.3% correct; $\chi^2(1) = 1.667$, $p = .197$). H4a is only partially supported.

**Brand Attitude**

An analysis of covariance (ANCOVA) (attitude toward the brand $A_b$ as dependent variable) was carried out with brand prominence, game repetition level, and product involvement (two levels each) as independent factors. Attitude toward the game and attitude toward advertising in general were used as covariates. As expected, a more positive attitude toward the game leads to a significantly more positive $A_b$, $F(1, 470) = 14.248$, $p < .001$. The attitude toward advertising in general also tends to influence $A_b$, $F(1, 470) = 2.508$, $p = .114$.

In line with expectations, brand prominence did not have a significant impact on $A_b$, $M_{subtle} = 2.898$ versus $M_{prominent} = 2.862$; $F(1, 470) = .290$, $p = .591$. The brand attitude did not differ significantly if the brand was placed subtly versus prominently. Consequently, H1b is supported. Game repetition had a significant main effect on $A_b$, $M_{low repetition} = 2.836$ versus $M_{high repetition} = 2.924$; $F(1, 470) = 3.887$, $p = .049$. A high level of game repetition leads to a significantly less favorable $A_b$(M = 2.836) than a low repetition level (M = 2.924). H2b is therefore supported.

The interaction effect between brand prominence and product involvement on $A_b$ is not significant, $F(1, 470) = 2.344$, $p = .126$. Placing the products in a congruent manner (an HI product prominently or an LI product subtly) did not result in a more positive brand attitude than placing the products incongruently (HI product subtly or LI product prominently). (LI product: $M_{subtle} = 2.900$ versus $M_{prominent} = 2.933$, $t(238) = .624$, $p = .533$; HI product: $M_{subtle} = 2.896$ versus $M_{prominent} = 2.791$, $t(238) = 1.408$, $p = .160$.) H3b is rejected.

The main effect of the game repetition level is qualified by a moderately significant interaction effect between the repetition level and product involvement (see Figure 1). For the LI product, there is no difference in $A_b$ between low and high levels of repetition, $M_{low repetition} = 2.927$; $M_{high repetition} = 2.906$, $t(238) = .352$, $p = .719$. For the HI product, low levels of game repetition lead to a more positive $A_b$(M = 2.921) than high repetition levels (M = 2.767), $t(238) = 1.768$, $p = .078$; $F(1, 470) = 3.188$, $p = .075$. Hence, H4b is supported.

Forcing respondents to play the game multiple times may have a different impact when individuals like the game versus when they do not like the game because of a possible dissonance between subjects’ actual desire to play the game more or less frequently and the experimentally forced level. To test whether the wear-out phase was also achieved equally quickly if individuals liked the game a lot, an additional analysis was carried out, including the interaction effect of the attitude (liking) toward the game (median split) and game repetition on brand attitude. The results show that the interaction effect is not significant, $F(1, 474) = 2.585$, $p = .107$, while the main effect of game repetition on $A_b$ was still apparent, $F(1, 474) = 3.749$, $p = .060$; $M_{low repetition} = 2.924$,
M_{high\ repetition} = 2.836. Therefore, we can conclude that wear-out effects of brand attitude are similar regardless of whether players liked the game.

In Experiment 2, the impact of repeatedly playing the game voluntarily is investigated. The main focus of Experiment 2 is the repeated exposure effects, that is, whether unforced repeated exposure leads to similar wear-in and wear-out effects as in the forced exposure format.

**EXPERIMENT 2**

**Respondents**

The same sampling procedure as in Experiment 1 was used, using a different sampling frame.

**Game Repetition**

Respondents could decide themselves how many times they played the game. In the introduction to the experiment, the respondents were informed that they could play the game as many times as they wanted. After a game was finished, they could choose to play the game again, or fill in the questionnaire. To replicate the repetition manipulation in Experiment 1 as much as possible, the responses of the participants who played the game twice (n = 55) versus the results of those who played the game three or four times were compared (n = 33). The sample has a spread in gender (48.9% females versus 51.1% males), age (average age 34), and education level (53.5% finished higher education).

**Results**

**Brand Recall**

Playing the game more frequently did not significantly increase brand recall (playing the game twice: 23.69% versus playing the game three or more times: 29.6%; $\chi^2(1) = .341, p = .559$. H2a is again confirmed.

The level of game repetition does not lead to a significant interaction effect with product involvement. Playing the game twice versus three or four times did not increase the brand recall for an LI product, or for an HI product (LI product: 20.8% versus 26.7%, $\chi^2(1) = .177, p = .674$; HI product: 25.8% versus 22.2%, $\chi^2(1) = .079, p = .779$). H4a is again confirmed.

**Brand Attitude**

Similar to Experiment 1, ANCOVA was used to analyze the impact of the independent variables on $A_b$, with attitude toward the game and general attitude toward advertising as covariates. General attitude toward advertising was no longer a significant covariate, $F(1, 88) = 1.483, p = .227$. Attitude toward the game had a significant positive effect, $F(1, 88) = 5.126, p = .026$.

In line with the results found in Experiment 1, repeatedly playing the game has a negative effect on brand evaluation, $F(1, 88) = 4.386, p = .039$. Playing the game three times or more leads to a less positive brand attitude ($M_{low\ repetition} = 2.844$ versus $M_{high\ repetition} = 2.717, t(37) = .444, p = .660$). For an HI product, game repetition leads to a more negative $A_b$ ($M_{low\ repetition} = 2.886$ versus $M_{high\ repetition} = 2.125, t(47) = 2.814, p = .007$). These results indicate the same trend as H4a (see Figure 2).

As an additional check, the effect of repeatedly playing the game on the attitude toward the game was tested. A $t$-test
pointed out that the number of times the game was played voluntarily (two times versus three or four times) was not correlated with the attitude toward the game, $M_{\text{low repetition}} = 2.586$ versus $M_{\text{high repetition}} = 2.303$, $t(86) = .883$, $p = .380$.

Based on the results of these different analyses, it can be concluded that the fast wear-in and wear-out effects of repeatedly playing the game on recall and the brand attitude for an LI and an HI product found in Experiment 1 are largely confirmed in a nonforced repetition situation. Moreover, as in Experiment 1, there does not seem to be a possible confound between the attitude toward the game and the level of repetition.

**DISCUSSION AND CONCLUSIONS**

Previous traditional product placement research investigated the effects of prominence of brand placements on advertising and brand effects, whereas past traditional advertising research examined the effects of advertising repetition on brand recall and attitudes. In this study, both dimensions of placement strength are investigated in an interactive (adver)gaming situation that is more cognitively involving and fun, and for which persuasion knowledge is apparent. Brand prominence and game repetition lead to different effects on brand outcomes. These outcomes are partly different for a low- and a high-involvement product category, but similar for forced and voluntary repetition levels.

**Brand Prominence**

As expected, the prominence of a brand placement has a positive impact on brand recall. This confirms the results of previous research (Gupta and Lord 1998; Schneider and Cornwall 2005). In this study, brand prominence was manipulated by moving the brand in the game or placing it static in the background. Movement automatically elicits orientating responses of consumers to the source of the movement, and hence focuses the attention on the moving object and thus stimulates cognitive processing (Coyle and Thorson 2001; Sundar and Kim 2005). This study showed no impact of prominence on brand attitudes. The PKM (Friedstad and Wright 1994) suggests that highly prominent placements with overt persuasive goals are processed more in depth than subtle placements. This would increase the likelihood of generating negative thoughts about the persuasive nature of the brand placement, leading to negative brand attitudes (Campbell and Kirmani 2000; Shiv, Edell, and Payne 1997). This mechanism has apparently been countered, which can be explained by several characteristics of the gaming environment. The pleasurable gaming experience may have activated the affect transfer mechanism for both the subtle and prominent placement to the same extent. Therefore, the motivation to start developing negative thoughts for the prominently placed brand may also have been low, given the pleasurable gaming experience. Another reason for not finding a negative effect of prominence on brand attitude could be due to the focused attention on the interactive content and the fact that the gamers were immediately aware of the persuasive goal of the game (high persuasion knowledge), independent of the level of prominence. Given the high persuasion knowledge about an advergame in general, the buy-in of persuasive content was probably higher, regardless of brand prominence. Furthermore, past studies have found that gamers do not generate negative feelings as long as the brand does not interrupt consumers’ goals (Hernandez et al. 2004). In this study, the brands do not specifically interfere with the gamers’ goal to play the game, which might explain why no negative brand attitudes are formed. However, further research is warranted to investigate to what extent the Persuasion Knowledge Model is applicable in an interactive gaming environment.

The differential effects of product placement on cognitive and attitudinal responses found in this study were also found
in previous research. For instance, Balasubramanian, Karrh, and Patwardhan (2006) explained the dissociation of product placement on different advertising outcomes by referring to the underlying mechanisms of the implicit versus explicit memory that are at work for the different outcome variables: brand recall is expected to be higher when the explicit memory is activated, but brand attitudes might not be influenced by this mechanism.

Game Repetition

In line with expectations, the level of placement strength as a result of playing the game more frequently did not have a significant impact on brand recall. The wear-in or learning process is apparently very fast in an advergame, which can be explained by the focused attention of the individual to the interactive content. In addition, the lack of complexity in the advergame might have accelerated the wear-in and wear-out phases. Consequently, recall did not increase between two and four plays, and reached its maximum after two exposures. On the other hand, compared with the low game repetition level, high levels of repetition had a negative effect on brand attitudes. These recall and brand attitude results were found under both forced game repetition and voluntary game repetition. Moreover, although the attitude toward the game as such had a positive impact on the attitude toward the brand placed in the game, repetition levels did not impact this game attitude in either of the two experiments. Wear-out effects due to repeatedly playing the game thus seem to be independent of the impact of game liking.

Moderating Influence of Product Involvement

Contrary to our expectations, incongruent combinations of brand prominence and product involvement (e.g., a subtly placed high-involvement brand) did not result in higher brand recall than congruent combinations (e.g., a prominently placed high-involvement brand) as proposed by Russell (2002). A mismatch between two dimensions of meaning (here product involvement and prominence) did not increase brand recall due to the incongruence of the stimuli. Instead, prominent placement always outperformed subtle ones in terms of brand recall. Apparently, the attention-attracting impact of prominent placements is much stronger than that of the incongruency mechanism. One reason may be that the alleged mismatch between prominence and product category involvement was not strong enough to result in a level of incongruency that triggered higher brand recall and overruled the impact of prominence. Replicating the impact of placement incongruency with other types of products in terms of involvement or buying motivation (e.g., utilitarian or hedonic) is called for to obtain a better understanding of this mechanism. Referring to the study of Yang et al. (2006), it would also be interesting to measure recall through implicit memory traces instead of measuring it explicitly, as we did in this study. Yang et al. (2006) found that although the explicit memory for brands placed in games was low, the implicit memory for these brands was much higher. Further research should address this in more depth. Brand prominence also had no significantly different effect on $A_b$ for the LI and the HI product. Apparently, in this study, the affect transfer mechanism of the game is stronger than the congruency effect of brand prominence and product involvement as proposed by Russell (2002). Thus, the effect of the prominence of the brand on brand recall and attitude is much stronger than the effect of product involvement. The characteristics of the (adver)gaming environment, focused attention and fun, enhance the effects of prominence. Further research should investigate further how the situational involvement of the (adver)gaming environment interferes with the enduring involvement with the product.

The moderating role of product involvement on the effect of game repetition was visible on brand attitude, but not on recall. Apparently, for both LI and HI, game repetition has the same influence on recall, that is, the learning phase is already achieved after two exposures, leading to no difference in recall compared to four exposures. As expected, for the HI product, a higher level of repeat playing has a more negative effect on brand attitudes than a low level of repetition, which is again an indication of fast wear-out. This is not the case for the LI product. These results are in line with prior research that found that intensive processing accelerates the wear-in and wear-out phases (Campbell and Keller 2003). People are more likely to rely on negative thoughts about the persuasive goals of advertisers when processing is intensive (Shiv, Edell, and Payne 1997) and when wear-out as a result of repeatedly playing the game frees up cognitive resources, especially for an HI product, for which extensive elaboration takes place (Campbell and Kirmani 2000). Again, this result was found in both a forced and a voluntary playing format.

Managerial Implications

Our results lead to a number of managerial implications for advertising professionals. The strength of placing a brand in an advergame does influence the advertising effects in terms of brand recall and brand attitude. Placing a brand prominently in an advergame generates better recall compared to placing it more subtly. This effect is similar for an LI and an HI product. According to our results, advertisers should not be concerned about the possible negative effects of prominence on $A_b$ because brand prominence had no effect on brand attitude for either product type (HI and LI).

Although the premise may exist that repeatedly playing an advergame increases advertising effectiveness, our study
found support for the opposite conclusion. Playing the game several times had no positive influence on brand recall, but impacted the development of brand attitudes negatively, especially for an HI product. Consequently, advertisers should avoid situations where the consumer repeatedly plays the same game, especially in the case of an HI product. According to our results, this holds true both in a situation in which the frequency of playing the game is left to the player, and in a situation in which the advertiser uses a promotional format in which consumers have to play a preset number of times. The simplicity of the arcade game tested in this study may explain this fast wear-out. Therefore, advertisers should work with more complex advergames. Another possibility to adjust for this negative effect of game repetition is to build in variations in the advergame—by displaying different “play worlds,” for example. The technological possibilities nowadays even permit customizing the advertising messages to the consumers, which might counter the negative effects on the brand attitude of repeatedly playing an advergame.

The results of this study cannot necessarily be extended to product placement in a mass media context (television, movies). First of all, a number of brand placement effects in this study at least partly result from the interactive nature of the game, such as the wear-in and wear-out effects found here. Product placement in noninteractive contexts, such as traditional television programs and movies, may result in different wear-in and wear-out patterns. The positive impact of prominent brand placement on brand recall has, of course, been found in mass media product placement studies. However, the relative importance of placement prominence may be different when plot connection is taken into account. The plot connection aspect and its effect on brand recall and attitude may play a more important role in television programs and movies than in most advergames. Persuasion knowledge and awareness and acceptance of brand placement will usually be more present for advergames than for television programs or movies. This may result in a different impact of product placement prominence on brand attitudes in advergames than in mass media programs. The conclusions from this study are therefore not necessarily valid in a traditional noninteractive mass media product placement context.

Limitations and Suggestions for Further Research

Given the limitations of the current study, there are opportunities for further research. The hypotheses of the current study are developed by applying mechanisms that were developed in traditional advertising media and product placement to interactive media. Hoffman and Novak (1996) state that applying traditional advertising mechanisms to a new interactive media environment should be done with care. Further research should focus more in depth on mechanisms such as persuasion knowledge and ad repetition in an interactive media environment. Although the convenience samples used here were appropriate to reach relevant samples of gamers, it might have decreased the external validity of the study. Further research that uses different sampling methods is needed to validate these results. A shortcoming of this study is the investigation of only two levels of brand prominence. Further research that manipulates more and different levels of brand prominence would be interesting. Special attention should be given to the integration of the brand in the game, since research has found that gamers develop attitudes toward brand placements in their game depending on the level of enhancement of realism of the game (Hernandez et al. 2004; Youn, Lee, and Doyle 2003). In this study, game/brand repetition was monotonic (the same game format). However, studying the effect of multiple exposures to a game in which a brand has been integrated in different ways (e.g., prominent, subtle, in different “worlds”) would be interesting. The limited number of products used in this study is certainly an important limitation. Only two product categories (coffee and cars) and unknown brands were used in this study, and product involvement was the only product type that was investigated. Further research could also explore the impact of exposure strength on other product types, such as utilitarian and hedonic products, and for unknown as well as familiar brands. Further research should also incorporate individual differences such as game involvement, gaming skills, experience (Schneider and Cornwell 2005), need for cognition, and so forth as potential moderators.

**NOTE**

1. A separate posttest was performed to test the underlying mechanisms and assumptions related to the specific nature of the (adver)gaming environment and experience. Seventy-two respondents participated (34 males and 38 females, M age = 24.4). Existing five-point Likert scales were used. The results show the following mean values: attention devoted to the game (Laczniak, Muehling, and Grossbart’s scale, 1989), $M = 3.383$; game liking (Murray and Dacin’s scale, 1996), $M = 3.773$; persuasion knowledge (Bearden’s scale, 2001), $M = 3.528$. All these measures are above the scale midpoint. The complexity of the game reached a mean value of 1.940 (Geissler, Zinkhan, and Watson’s scale, 2006), which is below the scale midpoint, as expected.

**REFERENCES**


APPENDIX

Example of Subtle and Prominent Stimulus

The HI brand is placed subtly in the background of the game.

The HI brand is used as a part of the game: gamers have to catch logos.