Product placements within a movie are often treated as a binary variable: either they are present or absent. However, placements can occur at many different levels ranging from a simple background prop to the product being an instrumental part of the story. The influence of 3 different levels of brand placements on explicit and implicit memory for the brand, implicit choice behavior, and attitudes toward the brand were examined. The results confirmed that levels of brand placements influence recognition of the target brand and attitudes toward the brand. On the other hand, simple placement of the brand within the movie influenced implicit memory and the implicit choice task. The implications of the current study’s findings were discussed.

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In the movie Spider-Man, the number 1 blockbuster movie of 2002, a can of Dr Pepper was featured for about 4 seconds when Spider-Man (Tobey Maguire) shot a spider web from his wrist toward it. This movie’s estimated $821.7 million worldwide box office gross income (Box Office Mojo, All Time Box Office, n.d.; http://www.boxofficemojo.com/alltime/world/), and additional exposure including pay-per-view, sales or rental of DVDs and videos, and television and cable reruns suggests that Dr Pepper was exposed to an enormous number of people throughout the world.

Brand placements are perceived as an effective mechanism for reaching audiences and have been employed by marketers for more than 50 years (Babin & Carder, 1996a; Sargent et al., 2001). Indeed, brand placements have been expanded to prime-time TV programming (Avery & Ferraro, 2000; Ferraro & Avery, 2000) and to different media, such as video games (Nelson, 2002) and novels (Snyder, 1992). Moreover, the role of brand placements has shifted from a brief background prop to being an intrinsic part of the movie. For instance, in the movie Castaway (2002),
actor Tom Hanks was a FedEx employee left adrift by a plane accident with numerous FedEx packages, which helped him to survive on a deserted island.

Despite the widespread use of brand placements to reach audiences, it is difficult to ascertain the effectiveness of brand placements because much of the data on their effectiveness is proprietary (Karrh, 1998; Yang, Roskos-Ewoldsen, & Roskos-Ewoldsen, 2004). Consequently, too little is known about the effect of brand placements given the dynamic nature of this practice (Babin & Carder, 1996a; Bhatnagar, Aksoy, & Malkoc, 2004; d’Astous & Chartier, 2000; Gupta, Balasubramanian, & Klassen, 2000). For example, how the brands are placed in the movie may influence their effectiveness (Ong & Meri, 1994). Thus, testing different types of brand placements has been proposed (Babin & Carder, 1996a; d’Astous & Chartier, 2000). Indeed, scholars have tested the effect of different types of brand placements such as whether the placement is visual or verbal (Gupta & Lord, 1998; Russell, 2002), the visual prominence of the placement (Brennen, Dubas, & Babin, 1999; d’Astous & Chartier, 2000; Law & Braun, 2000), and if the placement is involved in the plot of the story (Russell, 2002).

As with the many previous studies, the main purpose of the current study was to explore the effect of brands placed in a movie. First, prior research suggests that how the brands were presented in the movie might lead to different responses from the audience (Russell, 2002). The current study focused on the effect of three different levels of visual brand placements: in the background, used by main character, and as an integral part of the unfolding story. Second, the current study explored the influence of brand placements using both explicit and implicit measures of memory. In addition to an explicit memory measure, such as recognition, which has been used in measuring the effect of brand placements, an implicit memory measure—a word-fragment completion test—was used in present study. Finally, actual product-choice behavior was measured using an implicit choice behavior task that asked the participants to choose a product at the end of the experiment without referring to the movie exposure.

Product placements

Brand placements can be defined as “the paid inclusion of branded products or brand identifiers, through audio and/or visual means, within mass media programming” (Karrh, 1998, p. 33). Although it is not explicitly stated in this definition, brand placements have been conducted for persuasive intentions, such as increasing brand familiarity and sales.

Some of the advantages of brand placements practices include overcoming the problem of zapping because people are unlikely to change the channel or leave the room when a brand appears in a movie like they might for commercials (Avery & Ferraro 2000; d’Astous & Chartier, 2000). In addition, brand placements often involve an implicit endorsement by the celebrity using the brand which appears to have at least a slight influence on attitudes toward the brand (Avery & Ferraro, 2000).
Further, brand placements allow advertisers to target very specific audiences because
the demographics of who attends what kind of movie are well understood
(Nebenzhal & Secunda, 1993). Brand placements also have a longer life span than
typical advertisements (Brennan et al., 1999; d’Astous & Chartier, 2000). When
a movie is released as a DVD or shown on TV, the brand placement is typically still
present. Finally, surveys have found that audiences like brand placements because
they improve the realism of a movie or TV show (Gupta & Gould, 1997; Gupta et al.,
2000; Nebenzahl & Secunda, 1993; Ong & Meri, 1994).

Brand placements, memory, and story relatedness
The research regarding the effect of brand placements on memory generally finds
that memory is improved for a brand that is placed within a movie, compared with
the same brand that is not placed within a movie (Karrh, 1998). However, the early
research on the effect of brand placements on brand memory was mixed (Babin
and Carder, 1996a, 1996b; Ong & Meri, 1994). For example, 77% of viewers recalled
seeing Coke while watching the movie Falling Down, but only 18% recalled seeing
Hamm’s Beer in the movie (Ong & Meri, 1994).

The variability of these early findings shifted the research question from whether
the brand placements were effective to the factors that moderate the effect of brand
placements on brand memory. For example, studies found that placements that are
more visually prominent result in greater memory for the brand than do less pro-
minent placements (Brennen et al., 1999; d’Astous & Chartier, 2000; Gupta & Lord,
1998; Law & Braun, 2000).

Recently, Russell (2002) tested the effect of different levels of plot connection on
brand placements. High plot placement refers to the brand placement that plays
a major role in the story line or contributes to developing “the persona of a charac-
ter,” (Russell, 1998, p. 357) whereas background placement is called low plot place-
ment (Russell, 1998, 2002). One of the most important findings of Russell’s (2002)
study was that recognition rate for the products of high plot visual placement was
higher than recognition rates for the products of low plot visual brand placement.

While trying to understand the effects of different types of placements is impor-
tant, the research has been largely atheoretical and has relied on intuitive categories
for exploring different types of placements such as visual prominence or high versus
low plot placements. However, we would argue that understanding the effects of
different types of product placements within television and movies requires an
understanding of how people create coherent understandings of movies or television
shows (Yang et al., 2004). When people watch a movie, their primary focus is on
comprehending the story. What viewers cognitively do with different information in
a movie—including brand placements—depends on the implications of the infor-
mation for comprehending the movie. Consequently, understanding how people
comprehend a program should aid in the understanding of how people process
product placements and the likely effects of product placements. Research on text
comprehension indicates that comprehension involves the construction of situation
A situation model is a dynamic mental representation of a specific story or episode that has specific temporal and spatial constraints (van Dijk & Kintsch, 1983; Wyer, 2004). While Russell’s (2002) experiment on levels of plot connection was not conducted within a situation model perspective, the research is consistent with that perspective because it focuses on the placement of the brand within the larger context of the TV story. The current study attempted to remedy three limitations of Russell’s (2002) study. First, the landscape model (van den Broek, Risden, Fletcher, & Thurlow, 1996; van den Broek, Young, Tzeng, & Linderholm, 1999), a specific model of how situation models are constructed during comprehension, provides a theoretical framework for understanding different types of brand placements by focusing on how the audience processes the different levels of brand placements (Yang et al., 2004). Second, the present experiment used actual movies as stimuli unlike Russell, who created the stimuli for her experiment. Third, this study utilized both explicit and implicit memory measures to detect the effect of brand placements on memory. Recent research has demonstrated the importance of considering both explicit and implicit memory effects because they are influenced by different elements of brand placements (Law & Braun-LaTour, 2004).

The landscape model approaches coherence by looking at the relationship between online processing of a story and the memorial representation of that story (van den Broek et al., 1996, 1999). The landscape model takes advantage of the well-established finding that greater levels of semantic activation of a particular concept result in greater explicit memory for that concept. The model assumes that not all the information that is activated in memory is activated at the same level. That is, readers try to keep a story coherent while watching it; however, because of limited attentional resources, information that is central to the scene is activated at the highest level. At the next level of activation are concepts that are necessary for the scene to make sense such as enablers. Enablers are items within a story that allow the story to proceed. For example, if a little boy is trying to entice an alien into his house, there are a number of different things that he could use. If the boy uses Reese’s Pieces, they become the enabler used to draw the alien into the house. Other objects that are visually salient such as objects used by the character that are not central to the story will be activated at the next highest level. Finally, other information within the scene and background information receive the lowest level of activation because they are not necessary for comprehending the story and they are less visually prominent or salient.

Based on the landscape model, different predictions can be made concerning memory for brand placements. Brands that are necessary for maintaining story coherence because they operate as enablers will be activated more highly than brands that are part of the story because the brand is used by a main character, but as background material. Further, brands that are used by the character should receive greater activation according to the landscape model than brands that are simply part of the background because the brands used by the character are more visually salient.
According to this model, the greater the activation of the brand while viewing the movie, the greater the likelihood that it will be part of the situation model and explicitly remembered in the future. This experiment used the landscape model to identify three different levels of visual brand placements: *Background* is when the product is shown with one of the main characters but the character does not use the product; *Used by character* is when the product is used by one of the main characters; *Story connection* is when the product is used as an enabler in the story line, such as saving the main character or helping to solve a problem in the movie.

Second, to increase the external validity of this experiment, the current study used commercially produced movies. Russell’s (2002) study relied on experimenter-produced stimuli which can be problematic because of lower production quality and idiosyncrasies within the movie. In addition, because the single message cannot be representative of the category, the use of multiple messages belonging to the same category is recommended to increase the generalizability of the study. Therefore, five movies for each level of plot placements defined previously were tested to compare the effect of three different levels of visual brand placements.

H1: Recognition rates for brand names seen in the movie will be highest in the story-connection condition, next highest in the used-by-character condition, and lowest in the background condition.

**Memory measures and brand placement effectiveness**

One of the criticisms of the use of memory measures to study brand placement effectiveness is that most of the studies have used explicit measures of memory such as recall or recognition (Law & Braun, 2000). Explicit memory occurs when people intentionally and consciously try to recollect a specific previous event. Implicit memory involves memory effects that occur without intentional conscious recollection of the event (Graf & Schacter, 1985, 1987).

Recent research has demonstrated that memory may work implicitly without intention or awareness. Furthermore, this type of memory may be able to influence the interpretation of later events (Jacoby & Witherspoon, 1982) and choice behavior (Law & Braun, 2000). Originally, a dissociation between explicit and implicit memory was demonstrated in amnesic patients who could not explicitly recall or recognize previously studied words, but they were able to use those studied words in a different memory test, such as word completion and word fragment tests (Warrington & Weiskrantz, 1970, 1974). In the early 1980s, a series of studies found memory dissociation in normal subjects as well (Graf & Mandler, 1984; Graf, Mandler, & Haden, 1982; Jacoby & Dallas, 1981; Jacoby & Witherspoon, 1982; Tulving, Schacter, & Stark, 1982).

Two characteristics of implicit memory make it a particularly interesting approach for studying the effects of brand placements. Often, brands are part of the background in a scene so that they will not receive the same level of processing as foregrounded items within the scene. However, the findings from many studies
demonstrate that implicit memory is not influenced by how the items are originally processed, unlike explicit memory that is driven by semantic processing (Graf & Mandler, 1984; Graf et al., 1982; Jacoby & Dallas, 1981; Tulving et al., 1982). Second, psychologists have found that implicit memory survives longer than explicit memory (Jacoby & Dallas, 1981; Jacoby & Witherspoon, 1982; Tulving et al., 1982). These two characteristics of implicit memory have been demonstrated in research on implicit memory for advertisements (Shapiro & Krishnan, 2001).

Brand placement and implicit memory measures
The use of implicit memory in testing advertising and brand placement effects has been proposed due to the limitations of explicit memory tests to detect advertising effects (Duke & Carlson, 1993, 1994; Krishnan & Chakravarti, 1999; Schmitt, 1994). Advertising and brand placement effects may occur through nonconscious as well as conscious processes. For example, although the audience may not directly recall or recognize brand names to which it had been exposed, the brand names may still influence familiarity with and preference for the brands (Law & Braun, 2000; Law & Braun-Latour, 2004; Russell, 1998). Furthermore, the fact that implicit memory is not driven by whether information is semantically processed suggests that implicit memory tests may reveal advertising effects that are related to incidental brand exposure. Finally, purchase decisions may be influenced not only by conscious processes but also unconscious processes (Chung & Szymanski, 1997). At the moment of purchase, the consumer might not be able to consciously retrieve relevant information or interference may hamper conscious memory retrieval (Chung & Szymanski, 1997; Duke & Carlson, 1993). In that situation, implicit tests that do not demand conscious recollection may be appropriate for measuring advertising effects rather than explicit tests.

The results from studies testing implicit memory in advertising have found that implicit memory can detect advertising exposure effects that were not detectable using explicit memory measures (Duke, 1995; Duke & Carlson, 1994; Krishnan & Chakravarti, 1993; Krishnan & Shapiro, 1996; Shapiro & Krishnan, 2001). The use of implicit memory to measure the effect of brand placements has been tested in television programs (Law & Braun, 2000) and video games (Yang, Roskos-Ewoldsen, Dinu & Arpen, 2006). In these studies, implicit measures of memory provided a more sensitive test of brand placements than did explicit measures of memory (Law & Braun, 2000; Yang, Dinu, & Roskos-Ewoldsen, 2003). For example, Law and Braun had participants imagine that they were helping a friend furnish an apartment. Participants chose more items that had appeared in a recently watched episode of Seinfeld, compared with control items that did not appear in the episode. Likewise, a study of exposure to the brand names while playing a video game found that exposure to the brand name did influence the participants’ performance on a word fragment completion test (Yang et al., 2006). These results suggest that brand placements can prime the brand in memory, which could influence later judgments or behaviors related to that brand (see Roskos-Ewoldsen, Klinger, & Roskos-Ewoldsen, 2007; Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2002).
In order to test the effects of brand placements on implicit memory, participants completed a word fragment completion task that included the name of the target brand after viewing a movie clip with the brand placement.

H2: Word-fragment completion rates for brand names that appeared in the movies will be higher than for those not shown in the movies.

With its focus on comprehension, the landscape model involves semantic processes so that the focus of the model is only on explicit memory and is silent as to the effects of different levels of activation on implicit memory. Consequently, it is unclear what effect levels of brand placement will have on implicit memory for the brands.

RQ1: Do the different levels of brand placements influence the audiences' performance on a word fragment completion task?

Brand evaluation and implicit behavior

Another focus of research on brand placements has been on the effectiveness of brand placements on brand evaluation. It is expected that brand placements influence the audience's brand evaluations or attitudes (Babin & Carder, 1996a). However, research on brand placements generally finds that they have little or no effect on the evaluation of the brand or on purchase intentions (Babin & Carder, 1996a; Karrh, 1994; Ong & Meri, 1994; Vollmer & Mizerski, 1994).

One of the problems of the previous research regarding the effect of brand placements on the evaluation of brand and purchase intention is similar to the problem with research on the effect of brand placements on memory. That is, previous studies tested only explicit measures of attitude and purchase intention. Recent research regarding implicit attitudes suggests that attitudes can be primed without explicit memory of previous exposure to the attitude object (Olson & Fazio, 2001), and implicit attitudes have been demonstrated to be a good predictor of related behavior (Fazio & Olson, 2003). A measure of implicit choice behavior was developed by Fazio, Powell, and Williams (1989). The participants in this study were asked to perform tasks measuring the accessibility of their attitudes toward several products and then they were asked to choose a product as a “token of appreciation” for their participation in the research project. In this way, actual choice behavior was measured in an implicit way.

The Fazio et al. (1989) study provides a methodology for looking at implicit choice within the context of brand placements. Does exposure to brand placements influence implicit behavior? The audience may not report the attitude or behavior change explicitly after watching a movie; however, it is possible that the audience's choice behavior may be influenced implicitly. Therefore, the current study employed the implicit behavior measure that was used in the Fazio et al. study.

H3: Participants who see the brand in the movie will be more likely choose that brand than the participants who did not see the brand in the movie.

RQ2: Do different levels of brand placements influence participant’s choice behavior?
Method

Three pilot studies were conducted prior to the main experimental study. The participants for all of the studies were recruited from the same research participant pool at the University of Alabama and received extra credit for their participation.

Pilot Study 1: Selection of levels of brand placements

Eight judges (four undergraduate students and four graduate students) were asked to decide the level of brand placement of a brand from a series of movies following the theoretical predictions of the landscape model (Yang et al., 2004). A **background brand placement** involved the brand appearing in the clip but the brand was not used by any of the characters. **Used-by-main-character brand placement** involved one of the main characters using the brand in some manner such as pouring Evian water into a bowl for a dog to drink. **Story-connected brand placement** occurred when the brand was used to further the story in some manner. For example, in the movie *The Client*, a Sprite can was used by a police officer to get the fingerprints of a boy who refused to identify himself. Five movies were selected for each level of placement. The selected movies and levels of brand placements are presented in Table 1. From the selected movies, soft drinks (Coke, Dr Pepper, Pepsi, and Sprite), drinking water (Evian) and chocolate candy (M&Ms) were featured. Exposure time for each brand varied from 2 seconds to 74 seconds. Exposure time was a covariate in all-subsequent analysis.

<table>
<thead>
<tr>
<th>Level</th>
<th>Product</th>
<th>Movie</th>
<th>Genre</th>
<th>Exposure time (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>Evian</td>
<td>Legally Blonde</td>
<td>Comedy</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Dr Pepper</td>
<td>Mission to Mars</td>
<td>Sci-fi</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Pepsi</td>
<td>Miss Congeniality</td>
<td>Comedy/Action</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Coke</td>
<td>Ghostbusters</td>
<td>Comedy/Action</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Sprite</td>
<td>Liar Liar</td>
<td>Comedy</td>
<td>3</td>
</tr>
<tr>
<td>Used by character</td>
<td>Evian</td>
<td>Legally Blonde</td>
<td>Comedy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Coke</td>
<td>Falling Down</td>
<td>Drama/Action</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>M&amp;Ms</td>
<td>Mission to Mars</td>
<td>Sci-fi</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Dr Pepper</td>
<td>Spider Man</td>
<td>Action</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Pepsi</td>
<td>Thomas Crown Affair</td>
<td>Action/Adventure</td>
<td>14</td>
</tr>
<tr>
<td>Story connection</td>
<td>M&amp;Ms</td>
<td>Mission to Mars</td>
<td>Sci-fi</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Coke</td>
<td>Falling Down</td>
<td>Drama/Action</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>Dr Pepper</td>
<td>Mission to Mars</td>
<td>Sci-fi</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Pepsi</td>
<td>Twister</td>
<td>Action/drama</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Sprite</td>
<td>The Client</td>
<td>Drama/thriller</td>
<td>19</td>
</tr>
</tbody>
</table>
Pilot Study 2: Product preference test
The implicit choice task required products that were generally liked at about the same level in order to provide a sensitive test of the presence of brand placements on choice behavior. To determine consumer preferences for the six selected brands as well as other products belonging to the same categories, a total of 165 students were asked to indicate their brand preferences (109 female, 56 male). For the soft drink category, 19 products were listed, and 12 and 19 products were listed for the drinking water and chocolate candy categories, respectively. The participants were asked to indicate how much they liked the listed brand using an 11-point scale ranging from 0 (dislike) to 10 (like) and were asked to pick their five favorite products from a list of the three categories. Using these data, five brands from each product category that were liked at approximately the same level were selected (Soft drink: Coke, Sprite, Dr Pepper, Sunkist, and Pepsi; Drinking water: Dasani, Aquafina, Evian, Dannon, and Crystal; Chocolate candy: KitKat, Snickers, M&Ms, Twix, and Hershey).

Pilot Study 3: Word-fragment completion test
To ensure that there would not be ceiling or floor effects in the word-fragment completion task, the word stems that were going to be used in the main study were pilot tested. A total of 29 students participated (18 female and 11 male). A list of 30 words with blanks was presented to the participants (e.g., A__NT, for aunt). Six words were the target product names and the remaining 24 words were from Batig and Montague’s (1969) word lists. Because of the target word M&Ms, participants were instructed to fill in the blanks with either one letter or symbol (&, #, *). Across the 30 items, the mean completion rate was .43 (SD = 0.15).

Main study

Design
This study used a between-subjects experimental design with three levels of brand placements: background, used by character, story connection. The subjects were randomly assigned to one of the three conditions in the experiment.

Participants
A total of 373 students participated (259 female, 114 male). Participants were recruited from the subject pool of the University of Alabama. Participants received either course credit or extra credit for their participation. This study was presented as a movie entertainment study and each session was conducted with 5–15 participants.

Stimulus
The movie clips listed in Table 1 were edited to 20 minutes. The scenes with the target brand placement were placed roughly in the middle of each 20-minute clip. A total of 15 movie clips, five for each level of brand placements, were edited.
Procedure
After signing the informed consent form, the participants watched one of the 15 movie clips. After watching the movie, they completed a questionnaire measuring demographic information, previous exposure to the movie, and enjoyment of the movie they watched. Then, they performed a word-fragment completion test that was presented as a “word game study.” After the word-fragment completion task, but before the recognition task, personality scales were given as a distraction task. This task took approximately 10 minutes.

In the recognition task, the participants indicated whether they remember seeing a brand from the movie clips they watched (yes/no). The list included items that were not shown in the movies. Using the same list of brands used for the recognition task, attitude toward the brands was measured using an 11-point scale ranged from 0 (dislike) to 10 (like). Another personality scale was given as a distraction task. After this distraction task, the participants were thanked for their participation and dismissed from the study. As the participants left the theatre where they had watched the film clips, they were asked to choose one product from the five products that were identified in Pilot Study 2. The five products were arranged on a table and the product was presented as gift in appreciation for the participants’ time and effort. The researcher unobtrusively recorded each participant’s choice. Finally, participants were debriefed and thanked for their participation.

Results
Explicit memory
To test H1, the correct response for target brand recognition was calculated (recognized = 1, not recognized = 0) across all conditions. In addition, overall A’ (a non-parametric measure of d’) for the 24 remaining items (13 in the movie, 11 not in the movie) from the recognition task was calculated with the correct hit and false alarm responses to determine the sensitivity of participants’ recognition task performance. A’ is calculated as follows: A’ = 1/2+{([y−x](1+y−x))/[4y(1−x)]}, where x is the proportion of false alarms and y is proportion of hits (Grier, 1971).

Prior to testing the two hypothesis, overall A’ was analyzed by an analysis of variance (ANOVA) to determine whether participants’ overall recognition sensitivity varied across three conditions (levels of brand placements). The results indicate that there was no significant difference for overall A’ across the levels of brand placements, F(2, 364) = 2.13, ns, effect r = .09. Participants’ overall sensitivity (A’) in the recognition task did not differ across the three experimental conditions.

The recognition rate for the target brand was tested with an analysis of covariance (ANCOVA). The amount of time each brand was present in each movie clip, whether the participants had seen the movie before (watched = 1, not watched = 0) and overall recognition A’ (without the target brand) were included as covariates in the analysis. Both exposure time of the brand, F(1, 361) = 6.10, p < .05, and overall A’, F(1, 361) = 5.00, p < .05, were significant covariates, but previous viewing of the film was not,
The rate of target recognition increased with increases in the exposure time of the brand and increases in overall $A'$. The results of the ANCOVA revealed that levels of placements influenced the recognition of the target brand name, $F(2, 361) = 12.57, p < .001$, effect $r = .22$. Recognition rates for both the used-by-a-character ($M = 0.81, SE = 0.04$) and story-connection ($M = 0.82, SE = 0.04$) conditions were higher than the recognition rates for the target brand in the background condition ($M = 0.57, SE = 0.04$). The post hoc tests (Tukey HSD) confirmed that the recognition rate for the background-level-of-placements condition was significantly lower than the recognition rates in the used-by-character and story-connection conditions. However, the post hoc tests (Tukey HSD) revealed that the recognition rate for the story-connection condition was not significantly different from the used-by-the character condition. Therefore, the $H1$ was partially supported.

Because the recognition rates for the used-by-character and story-connection conditions were very similar—which runs counter to the predictions of the landscape model—we looked at the recognition rates for each of the five clips in each of these conditions. Close examination of the recognition rates for the target brand from each movie clip revealed that the recognition rate for Pepsi in the movie *Twister* was at a chance level of recognition (50%). Recognition rates for the other four clips in the story-connection condition were substantially above chance (93%). To explore the effect of this anomalous clip, an ANCOVA was conducted without the data from the movie *Twister*. Again, exposure time, overall $A'$, and previous watching were included as covariates. Exposure time, $F(1, 335) = 2.15, ns$ and previous watching, $F(1, 335) = 1.80, ns$, were not significant covariates, but overall $A'$ was, $F(1, 335) = 3.83, p = .051$. As the overall $A'$ increased, the recognition rate of the target brand also increased.

The results of this analysis are consistent with the predictions of the landscape model. There was a significant effect of levels of placements on the recognition of the target brand, $F(2, 335) = 20.57, p < .001$, effect $r = .28$. Consistent with the landscape model, the recognition rate was higher in the story-connection condition ($M = 0.93, SE = 0.04$) than in the used-by-character condition ($M = 0.80, SE = 0.04$) which was higher than the background condition ($M = 0.55, SE = 0.04$). The post hoc tests (Tukey HSD) confirmed that the mean recognition rates from all three levels of placements were significantly different from each other. These results supported $H1$. However, this support is tempered by the random recognition rates in the *Twister* condition. It is unclear why participants failed to recognize Pepsi in this condition.

**Implicit memory**

Prior to testing the hypothesis that participants would show higher levels of word-fragment completion for brands they had seen in the movie, overall word-fragment completion rates were analyzed using an ANOVA to rule out any effect of the conditions on general word-fragment completion rates. The overall word-fragment completion rate was calculated from participants’ responses to the 24 nontarget...
items (correct response = 1, incorrect response = 0). The results confirmed that there were no significant differences in overall word-fragment completion rates across the conditions in this experiment: levels of placements, $F(2, 369) = 2.44, ns, r = .10$, was nonsignificant.

To test H2 and RQ1, a 2 (Exposure to product) × 3 (Levels of brand placements) ANCOVA was conducted. The word-fragment completion rate for the target brand name when it was shown in the movies, and average completion rate of the brand name when it was not shown in the movies were compared (correct completion = 1, incorrect completion = 0). Average completion rate of the brand without exposure was calculated by the correct response rate of the brand names from those participants who did not see this brand in the movie. Exposure time to the brand, previous viewing, explicit memory for the brand, and overall word-fragment completion rate of non-target words were included as covariates. Exposure time of the brand, $F(1, 366) = 3.92, p < .05$, and overall word-fragment completion rates, $F(1, 365) = 4.51, p < .05$, were significant covariates. However, previous viewing, $F(1, 365) = 1.28, ns$, and explicit memory for the brand, $F(1, 365) = .40, ns$, were not significant covariates. Participants who had higher overall word-fragment completion rates were more likely to correctly complete the word fragment for the viewed brand than participants who had lower overall scores on the word-fragment completion task. Likewise, participants in those conditions where the brand was shown longer were more likely to correctly complete the word fragment for the viewed brand than where those participants who were in conditions where the brand was shown for a shorter period of time.

The main effect of product presence was statistically significant, $F(1, 365) = 5.74, p < .05$, effect $r = .14$. That is, word-fragment completion rates for the brands’ names ($M = 0.29, SE = 0.02$) appearing in the movies were higher than when they were not shown in the movies ($M = 0.24, SE = 0.01$). Therefore, H2 was supported. However, levels of placements, $F(2, 365) = .24, ns$, effect $r = .05$, was not significant. Regarding RQ1, it seems that the different levels of brand placements do not influence the audience’s performance on a word-fragment completion task.

Implicit behavior

In testing H3 and RQ2, only soft drink products were used. Participants were asked to choose a brand from the same product category as the brand that was placed in the movie (e.g., soft drinks when the brand was Pepsi, candy bars when the brand was M&Ms, and bottled water when the brand was Evian). Unfortunately, for the drinking water and chocolate candy conditions, no comparison conditions existed in which there were the same products to choose when the participants watched the movie clips without those brands because there was only one brand of drinking water used and one brand of chocolate candy bar used in the study. Therefore, the four movie clips conditions that contained Evian and M&Ms were excluded from this analysis and the remaining 11 movie clips, which have one of the four soft drinks, were included. This left four clips in the background condition, three clips in the used-by-character condition, and four clips in the story-connection condition.
The influence of levels of placements on product choice behavior was tested by a 2 (Exposure to brand) \times 3 (Levels of brand placements) ANCOVA analysis. The exposure to the brand variable involved comparing the choice rate for the target brand when it was shown in the movie and when it was not shown in the movie. If the participants chose the target brand they watched in the movie, this was coded as 1, and if they did not, it was coded as 0. Four variables were included as covariates: attitude toward the brand, exposure time to the brand in the movie, whether the movie had been previously viewed, and brand recognition. In the analysis, attitude toward the brand was a significant covariate, \( F(1, 267) = 15.44, p < .001 \). However, exposure time, \( F(1, 267) = 2.06, ns \), having previously viewed the movie, \( F(1, 267) = .27, ns \), and brand recognition, \( F(1, 267) = 1.74, ns \), were not significant covariates. As expected, when the attitude toward the brand was more positive, participants were more likely to choose the target brand.

The main effect of brand presence was significant, \( F(1, 267) = 7.65, p < .01 \), effect \( r = 0.19 \). That is, participants who were exposed to the brand in the movie were more likely to choose the brand than participants who were not exposed to the brand in the movie (\( M = 0.21, SE = 0.03 \) vs. \( M = 0.18, SE = 0.01 \)). Therefore, H3 was supported. However, levels of brand placements, \( F(2, 267) = 1.13, ns, r = .05 \), did not influence brand choice. Regarding RQ2, it seems that the different levels of brand placements do not influence the audience’s choice behavior.

**Attitude toward the brand**

Although a hypothesis or research question regarding the influence of brand placements on attitude toward the brand was not explicitly stated, the influence of levels of placements on attitude toward the brand was tested using an ANCOVA with covariates of exposure time and previous viewing of the movie. Exposure time was a significant covariate, \( F(1, 367) = 10.32, p < .01 \), but previous watching, \( F(1, 367) = 1.30, ns \), was not. As exposure time increased, the attitude toward the brand became more positive.

The results showed that only the levels of placements influenced the attitude toward the target brand, \( F(2, 367) = 5.92, p < .01 \), effect \( r = .15 \). When the brand was used by the character, the audience expressed more positive attitudes toward the brand (\( M = 7.66, SE = 0.27 \)) than when the product was just in the background (\( M = 7.15, SE = 0.28 \)) or when the brand was used to help unfold the story (\( M = 6.30, SE = 0.28 \)).

**Discussion**

**Explicit and implicit memory, and brand placements**

Comprehension is a fundamental process that people engage in when watching a movie. Given the importance of comprehension to the enjoyment of a movie, this experiment tested whether the landscape model of comprehension could aid in our understanding of the effects of product placements (Yang et al., 2004). One of the
major contributions of the current research is to provide a theoretical explanation for the influence of different levels of brand placements on brand memory. The landscape model (van den Broek et al., 1996, 1999) specifies what information will be activated and the level of activation of different kinds of information during the process of comprehension. The basic prediction is that, the greater the activation of the brand during the comprehension process, the greater the likelihood that that brand will be recalled in the future.

To test this possibility, participants watched a clip where the brand was either part of the background, used by a main character, or were an integral part of the story. The landscape model predicts that during the comprehension process, background brand placements should have a minimal level of activation, brand placements used by a main character should have a moderate level of activation and brand placements that are integral to the story should have the highest level of activation because they are intricately involved in the comprehension of the story. The findings from the current study generally support this theoretical prediction. Participants recognized the brand more when the brand was used by the main character or when the brand was integral to the story than when the brand was featured as a background. However, contrary to the predictions of the landscape model, there was no significant difference in recognition memory between the condition where the brand was used by the character and the condition in which it was related to the unfolding of the story. The findings offered limited support for H1.

However, one of the five clips used in the story-connection condition was problematic. Participants who watched the segment from the movie *Twister* had only chance recognition for Pepsi, which is the brand placement that occurred in this clip. When the story-connection condition was adjusted by eliminating the data from movie *Twister*, the recognition rates for the brands used for the unfolding of the story were significantly higher than when the brands were used by main character. These results fully support H1. It is unclear why recognition rates were at chance levels for Pepsi in the movie *Twister*. In this clip, the characters are preparing probes that will hopefully be sucked up into a tornado to provide scientific information about tornados. In the past, the probes were not successfully sucked up into the tornado. The characters are cutting up Pepsi cans into small propellers to attach to the probes in the hopes that the propellers will help the probes be drawn up into the tornado. Participants may not have noticed that Pepsi was being used because the brand was used at night and it was difficult to see the brand because of the darkness. In other words, during the comprehension process, “cans” may have been activated, but not “Pepsi cans” because of the difficulty in discerning that the cans were indeed Pepsi cans. Another possibility is that the arousal due to the pending Category 5 tornado may have interfered with participants’ memory for Pepsi in this scene. Thus, the findings that brand memory was better when the product is integral to the story rather than simply used by a main character is provisional. Certainly, for four of the five clips that were used in this experiment, memory for the brand was substantially better when the product was integral to the story than when it was simply used by
a character. The failure of this effect for Pepsi in the movie *Twister* suggests that the ease of seeing the brand may mitigate the effect of visual brand placement or that arousal may mitigate this effect. Future research will need to explore these possibilities.

In addition, the current study proposed the use of implicit measures of memory to evaluate the effect of brand placements. Previous research on the effects of product placements in movies has depended on explicit memory tests to ascertain the effect of brand placements (Law & Braun-Latour, 2004). In this study, an implicit memory measure was used to measure the effect of brand placements on memory. The results of the word fragment completion test demonstrated that the mere presence of the brand in the movie improved participants’ implicit memory for the products, confirming H2. While level of placement influenced explicit memory, the results of the current study suggest that levels of placements did not influence the performance on the word-fragment completion task. This finding is consistent with previous research findings (Graf & Mandler, 1984; Graf et al., 1982; Jacoby & Dallas, 1981; Tulving et al., 1982) that implicit memory is not influenced by how the memory items are originally processed, unlike explicit memory that is driven by semantic processing. Moreover, the correlation in the current experiment between participants’ performance for the critical item on the explicit and implicit memory measures (r = .02, ns) support the dissociation between explicit and implicit memory tests. Explicit and implicit measures of memory are sensitive to different influences of brand placements on memory. Clearly, the influence of brand placements is more complex than simply whether the brand is recalled at a later time. The placement of brands can influence memory, but the influence on explicit memory may be minimal depending on the level of brand placement within the movie.

**Implicit behavior, attitude, and brand placements**

The current study examined the effect of brand placements on the actual choice behavior of participants. Most previous studies of brand placements (Law & Braun, 2000; Morton & Friedman, 2002; Ong & Meri, 1994) measured purchase intention toward the brands. Choice behavior was measured by asking the participants to choose a product as a token of appreciation for participating in the research. Critically, the choice task was conducted after participants had been dismissed from the experiment so that the connection with the experiment was minimal. As one would expect, participants’ attitudes toward the brand had a reliable influence on their choices. However, brand placements did influence the choice behavior even after controlling for the influence of participants’ attitudes toward the brand, as predicted by H3. Indeed, the mere presence of the brand in the movie accounted for almost 20% of the variability in participants’ choice behavior. Participants who saw the target brand in the movie were more likely to choose that brand compared to the participants who did not view the brand in the movie. Consistent with the implicit memory measure, the levels of brand placements within the movie did not influence participants’ implicit choice behavior. From the perspective of an implicit measure
of behavior, these findings are intriguing because participants had been exposed to numerous brand names during the recognition task, word fragment completion task, and when completing the attitude measures. Despite exposure to numerous brands between exposure to the brand in the middle of the 20-minute film clip, participants were more likely to choose the brand if they were exposed to it regardless of the connection of the brand to the film. Of course, the choice behavior was measured fairly soon after participants had watched the film clip with the product. Future research will need to explore the time frame of this effect.

The findings concerning participants’ explicitly expressed attitudes also provide interesting insights concerning the effects of brand placements. When the brand was used by the main character, the audience expressed more positive attitudes toward the brand than when the product was presented in the background or when the brand was part of the unfolding story which is consistent with the previous studies (d’Astous & Chartier, 2000; DeLorme & Reid, 1999) that found that when the brand was used by a liked actor, the audience was more likely to evaluate the brand positively. Surprisingly, when the brand was part of the story, the audience’s expressed attitude toward the brand was less positive compared to the other two conditions. However, the manner in which the brands were used in the movies in this condition was not typical of how the brand is normally used by the research participants. For example, Dr Pepper is not typically used to save a spaceship (e.g., Mission to Mars) nor are Pepsi cans typically cut up to make propellers to attach to scientific probes for research on tornados. Another possibility is that the attitudinal results from this condition are a consequence of unusual and somewhat negative uses of the brands in some of the film clips. For example, Sprite in the movie The Client was used to deceptively take the fingerprint of a boy; the scientists’ hands were cut up fairly badly by the Pepsi cans in the Twister clip; Defens (the main character in Falling Down) buys a Coke to get change and then trashes the store when the cost of the can is exorbitant; and M&Ms are used in Mission to Mars to model the DNA of aliens. However, despite the apparently negative effect on brand attitudes when the product was used to aid in the unfolding of the story, participants still choose the product in these conditions.

Finally, the current study can provide some useful insight for the practitioners of brand placements. If the intention of the brand placement is to gain recognition of the brand by the audience, then practitioners will want the brand to be used by a main character or, ideally, to play a role in the unfolding story. If the intention of the brand placement is to increase viewers’ sense of familiarity with the brand, simply placing the brand in the movie may be adequate because implicit memory was not influenced by the level of placement of brand within the movie. Implicit memory often translates in to enhanced perceptions of familiarity with the product which can result in more positive evaluations of the product (Klinger & Greenwald, 1994). The findings from the implicit choice task are consistent with implicit memory enhancing perceptions of familiarity because participants were more likely to choose a brand that appeared in the movie regardless of the level of the brand placement. Indeed,
considering the findings from previous research in psychology that implicit memory survives longer than explicit memory (Tulving et al., 1982), the brand placements may have a long-term effect on implicit memory and perceptions of familiarity, given the findings of the current experiment.

Notes

1 A mental model is a more abstract representation of a series of related stories. Like a situation model, a mental model has temporal and spatial constraints but these constraints will typically be looser. Importantly, situation and mental models represent knowledge about some event or events. A schema is a more abstract representation that is knowledge of something (Roskos-Ewoldsen, Davies, & Roskos-Ewoldsen, 2004).

2 Across the 15 clips that were used in this experiment, recognition was at chance for four of the clips. Two of the clips were from the brand in the background condition (Dr Pepper in Mission to Mars and Pepsi in Miss Congeniality), a third clip was from the brand used-by-the main character condition (M&Ms in Mission to Mars), and the fourth clip was Pepsi in Twister which was from the story-connection condition. When the analysis is repeated without these four clips, the pattern is consistent with the predictions of the Landscape model.

3 Because M&Ms was the only target word with a symbol and it only appeared in the used-by-character and story-connection conditions, the implicit memory data were also analyzed without M&Ms to see if the presence of the symbol influences participants’ responses. The results were the same as when M&Ms was included in the analysis. Neither exposure time of brand, F(1, 315) = 2.82, ns, nor explicit memory, F(3,315) = .20, ns, were significant covariates. Both previous watching, F(1, 315) = 4.00, p < .05, and overall word-fragment completion rates, F(1, 366) = 4.25, p < .05, were significant covariates. The main effect of product presence was statistically significant, F(1, 365) = 4.05, p < .05. The main effect for levels of placements, F(2, 315) = 1.11, ns, effect r = .05, was not significant.

4 The explicit memory, implicit memory, and attitude data were reanalyzed excluding the same clips as were excluded from the implicit behavior analysis. None of the results in the reanalysis differed from the results reported in the text.

5 The correlations between the other implicit and explicit measures are as follows: explicit memory and choice task, r = .01, ns; explicit memory and attitude, r = -.02, ns; implicit memory and the choice task, r = .02, ns; implicit memory and attitude, r = .06, ns; and choice task and attitude, r = .20, p < .05.

References


L’efficacité des placements de marques dans les films : niveaux des placements, mémoire explicite et implicite et comportement de choix de marque

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Résumé

Les placements de produits dans un film sont souvent traités comme une variable binaire : ils sont soit présents, soit absents. Toutefois, les placements peuvent se faire à plusieurs niveaux différents, d’une simple présence comme accessoire de fond à un rôle instrumental dans l’histoire. L’influence de trois différents niveaux de placements de marques sur la mémoire explicite et implicite de la marque, sur le comportement implicite de choix et sur les attitudes envers la marque fut étudiée. Les résultats confirment que les niveaux de placements de marques influencent la reconnaissance de la marque visée et les attitudes face à la marque. D’autre part, un simple placement de la marque dans le film a influencé la mémoire implicite et la tâche de choix implicite. Les conséquences des résultats de la présente étude sont discutées.
Die Wirksamkeit von Markenplatzierung in Filmen: Levels der Platzierung, explizite und implizite Erinnerung sowie Markenwahlverhalten

Las colocaciones de producto dentro de las películas son a menudo tratadas como una variable binaria: están presentes o asuntes. No obstante, las colocaciones pueden ocurrir a distintos niveles variando desde un accesorio en el fondo hasta un producto que es parte instrumental de la historia. La influencia de tres niveles de colocación de marcas sobre la memoria de marca explícita e implícita, el comportamiento de selección implícito, y las actitudes hacia las marcas fueron examinados. Los resultados confirmaron que los niveles de colocación de marcas influyen sobre el reconocimiento de la marca meta y las actitudes hacia la marca. Por otro lado, la simple colocación de la marca dentro de la película influyó sobre la memoria implícita y la tarea implícita de selección. Las implicancias de los resultados del estudio presente son analizadas.
品牌嵌入电影中的效果：嵌入程度、显性和隐性记忆、及品牌选择行为

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电影中品牌嵌入往往被处理为两极变量：非有即无。其实，嵌入可在多种层面出现，从简单的背景道具到作为故事的重要部分。本研究对三种不同程度的品牌嵌入对该品牌的显性记忆和隐性记忆、隐性选择行为和对品牌的态度进行检测。结果表明品牌嵌入的程度影响对目标品牌的辨别和态度。另外，电影中简单的品牌嵌入影响隐性记忆和隐性选择。我们还对本研究结果的涵义进行了探讨。
영화에서의 상표배치효과에 관한 연구: 배치의 수준들, 노골적인 그리고 암묵적인 기억, 그리고 상표선택의 행위들

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요약
영화에서의 상품배치는 종종 이진변수로서 취급된다: 상품들이 나타나거나 나타나지 않거나 하는 것이 그것이다. 그러나 배치들은 여러 다른 수준으로 나타날 수 있는바 상품은 단순한 배경소품으로부터 이야기의 유효한 도구로서 쓰여질 수도 있다. 본 논문은 세 가지 다른 수준에 걸친 상표배치의 영향력에 대한 연구로서, 이들은 상표에 대한 명백하고 암시적인 기억, 암시적인 선택행위, 그리고 상표에 대한 태도들에 대한 영향력에 관한 것이다. 그 결과들은 상표배치의 수준들은 목표 상표의 인지와 상표에 대한 태도들의 영향을 미친다는 것을 확신하고 있다. 한편, 영화내에 상표를 단순히 배치하는 것은 암시적인 기억과 내재적인 선택행위에 영향을 미치는 것으로 밝혀졌다. 본 연구 발견의 함의에 대하여 논의하였다.