

## ADVERTISING REPETITION AND PLACEMENT ISSUES IN ON-LINE ENVIRONMENTS

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**ABSTRACT:** This study investigates the ways of improving banner advertising effectiveness by suggesting alternative advertising repetition strategies in varying on-line environments. Specifically, we investigate the effectiveness of repeating varied executions versus repeating single executions of a banner ad on brand recall and intention to click in different competitive and content-relevant on-line environments. The results of our experiment show that (1) banner advertising repetition leads to greater brand name memory and intention to click in on-line environments; (2) in a noncompetitive Internet environment, an ad variation strategy leads to higher brand name recall and intention to click than an ad repetition strategy; (3) in a competitive Internet environment, a single ad repetition strategy leads to higher brand name recall than a varied ad repetition strategy; (4) brand name recall is higher when the ad is presented in a content-relevant Web site; (5) a single ad repetition strategy generates marginally greater recall in a content-relevant Web site; and (6) a varied ad repetition strategy generates marginally greater recall in a content nonrelevant Web site. The effects of repeating varied versus same executions of an ad on intention to click in content-relevant Web sites did not generate any significant findings.

Advertisers were attracted to the Internet early on because of its interactivity, wide reach, and effective targeting ability. After its advent in 1994, Internet advertising spending rapidly increased to \$8.1 billion in 2000, constituting 3.3% of overall media spending. In the years that followed, the effectiveness of Internet advertising started being questioned as average click-through rates started declining steadily from 7% in 1996 to approximately .5% in 2003 (DoubleClick 2003). The decline in Internet advertising spending has since reverted and the Internet is expected to account for 13% of overall media spending in 2010 (Morgan Stanley 2006). As spending on Internet advertising continues to rise, advertisers are increasingly looking for new avenues to increase advertising effectiveness.

Effective communication on the Internet is becoming more and more difficult for advertisers for a number of reasons. For one, the advertising clutter on the Internet has increased tremendously. Jupiter Media Metrix has estimated that an average Internet user was exposed to about 950 banner ads in 2005. Most of these banner ads do not receive much attention, as is apparent from the .5% click-through rate. A second problem advertisers face on the Internet is that consumers are generally focusing on Web page content as opposed to banner ads (Dreze

and Hussherr 2003; Shapiro, MacInnis, and Heckler 1997). Because of increasing advertising clutter and low attention paid to banner ads, effective advertising placement strategies have become more important for on-line advertisers.

One of the widely employed strategies used in traditional media to break through clutter is advertising repetition. It is well contended that consumers' ability to recall information increases with message repetition (Anand and Sternthal 1990; Batra and Ray 1986; Cacioppo and Petty 1979; Calder and Sternthal 1980). Marketers often repeat same or varied executions of an ad to enhance recall and influence consumer judgments (Craig, Sternthal, and Leavitt 1976). It has also been suggested that the strategic choice of using a single ad repetition versus a varied ad repetition strategy should be determined by the contextual environment (Yoo, Gilliland, and Donthu 1994), that is, the extent of competition. This is especially true in the on-line environments where ads may be easily varied and placed based on the content of the Web site.

It is very common to see banner ads presented on content-relevant Web sites together with many competing ads. For example, a consumer shopping for insurance service is likely to have several insurance company ads pop up when searching for a product. The Internet allows advertisers to track consumers using cookie technologies; it also allows them to show relevant ads at the right time when the consumer is actually shopping for the product or service. Advertisers are increasingly using very narrow behavioral targeting tactics that identify targeted consumers based on their browsing behavior on the Internet and have targeted banner ads "follow" them as they browse. Companies such as Snapple and Adidas have successfully implemented such strategies and have reported increased Web site traffic, increased search for key words about their companies,

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increased brand awareness, and increased purchase intent (Oser 2004a, 2004b). The flexibility and ease of customization of messages and ads on the Internet leads to an increased opportunity for very narrow targeting tactics. The choice of repeating identical executions versus varied executions of an ad can also easily be altered by the advertiser. If one strategy was proven more effective than the other, advertisers could easily alter their repetition tactics based on other competing ads on the site, as well as Web site content. In this paper, we will try to suggest ways of improving Internet advertising effectiveness by proposing various repetition strategies based on content relevance of the Web site and extent of competition from other advertisers.

Although the Internet provides advertisers with an ultimate platform for customizing ad repetition and placement strategies, the effectiveness of various advertising repetition and placement strategies has not been researched in an on-line context. It would be of interest to advertisers to know which advertising repetition strategy would be more effective in these varying on-line environments. Using established theories from traditional media, and especially building on Unnava and Burnkrant's encoding variability hypothesis and differential attention theory (Burnkrant and Unnava 1987; Unnava and Burnkrant 1991) and Malaviya's resource theory (Malaviya, Meyers-Levy, and Sternthal 1999) to be discussed below, the present study examines the effectiveness of using varied versus single executions of an ad in different on-line environments.

Specifically, we will try to address the following issues: Does the conventional wisdom in traditional media that advertising repetition increases advertising recall hold true in the on-line environment? If yes, should managers prefer repeating a single execution of an ad or varied executions of an ad? Is the strategic preference between using a single execution or a varied execution contingent on the extent of competition within the Web site and content relevance of the Web site in which the ad is presented? What role does the relevance of the advertising content to the Web site play in the choice of repetition strategy? To address these questions, we have examined the impact of repeating single versus varied executions of an ad on consumers' intention to click and brand recall in various on-line environments.

## THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

### Internet Advertising Effectiveness

Declining click-through rates led many researchers to look into ways of increasing advertising effectiveness. Researchers who investigated on-line advertising efficiency generally used either direct response measures such as click-through rates or

the more traditional brand measures such as advertising recall, attitude toward the ad, or attitude toward the brand.

Studies that looked into improving the direct response to an ad have generally found that click-through rates improve with interactivity (Chandon, Chtourou, and Fortin 2003; Dreze and Hussherr 2003; Li and Bukovac 1999; Lohtia, Donthu, and Hershberger 2003). Several other banner ad characteristics seem to play a role in achieving better click-throughs, such as banner size and shape (Dreze and Hussherr 2003; Li and Bukovac 1999), background–banner color contrast (Dreze and Hussherr 2003), colors, and whether or not an incentive was offered (Chandon, Chtourou, and Fortin 2003; Dreze and Hussherr 2003; Lohtia, Donthu, and Hershberger 2003). Although merely generating increased traffic at a Web site through higher click-through rates used to be accepted as a measure of success, the increased need to improve profitability has led to more interest in conversion rates (clicks that result in purchases) and view-through rates (people who do not click, but later visit a Web site as a result of seeing the ad) in the industry. In fact, AdKnowledge has reported that 85.7% of the time, the campaign generating the highest click-through rate generated a lower conversion rate than other campaigns with lower click-through rates.

Recently, several researchers have shown that banner ads also have an impact on consumers' attitude toward a brand independent of click-through rate. It was shown that banner ads have longer-term effects that help build brand equity and can successfully raise brand awareness, preference, and consumer purchase intentions (Briggs and Hollis 1997; Dreze and Hussherr 2003; Hughes 2002). Dreze and Hussherr (2003) have successfully shown that a large part of banner processing will be done at the preattentive level, which results in low click-through rates, but that banner ads have produced favorable effects on users' recall, recognition, and awareness of banner advertising. Based on these findings, they suggest that advertisers should rely more on traditional brand equity measures such as brand awareness and advertising recall rather than click-through rates. Likewise, Yoo and Stout (2005) have found that explicit memory performance of consumers exposed to Internet advertising was poor, but that implicit memory performance was improved as a result of exposure to banner ads.

Several studies also looked into improving Internet banner advertising effectiveness by optimizing the placement of ads (Cho, Lee, and Tharp 2001; Dou, Linn, and Yang 2001; Moore, Stammerjohan, and Coulter 2005; Shamdasani, Stanaland, and Tan 2001). By using target market analysis, Sherman and Deighton (2001) have found that the average cost per response can be reduced ninefold when advertising on Web sites whose visitors were disproportionately likely to respond to banner advertising. Likewise, Manchanda et al. (2006) have shown that banner ads have an impact on Internet purchasing and

that click-through rates are a poor indicator of the effect of banner ad exposure on sales.

To capture both direct response and brand performance measures, this study will examine the effects of banner ad repetition strategies on intention to click, as well as brand recall in various on-line contexts.

### Advertising Repetition

The effects of advertising repetition have been widely studied in traditional channels. Earlier research that examined the effects of advertising repetition usually studied a single ad repetition strategy in isolation of other ads. Based on Berlyne's two-factor theory, studies on the effects of advertising repetition mostly agree that initial exposures to a message first increase attitude toward the product due to positive habituation, but that later exposures lead to tedium and lower attention, and thereby decrease attitude toward the product. These effects suggest an inverted-U relationship between number of exposures and message impact (Batra and Ray 1986; Cacioppo and Petty 1979; Calder and Sternthal 1980). In their study examining the effect of banner advertising on Internet purchases, Manchanda et al. (2006) have found that increased exposures to banner ads are positively correlated with revenues, but that the incremental return on each exposure decreases with each additional exposure.

Studies on the effects of repetition on mere message recall usually find a positive effect of advertising repetition on recall (Belch 1982; Burke and Srull 1988; Cacioppo and Petty 1979). The general argument is that the consumer's ability to recall information will increase with message repetition. We expect this argument to hold true in the on-line environment. Likewise, we expect the greater attention to a banner through repeated exposures to also increase consumers' intention to click on the banner.

We therefore hypothesize that

*H1: Banner advertising repetition leads to greater brand recall (H1a) and intention to click (H1b) in on-line environments.*

### Advertising Repetition in Cluttered Contexts

Earlier repetition research studied the choice of using single versus varied executions of an ad on advertising effectiveness. Research that compares the effectiveness of repeating the same versus varied ads generally contends that using variation should lead to multiple retrieval routes in memory, and therefore greater recall (Crowder 1976; Unnava and Burnkrant 1991). Concurrent with this encoding variability hypothesis, the differential attention theory suggests that consumers' attention to a message decreases when they are exposed to the same message repeatedly and that using varied executions of an ad will reduce this inattention of subjects.

The effects of repetition in cluttered environments where the consumer is exposed to messages from many competing brands and the effectiveness of using different repetition strategies in these environments is far less researched. Studies on advertising repetition in cluttered contexts usually find that the effect of advertising repetition on message recall is reduced. Burke and Srull (1988) and Keller (1987) show that exposure to several ads by different brands in a product category leads to confusion of claims and messages, and thereby lower brand name recall.

Resource availability theory contends that consumers have limited resources for message retention. Repeating advertising messages will clear resources for the processing of the ad, but at the same time, competing ads will reduce resource availability. In line with these arguments, Yoo, Gilliland, and Donthu (1994) argue that a single ad repetition strategy will be more effective in a competitive environment, because a single ad will produce more salience and reduce the forgetting associated with the surrounding clutter caused by other competing ads.

Malaviya, Meyers-Levy, and Sternthal point to the influence of type of processing in cluttered contexts and argue that ads will generate better recall only to the extent that they facilitate both relational and item-specific processing. Relational processing emphasizes "similarities that unite, connect, or serve to categorize individual pieces of information," whereas item-specific processing focuses on "information that an object is specifically depicted as processing" (Malaviya, Meyers-Levy, and Sternthal 1999, p. 101). In cluttered or competitive environments, where products of competing brands are present, repeated exposures to an ad will primarily lead to relational processing because attention will be drawn to shared product features. At the same time, item-specific processing will be reduced because exposure to competing ads is expected to reduce attention paid to a particular ad or brand name. They argue that, overall, these two effects will cancel each other out and repetition will have no effect on product judgments in cluttered environments.

In the Internet environment, banner ads are commonly placed on Web sites that contain information on companies or other products and feature graphics other than banner ads. In addition, Web sites usually feature more than one ad on the same page. Hence, there is more clutter in on-line environments than in traditional media.

Based on former studies that examine advertising repetition in cluttered or competitive environments and using resource theory, we argue that in a competitive on-line environment where many ads in the same product category are shown, repeating the same execution is expected to improve advertising effectiveness because repeating a single execution has a better chance of resisting interference by other brands and clearing up resources for processing the ad. Therefore:

*H2: In a competitive on-line environment, a single banner ad repetition strategy leads to greater brand recall (H2a) and intention to click (H2b) than a banner ad variation strategy.*

Based on Unnava and Burnkrant's differential attention hypothesis and encoding variability theory (Burnkrant and Unnava 1987; Unnava and Burnkrant 1991), we expect that a varied ad repetition strategy will lead to greater recall in noncompetitive on-line environments. In the noncompetitive environment where there is less interference from other brands, the threat of inattention from using a single ad repetition strategy will be greater. In such an environment, repeating varied executions rather than single executions of an ad will both lead to multiple memory traces and reduce the level of inattention, thereby improving advertising effectiveness. Therefore, we hypothesize that

*H3: In a noncompetitive on-line environment, a banner ad variation strategy leads to greater brand recall (H3a) and intention to click (H3b) than a banner ad repetition strategy.*

### **Banner Effectiveness in Content-Relevant Environments**

It is a frequently employed strategy to place ads in outlets that are related in content in both traditional media and on-line environments. For example, a computer magazine will include many ads for different brands of computers and related consumer electronics. People who read a computer magazine are expected to be part of the target audience and are therefore thought to be more involved and motivated to process ads related to computers. Research in conventional media suggests that the context in which an ad is presented has an important effect on how the message is processed. Indeed, it has been shown that an identical message can have different effects depending on the context in which it was presented (Chaiken and Stangor 1987; Cooper and Croyle 1984; Kiesler, Collins, and Miller 1969).

It is also well contended that recall rates are greater for targeted consumers (Appel and Blum 1961; Hodock 1980; Maloney 1961). Based on the selective attention explanation, Burke and Srull argue, "if a consumer is interested in the brand message because, for example, s/he plans to purchase some brand from the product class, s/he may intentionally process the message in a manner that makes it more resistant to forgetting" (1988, p. 57). The Elaboration Likelihood Model (ELM) also posits that when motivation to process an ad is greater, individuals are more likely to follow the central route to persuasion rather than the peripheral route. In that case, people are expected to have greater cognitive processing and greater recall for ads and other product-related information. Likewise,

research on relevancy of information has generally found that compared with irrelevant information, relevant information results in a more thorough processing of information, better recall (Rumelhart and Orthony 1976), and more favorable behavior and attitude changes (Haberland and Dacin 1992).

The common themes in background information and featured ads in content-relevant outlets may also enhance relational processing. Relational processing, which "emphasizes similarities that unite, connect, or serve to categorize individual pieces of information" (Malaviya, Meyers-Levy, and Sternthal 1999, p. 101), was found to make category information salient and enhance recall of product- and category-related themes.

In an on-line context, Moore, Stammerjohan, and Coulter (2005) have found that banner ad-Web site context congruity generates more favorable attitudes toward the ad and the Web site. Likewise, Shamdasani, Stanaland, and Tan (2001) have found that for high-involvement products, advertising effectiveness can be improved by placing ads on a content-relevant Web site.

In line with the selective attention explanation (Burke and Srull 1988), the ELM (Petty and Cacioppo 1979, 1983; Schumann, Petty, and Clemons 1990), and the greater relational processing induced, we expect that recall will be greater in content-relevant on-line environments. Therefore, we hypothesize that

*H4: Brand name recall (H4a) and intention to click (H4b) will be higher when the banner ad is presented in a content-relevant Web site.*

It is also expected that there will be more clutter and interference in content-relevant Web pages. For example, on a computer magazine Web site such as PCWorld.com, consumers are usually exposed to a great amount of product-related information, graphics, and ads from multiple competing ads, all on the same Web page. In accordance with resource theory and the theories described above to explain effectiveness of repetition strategies in competitive environments, we also expect that in a content-relevant environment, repeating same executions of an ad will lead to greater recall, because a single ad repetition strategy has a better chance of resisting the interference of the greater surrounding "clutter" and the induced forgetting in these environments.

Placement of banner ads in content-nonrelevant Web sites will involve less clutter. Therefore, based on Unnava and Burnkrant's (Burnkrant and Unnava 1987; Unnava and Burnkrant 1991) differential attention hypothesis and encoding variability theory, we argue that a varied ad repetition strategy should be preferred over a single ad repetition strategy in content-nonrelevant Web sites. In content-nonrelevant Web sites, the interference from other brands is less, and the resulting threat of boredom and inattention from using a single ad repetition strategy will be greater. Using varied executions will

reduce such boredom and inattention. In addition, according to Unnava and Burnkrant's (1991) encoding variability theory, repeating varied executions rather than single executions of an ad will lead to multiple memory traces that make the recall of information more likely.

Therefore, we hypothesize that

*H5: A single banner ad repetition strategy generates better brand recall (H5a) and intention to click (H5b) in a content-relevant Web site.*

*H6: A varied banner ad repetition strategy generates better brand recall (H6a) and intention to click (H6b) in a content-nonrelevant Web site.*

## EXPERIMENT

The hypothesized relationships were tested over two studies. The first study tested the effects of banner advertising repetition strategies on brand recall, whereas the second study tests the hypothesized effects on intention to click on the banner.

### Study 1

One hundred and sixty-eight students enrolled in marketing classes in a large state university participated in this study. All students were given the URL of the on-line experiment and were asked to go through the seven controlled Web pages and fill out a survey at the end.

#### *Experimental Design and Procedure*

The 168 participants were randomly assigned to one of the eight treatment conditions of a  $2 \times 2 \times 2$  factorial design. The three factors used in this study were as follows: (1) banner advertising repetition strategy (single ad repetition versus variation), (2) competitive environment (competitive versus noncompetitive environment), and (3) content relevance of the Web site where the ads were placed (content-relevant versus content nonrelevant). Each participant had to go through seven controlled Web pages, with two or three banner ads shown on each page. Each participant was exposed to a total of 19 banner ads. The number of exposures to the target ad was held constant at four in all eight treatment conditions for optimal exposure (Aaker and Myers 1982; Krugman 1975). The number of exposures is compatible with the number of exposures used by Unnava and Burnkrant (1991) and Yoo, Gilliland, and Donthu (1994). After going through all seven pages, participants were asked to fill out an on-line survey with brand recall questions, as well as questions about their familiarity with laptop computers and computers in general.

#### *Manipulations*

*Variation Versus Repetition.* Banner ads for a new fictitious laptop (SUN Laptop) were created as the target brand in this study. The SUN Laptop ads were created by editing the SUN logo (actual logo) and various laptop ads to give the fictitious laptop ads a real look. Four banner ads of the product were created to be used in the varied ad execution condition. A cosmetic ad variation strategy was used. The four ads are comparable in content, but have different cosmetic appearances. Participants in the single ad repetition condition were exposed to the same target ad four times. In each case, the target ad was presented together with 15 other ads. Participants in the varied ad execution condition were exposed to the four varied executions of the target banner ad. To eliminate a possible order effect, the target ads were positioned as the third, seventh, twelfth, and fifteenth banner ad in all experimental conditions.

*Competitive Environment.* The competitive environment was manipulated by the different number of competing ads shown in each situation. In the competitive condition, four more laptop ads were shown in addition to the target brand ads repeated four times. In both the competitive and noncompetitive conditions, four more desktop computer ads were shown. In the noncompetitive environment, the remaining 11 ads were chosen from other unrelated product categories. In summary, in the competitive condition, participants were exposed to 4 SUN Laptop ads (target ad), 4 desktop ads, 4 laptop ads, and 7 ads from other noncompeting product categories; in the noncompetitive condition, participants were exposed to 4 SUN Laptop ads (target ad), 4 desktop ads, and 11 ads from other noncompeting product categories.

*Content Relevance.* Participants in the content-relevant condition were shown the 19 ads on a PCWorld Web site, whereas participants in the content-nonrelevant Web site condition were shown the 19 ads on a CNN World Web site. On both the CNN and PCWorld Web sites, the ads were shown on Web pages that featured different articles. The articles presented on the content-relevant PCWorld Web site were mostly related to computer and electronic products, and included articles about CD-RW drives, digital cameras, laptop computers, and Pentium processors. The content-nonrelevant Web site included articles about Golden Globe winners, Uranus moons, and comets.

*Dependent Variables.* After participants went through their assigned Web pages, they were linked to a questionnaire. Participants were first asked brand recall questions. Recall scores were coded as 0 or 1—0 if they failed to recall seeing the particular ad, and 1 if they successfully remembered seeing the ad. Banner advertisers are realizing that click-through rates are

**TABLE 1**  
**Average Brand Name Recall and Intention to Click**  
**for Target Ad (Repeated Four Times) Versus**  
**Other Ads (Single Exposure)**

Target ad	Recall ( <i>n</i> = 168)	Intention to click
SUN	.3929 (.4898) <sup>a</sup>	2.9348 (1.254) <i>n</i> = 46 <sup>b</sup>
AT&T	.1131 (.3177)*	2.4483 (1.4537)* <i>n</i> = 29
CNET	.1845 (.3891)*	2.00 (1.4719)* <i>n</i> = 13

<sup>a</sup> Numbers in parentheses are standard deviations.  
<sup>b</sup> Only consumers who recalled ads reported their intention to click.  
\* Significant at the .05 level.

not a complete measure of banner ad effectiveness (Shen 2002). Banner ads also play a major role in brand building; hence, recall, an effectiveness measure used in traditional media, may be an appropriate measure of effectiveness.

## Study 2

The second study conducted tested the effects of single versus varied executions of banner ads on consumers' intention to click in content-relevant and competitive environments. One hundred and five students enrolled in various marketing classes were asked to go through the same seven controlled Web pages and were asked to answer a survey at the end. The same content relevance, competitiveness, and ad execution manipulations used in the first study were also used in the second study. Once again, students were asked to go through the seven controlled Web pages and evaluate their intention to click on the banner ads presented in the survey at the end of the experiment.

## DATA ANALYSIS AND RESULTS

### Advertising Repetition

We expect that advertising repetition will lead to greater brand name memory recall and greater intention to click in on-line environments. To test this hypothesis, we compared the brand recall scores and intention to click scores of our repeated target ad (SUN Laptop) with brand recall scores from two other ads (CNET and AT&T) that were shown only once using a *t* test. The mean recall scores and the results of the *t* test are presented in Table 1. The repeated target ad received

significantly higher recall rates than both ads. The results were significant at the .05 level. Hence, we did find support for H1a and H1b that advertising repetition does increase advertising recall (a) and intention to click (b) in the on-line environment.

### Advertising Repetition Strategy and the Competitive Environment

We had hypothesized that in a noncompetitive on-line environment, an ad variation strategy leads to higher brand name memory recall than an ad repetition strategy, because varied ad executions would reduce the effect of boredom and also lead to multiple memory traces for the recall of brand names. We had also hypothesized that in a competitive on-line environment, a single ad repetition strategy leads to higher brand name memory recall than an ad variation strategy because repeating the same ad will have a higher chance of resisting the interference caused by the other ads.

Due to the dichotomous nature of our brand recall scores, a logistic regression model was used to test the effect of the advertising repetition strategy used in the competitive environment on brand recall. Our hypotheses call for an interaction between the competitive environment and the advertising repetition strategy employed. The logit model includes the competitive environment (competitive versus noncompetitive), the advertising execution strategy (single versus varied), and the interaction term (competitive environment  $\times$  advertising execution strategy) as independent variables, and brand name memory recall as the dependent variable. No main effect of advertising repetition strategy ( $p > .6$ ) or competitive environment strategy ( $p > .3$ ) was found for recall scores. The main effects in the logistic regression model were not significant. The results of the logistic regression are given in Table 2.

The interaction term (competitive environment  $\times$  advertising execution strategy) in our logit model was significant at the .001 level. The results of the interaction effects can be seen in Figure 1.

The average brand recall scores for the competitive and noncompetitive conditions when a single ad repetition versus a varied ad repetition strategy was used are shown in Table 3. Our analysis confirms that an advertising variation strategy does create greater average recall for participants in the noncompetitive situation, as hypothesized in H2a. Participants in the noncompetitive situation had significantly greater average (.5625 versus .2647) recall scores when presented with varied ads as opposed to same ads. The difference was significant ( $t = -2.768, p < .01$ ).

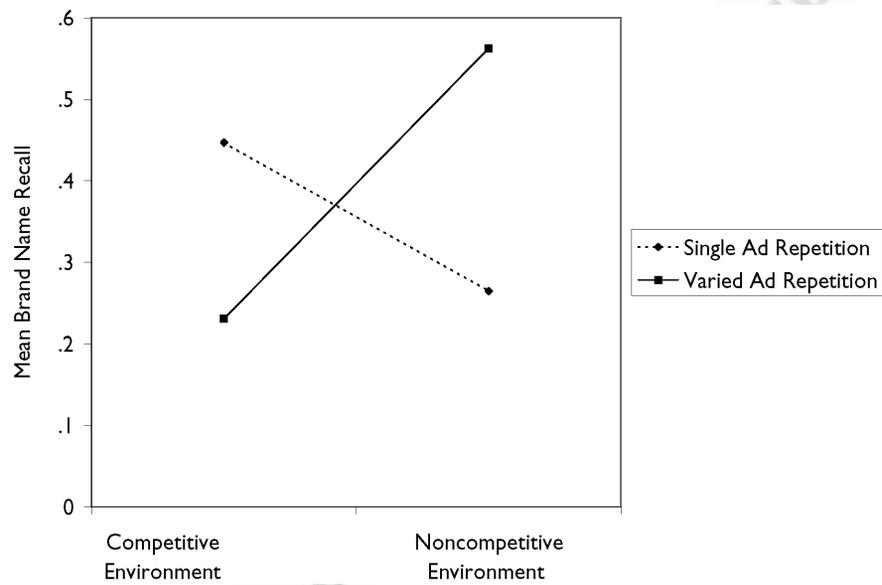
A univariate ANOVA (analysis of variance) was used to test the hypothesis that advertising variation strategy does create greater intention to click for participants in the noncompetitive situation (H2b). The results of the ANOVA are presented

**TABLE 2**  
**Logistic Regression Results (Dependent Variable = Brand Recall)**

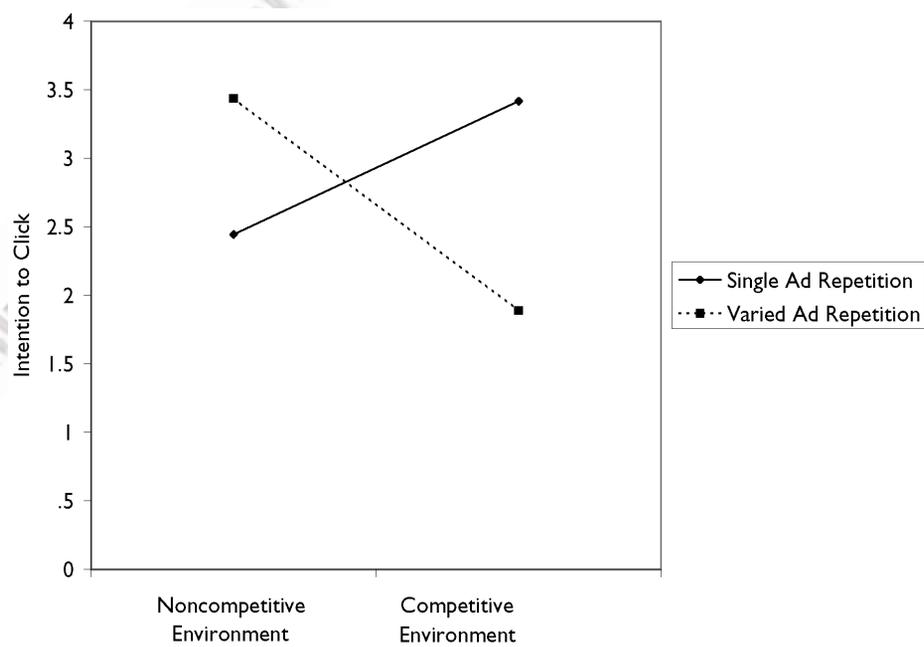
	Ad execution	Competition	Ad execution × competition
Brand recall	.141* (.679)	.324 (.343)	2.263 (.001)

*Note:* Significance levels are given in parentheses.  
 \* Coefficients of variables in regression.

**FIGURE 1**  
**Interaction Effects Between Advertising Repetition Strategy and the Competitive Environment**  
 (Dependent Variable = Brand Recall)



(Dependent Variable = Intention to Click)



**TABLE 3**  
**Mean Recall Scores in Competitive and Noncompetitive Environments**

Dependent variable	Competitive environment			
	Single ad repetition	Varied ad repetition	t	p
Brand recall <sup>a</sup>	.4468 (.5025)	.2308 (.4268)	2.123	(.037)
Intention to click <sup>b</sup>	3.4167 (.99620)	1.8889 (.92796)	3.579	(.002)
Dependent variable	Noncompetitive environment			
	Single ad repetition	Varied ad repetition	t	p
Brand recall	.2647 (.4478)	.5625 (.5013)	-2.768	(.007)
Intention to click	2.4444 (1.23603)	3.4375 (1.20934)	-1.956	(.063)

*Note:* Numbers in parentheses are standard deviations.

<sup>a</sup> Study 1 results.

<sup>b</sup> Study 2 results.

**TABLE 4**  
**Univariate ANOVA Results**  
**(Dependent Variable = Intention to Click)**

Source	Univariate F	Significance
Ad execution	.628	.433
Competition	.730	.398
Ad execution × competition	13.954	.001

*Notes:* ANOVA = analysis of variance.  
 $R^2 = .266$  (Adjusted  $R^2 = .214$ ).

in Table 4. As in Study 1, no main effects of advertising repetition strategy ( $p > .4$ ) or competitive environment strategy ( $p > .3$ ) on intention to click were found in Study 2. The interaction term ad execution × competition was significant at the .01 level for intention to click.

The average intention to click score comparisons for the competitive and noncompetitive conditions when a single ad repetition and varied ad repetition strategies were used is shown in Table 3. Our analysis reconfirms that an advertising variation strategy does generate greater intention to click for participants in the noncompetitive situation as hypothesized in H2b. Participants in the noncompetitive situation had significantly greater average (3.4375 versus 2.4444) recall scores when presented with varied ads as opposed to same ads. The difference was significant ( $t = -1.956, p < .10$ ).

Our analysis also confirms that a single ad repetition strategy does create greater average recall and intention to click

for participants in the competitive situation, as hypothesized in H3a and H3b. Participants in the competitive situation had significantly greater average (.4468 versus .2308) recall scores and intention to click scores (3.4167 versus 1.8889) when presented with varied ads as opposed to same ads. The difference was significant for both advertising recall ( $t = 2.123, p < .05$ ) and intention to click ( $t = -3.579, p < .01$ ).

#### Advertising Repetition in a Content-Relevant Web Site

We have hypothesized that regardless of the advertising execution strategy used, repeating an ad in a content-relevant Web site will lead to greater recall (H4a) and greater intention to click (H4b). To test our hypothesis, we compared participants' brand name recall scores for the content-relevant "PCWorld" Web site with those for the content-nonrelevant "CNN" Web site. Our analysis confirms that average recall scores were greater when our target ad (SUN Laptop) was presented in a content-relevant Web site (PCWorld) as opposed to a content-nonrelevant Web site (CNN). The mean recall scores and results of the  $t$  test are given in Table 5. As can be seen in Table 4, participants in the content-relevant situation had greater brand recall scores as well as greater intention to click scores. The differences were significant at the .01 level (brand recall:  $t = 3.166, p < .01$ ; intention to click:  $t = 3.127, p < .01$ ). Hence, our hypotheses that brand name recall (H4a) and intention to click (H4b) were greater for content-relevant Web sites were supported.

**TABLE 5**  
**Mean Recall and Intention to Click Scores in Content-Relevant and Content-Nonrelevant Web sites**

	Content-relevant	Content-nonrelevant	t	p
Brand recall <sup>a</sup>	.5122 (.5029)	.2791 (.4512)	.166	.002
Intention to click <sup>b</sup>	3.3333 (1.2309)	2.0000 (.7071)	-3.127	.006

Note: Numbers in parentheses are standard deviations.

<sup>a</sup> Study 1 results: average brand recall scores.

<sup>b</sup> Study 2 results: average intention to click scores.

**TABLE 6**  
**Logistic Regression Results (Content Relevance)**

	Involvement	Ad execution	Content relevance	Ad execution × content
Brand recall	.463* (.017)	.110 (.746)	-1.042 (.002)	1.147 (.092)

Note: Significance levels are given in parentheses.

\* Coefficients of variables in regression.

#### Advertising Repetition Strategy and the Content Relevance of the Web site

We had hypothesized that a single advertising repetition strategy works better in a content-relevant Web site, and that a varied advertising repetition strategy works better in a content-nonrelevant environment.

We ran another logistic regression model to test the effect of advertising repetition strategy used and the content relevance of the environment on brand recall. The independent variables in the logit model include the advertising execution strategy used (single versus varied), the content relevance of the Web site (content-relevant versus nonrelevant), and the interaction term (ad execution × content). Level of involvement with computers was also introduced as a covariate, since it is known to affect recall scores. The dependent variable is brand name recall, which is a 0, 1 dichotomous variable. The results of the logistic regression are shown in Table 6. A main effect of content relevance of the Web site was found ( $p < .01$ ). The main effect of advertising repetition was not significant at the .10 level. The interaction was also significant at the .10 level ( $p = .092$ ). The significant interaction term marginally supports our hypothesis (H5a) that an advertising repetition strategy will lead to greater recall in content-relevant Web sites and that an advertising variation strategy will lead to greater recall in content-nonrelevant Web sites (H6a).

The interaction between the content relevance of the Web site and advertising execution on intention to click were

**TABLE 7**  
**Univariate ANOVA Results**  
**(Dependent Variable = Intention to Click)**

Source	Univariate F	Significance
Ad execution	.065	.800
Content relevance	3.279	.077
Ad execution × content relevance	2.633	.112

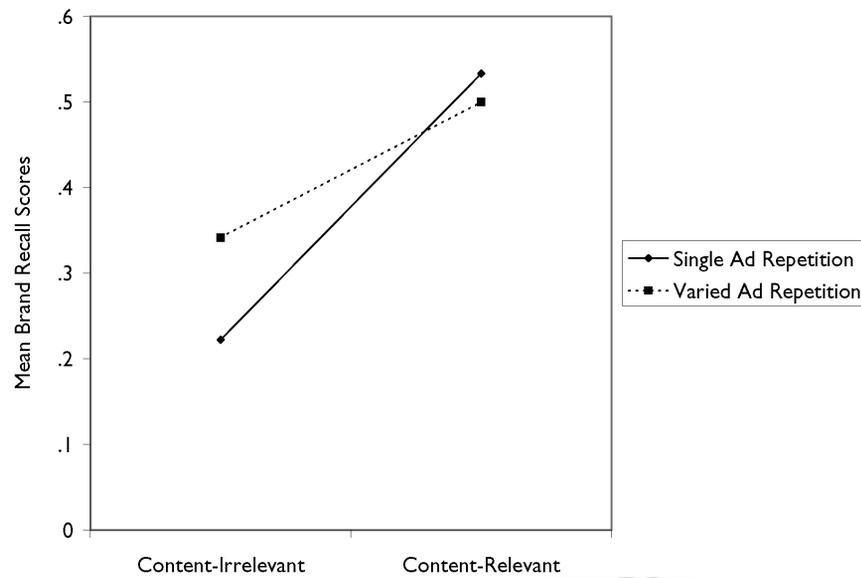
Notes: ANOVA = analysis of variance.

$R^2 = .112$  (Adjusted  $R^2 = .048$ ).

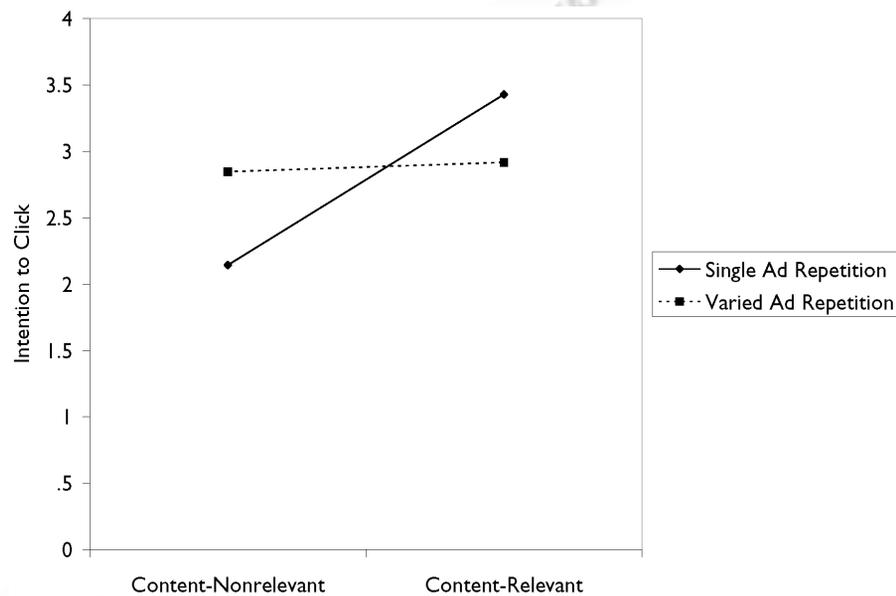
tested using a univariate ANOVA. The results are presented in Table 7, and a graphical representation of the interactions is presented in Figure 2. The main effect of advertising repetition was not significant at the .10 level; however, the main effect of content relevance was marginally significant at the .10 level ( $p = .77$ ). The interaction was also insignificant at the .10 level ( $p = .112$ ). The insignificant interaction was likely a result of the significant main effect of content relevance. Based on these results, our hypotheses that an advertising repetition strategy will lead to greater intention to click in content-relevant Web sites (H5b) and that an advertising variation strategy will lead to greater intention to click in content-nonrelevant Web sites (H6b) is not supported.

A summary of our findings can be seen in Table 8.

**FIGURE 2**  
**Interaction Effects Between Advertising Repetition Strategy and Content Relevance**  
 (Dependent Variable = Brand Recall)



(Dependent Variable = Intention to Click)



**DISCUSSION**

The Internet has opened new opportunities for advertisers with respect to using targeted advertising strategies. Cookie technologies have made it possible to place banner ads on desired Web sites and to vary the banner ads shown based on the consumers' shopping interests. The on-line environment is also characterized to be a cluttered environment where many ads and other images are presented on the same Web site. Former research in traditional media has suggested that a single ad

repetition strategy would have a greater chance of resisting the interference caused by the "clutter." Although ad repetition strategies seem to be widely used in on-line channels, no particular repetition strategy seems to be employed.

In this study, we examined the effects of banner advertising repetition on brand name recall and intention to click in various on-line environments. We investigated the role of competitive environment in relation to the effectiveness of the specific advertising repetition strategy used, as well as the effectiveness of placing ads in content-relevant Web sites. Specifically,

**TABLE 8**  
**Summary of Hypotheses and Results**

Hypothesis	Significance	Result
H1: Banner advertising repetition leads to greater brand name recall (H1a) and intention to click (H1b) in on-line environments.	.05 (a and b)	Supported
H2: In a competitive on-line environment, a single banner ad repetition strategy leads to greater brand recall (H2a) and intention to click (H2b) than a banner ad-variation strategy.	.037 (a) .002 (b)	Supported Supported
H3: In a noncompetitive on-line environment, a banner ad variation strategy leads to greater brand recall (H3a) and intention to click (H3b) than a banner ad repetition strategy.	.007 (a) .063 (b)	Supported Supported
H4: Brand name recall (H4a) and intention to click (H4b) will be higher when the banner ad is presented in a content-relevant Web site.	.002 (a) .006 (b)	Supported Supported
H5: A single banner ad repetition strategy generates better brand recall (H5a) and intention to click (H5b) in a content-relevant Web site.	.092 (a) .112 (b)	Marginally supported Not supported
H6: A varied banner ad repetition strategy generates better brand recall (H6a) and intention to click (H6b) in a content-nonrelevant Web site.	.092 (a) .112 (b)	Marginally supported Not supported

the effectiveness of repeating varied executions of an ad and repeating a single execution of an ad were compared in different competitive and content-relevant on-line environments. In that sense, we tried to further research in the area by examining whether previously studied relationships hold in the on-line environment and by expanding our knowledge on the efficiency of repeating same versus varied executions of an ad.

The results of our on-line experiment found support for our hypotheses that (1) advertising repetition created greater brand name recall and intention to click in the on-line environment, (2) a varied ad repetition strategy is more effective in noncompetitive on-line environments, (3) a single ad repetition strategy is more effective in competitive environments, (4) ads generate greater recall and intention to click on content-relevant Web sites, (5) a varied ad repetition strategy is more effective in a content-nonrelevant Web site, and (6) a single ad repetition strategy is more effective in a content-relevant Web site. The effects of repeating varied versus same executions of an ad on intention to click in content-relevant Web sites did not generate any significant findings.

There are certain limitations in this study. Our study has examined the effects of advertising repetition when the ad was repeated only four times. The number of exposures was not manipulated, although it has been suggested that frequency plays an important role in brand name recall. Therefore, future studies should also examine the role of frequency in on-line banner ad repetition strategies.

Although there are numerous examples of using fictional target brands in literature, we have to acknowledge that some people may have strong opinions about SUN Microsystems. Hence, some of the positive effects for our target brand (SUN Laptop) could have been generated because of people's preex-

isting opinions about Sun Microsystems. We also employed a cosmetic variation strategy. Schumann, Petty, and Clemons (1990) argue that substantive variation works better when motivation to process the ad was high. Future studies should also examine the effects of substantive variation strategies in on-line environments.

The findings of this research also have strong implications. Our research points to the importance of banner advertisement placement strategies. We suggest that banner ad placement strategies should be done with care, and placements should be preceded by a careful analysis of the environment where the banner ad is going to be placed. Placement of banner ads in content-relevant Web sites and choosing the appropriate repetition strategies enhances effectiveness of banner ads.

Our findings suggest that an advertising repetition strategy would be beneficial for generating greater recall on-line. If the banner ad is to be placed in a competitive environment where banner ads of other competing brands are present, it is suggested that advertisers use a single ad repetition strategy. Likewise, it is suggested that advertisers use a varied ad repetition strategy when the banner ad is placed in a noncompetitive Web site. Placement of on-line ads in content-relevant Web sites also proved to be an effective strategy. In a real setting, content-relevant Web sites would also feature more competitive ads. Therefore, it is also expected that a single ad repetition strategy would be more beneficial when placing ads in content-relevant Web sites.

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