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THE EFFECTS OF BANNER AD SIZE AND TIME COST ON BRAND ATTITUDE AND CLICK-THROUGH

By

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ABSTRACT

THE EFFECTS OF BANNER AD SIZE AND TIME COST ON BRAND ATTITUDE AND CLICK-THROUGH

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The effectiveness of banner ad size and time cost on brand attitude and click-through was investigated in four computer-based experiments. Four 2 x 2 between-subjects factorial designs employing 249 student participants were used to test specific hypotheses. In Chapter 1, the factors are banner ad size (large vs. small) and involvement (high vs. low). Chapter 2 tests the external validity of Study 1. To do this, Chapter 2 uses the same methods, procedures, and measures as used in Chapter 1, the only difference being the color of the banner ad stimulus. In Chapter 3, the factors are speed of modem connection (fast vs. slow) and involvement (high vs. low). In Chapter 4, the factors are time for task (rush vs. no rush) and involvement (high vs. low).

The results suggest that (1) small banner ads are more effective in affecting brand attitude than large banner ads under the moderate involvement conditions, (2) banner ad size, however, does not affect click-through, and (3) click-through is affected by viewers' involvement and connection speed (waiting time). Implications for web advertisers are discussed.

To my mother, *Seung-Ja Park*.

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INTRODUCTION

Even with recent "dot.com" turbulence, advertising expenditure on the World Wide Web (Web) has rapidly climbed to $8.2 billion in less than seven years (IAB, 2001). With this growth of Web advertising, researchers have focused on its effectiveness. Particularly, as banner advertising has dominated advertising expenditure on the Web accounting for over 40 % (IAB, 2001), various techniques that increase the effectiveness of banner ads have attracted researcher's attention.

For most Web advertisers, banner ads were initially defined as traffic generators (Hoffman, Novak, & Chatterjee, 1995). Because a new marketing paradigm based on the Web recognizes the importance of active Web consumers and the interaction with them, researchers have assumed *click-through* as the most important criterion of banner ad effectiveness, and they have examined techniques that increase click-through.

However, as the average banner ad only generates less than a 0.5 % viewer click-through rate (Rossiter & Bellman, 1999; Wilson, 2000), researchers are paying attention to the effectiveness of banner ads on brand building. A study conducted by Briggs and Hollis (1997) reported that one banner exposure produces a 50 % increase in consumer loyalty and as high as a 200 % increase in brand awareness. These findings imply that banner ads have value beyond click-through and are able to build effective brand images.

Considering the importance of click-through and brand building, it would be important for banner advertisers to understand which factor(s) affects these outcomes. Particularly, it would be important to distinguish factors affecting each outcome respectively. This is because attitudes motivating click-through behavior (i.e., attitude toward action) might be distinguished from the attitude toward brand (i.e., attitude toward

target) (Fishbein & Ajzen, 1975). In other words, the reasons why people click a banner ad might be different from the reasons they form a favorable brand attitude through the exposure to the banner ad. Because click-through is an action unique to the Web medium, we may identify those influential factors which are also unique to the medium. On the basis of Fishbein and Ajzen's assumption, the proposed study examines (1) if factors influencing brand attitude do affect click-through behavior as well and (2) what factors affect click-through behavior.

The literature on ad size in traditional media shows that ad size affects brands (e.g., brand quality and brand attitude, see Homer, 1995; Kirmani, 1990; Kirmani & Wright, 1989; Moriarty, 1986). The results of these studies suggest that banner ad size in Web environments also affects brand attitude. However, it is unclear if the banner ad size exerts an influence on click-through behavior. Very few studies have examined the effects of banner ad size on click-through, and the results were inconsistent (see Cho, 1999; Cho & Leckenby, 2000; Li, 1998; Li & Bukovac, 1999). Furthermore, the extremely low rate of click-through of current banner ads may indicate that banner ad size does not explain much of the variance in predicting click-through behavior.

Thus, Chapter 1 of this dissertation is designed to answer the research questions: does banner ad size affect brand attitude, and does banner ad size also affect click-through? The effectiveness of banner ad size on both brand attitude and click-through is examined using a 2 x 2 between subject factorial design. The factors are banner ad size (large vs. small) and involvement (high vs. low).

Chapter 2 is designed to test the external validity of the effectiveness of banner ad size. This study employs the same methods, procedures, and measures as used in Chapter

1, the only difference being the color of the banner ad stimulus. The purpose of Chapters 1 and 2 is to test if banner ad size affects brand attitude and click-through.

If banner ad size does not affect click-through, what other factor(s) affects click-through behavior? To answer the question, it would be important to ask "why do the majority of the current Web viewers not click banner ads?" One significant criticism expressed by many viewers about surfing the Web is that it takes a long waiting time to download materials from certain web sites (Dellaert & Kahn, 1999). One can infer that *time* (e.g., waiting time for downloading) might be a critical factor affecting click-through on banner ads.

Chapters 3 and 4, therefore, investigate the effects of time related variables on click-through behavior. Chapter 3 employs a 2 x 2 between subject factorial design. It tests the effect of the connection speed on click-through. The factors are speed of modem connection (fast vs. slow) and involvement (high vs. low). Chapter 4 examines the effect of time for task on click-through behavior. The factors are time for task (rush vs. no-rush) and involvement (high vs. low).

CHAPTER 1: EFFECTIVENESS OF BANNER AD SIZE ON BRAND ATTITUDE AND CLICK-THROUGH

CHAPTER 1-1. INTRODUCTION

Banner Ad: Background

Banner ads that are hyperlinked to an advertiser's website are one form of Web advertising (Hoffman, Novak, & Chatterjee, 1995). Banner ads are "small graphic buttons or images containing tempting information, inviting users to click for more information (Ellsworth & Ellsworth, 1997, p 87)." For example, LifeMinders.com posts a banner ad on a Yahoo search engine Web page saying "Free travel tips, LifeMinders.com. You could win $ 5000! Enter your e-mail." If a viewer clicks the banner, then, she accesses the home site of LifeMinders.com.

Since AT&T first advertised on HotWired.com in 1994 (Zeff & Aronson, 1999), banner advertising has undergone a tremendous growth. According to the IAB Internet Advertising Revenue Report (2001), banner ad took the lion's share among Internet ad formats accounting for 48% of 2000 year total revenue of Internet advertising (see Table 1). Further, the banner ad revenue ($3.8 billion) in 2000 year surpassed outdoor ad revenue ($1.8 billion) in 2000, and is approaching ad revenue for business paper, which totaled approximately $4.8 billion in 2000 (IAB, 2001).

Even with this predominant status, banner ad has problems in its development. The performance of banner ad (i.e., click-through rate) is reported to be problematic in satisfying what web advertisers envisioned a few years ago. The average banner only generates less than a 0.5 % viewer click-through rate. Considering 25% click-through rate in the beginning era of banner ad, it has become clear that web viewers are loosing

their curiosity about click-through banner ads (Gimein, 1999). This phenomenon may be a dilemma for web advertisers (e.g., online retailers like amazon.com) who consider banner advertising as a model of interactive marketing tools. Furthermore, although Briggs and Hollis argue that banner ad is effective in building brand, Savitz (1999) suggests that banner ad might have limitations in brand building. He describes well the problem of banner ad in brand building.

> "Plop, plop, fizz, fizz: People can remember the jingles from decades-old TV ads. But can you recall even one banner? (http://www.thestandard.com)"

It is likely to be difficult for brand advertisers, which are mostly marketing low involved products such as soft drink, toothpaste, laundry detergent, etc., to differentiate their brands from similar competitors by relying on such small rectangular boxes. Thus, Savitz argues "banner ads make more sense for advertisers seeking an immediate response-an online purchase or registration-than for brand advertising." (1999).

As a result, banner ad seems to have problems in both brand building and click-through. To overcome these, banner advertisers recently used various (increased size) shapes and advanced rich media technology. For example, the Internet Advertising Bureau (IAB), the leading voice of the online advertising industry, provided voluntary guidelines for seven new banner ad units; two vertical units and five large rectangular units. The new banner ad units are currently being introduced by Web advertisers and are designed to allow advertisers to exploit greater interactivity as well as expand the creativity in their banner ad messaging (IAB, 2001). By providing more information and interactive functions in banner ads, the advertisers try to increase the effects of banner ads.

Table 1.

Internet Ad Revenue, (percentage)

Year	1998(1st)	1998(2nd)	1999(1st)	1999(2nd)	2000(1st)	2000(2nd)
Banner	438 (56.5)	727 (60.9)	953 (58.6)	1623 (54.1)	2038 (50.9)	1800 (42.7)
Sponsor*	298 (38.5)	344 (28.9)	462 (28.4)	765 (25.5)	1080 (27.0)	1242 (29.4)
Interst*	27 (3.5)	62 (5.2)	79 (4.9)	120 (4.0)	120 (3.0)	190 (4.5)
Email	-	-	16 (1.0)	78 (2.6)	99 (2.5)	128 (3.0)
Classif*	-	-	-	-	223 (5.6)	400 (9.5)
Referra*	-	-	-	-	141 (3.5)	230 (5.5)
Rich M*	-	-	-	-	80 (2.0)	84 (2.0)
Keyword*	-	-	-	-	40 (1.0)	84 (2.0)
Others	12 (1.6)	113 (9.5)	117 (7.2)	414 (13.8)	179 (4.5)	62 (1.5)
Total	774	1192	1627	3000	4000	4220

Note. 1. Sponsor=Sponsorships, Interst=Interstitials, Classif=Classifieds, Referr=Referrals, Rich M= Rich Media, Keyword= Keyword Search

2. Numbers are in million dollars

3. The data are based on annual reports from the IAB (see http://www.iab.net).

Effects of Banner Ad: Brand Building and Click-through

The functional process of banner advertising is conceptually similar to the direct response advertising in traditional media such as direct mail and telemarketing. According to Rossiter and Percy (1997), direct response advertising calls for "immediate behavioral action and is directed at a relatively narrow target audience (p. 439)." If

banner advertising is conceptualized as one form of direct response advertising, the main role of banner ads is to induce click-through.

However, Rossiter and Percy also propose that a narrowly defined target audience is an important prerequisite for direct response advertising. This is because the quality of the list (a demographically or geographically defined target audience) accounts for 40 % of direct mail effectiveness. This requirement indicates that banner advertising on the Web is different from the direct response advertising in traditional media. In fact, most banner ads are posted on search engines and popular sites without considerations of sophisticated demographic, geographic or user-nonuser database (The Economist, 1999). According to the IAB Internet Advertising Revenue Report (2001), search engines and portals were reported to be the leading content genre which took 36 % of total internet advertising revenues in 2000.

In current practice, then, banner ads look more like mass ads than direct response ads. More precisely, banner ads are similar to a "double-duty" mass ad—serving to create company or brand attitude as well as to induce a direct response (Rossiter & Percy). This conceptualization of banner advertising is also reflected in a new ARF model which Harvey (1997) proposed to apply for interactive advertising.

The original ARF model was offered by the Advertising Research Foundation (ARF) to answer a question of "how media might be compared" and " how does advertising work" (Harvey, 1997, p. 11). The original ARF model has a six-stages of the advertising process; *Vehicle Distribution, Vehicle Exposure, Advertising Exposure, Advertising Perception, Advertising Communication, and Sales Response.* By criticizing a conceptual simplicity and measurement issues in the original model, Harvey updated

the original ARF model by replacing *Advertising Perception*, *Advertising Communication*, and *Sales Response* with *Persuasion* (which includes *Recall*, *Click-through*, *Interaction*, and *Attitude Shift* stages), *Leads*, *Sales*, *Profits*, *Loyal Customers*, and *Return On Investment* (ROI) (see Figure 1). Harvey proposed this new ARF model "to make the model more fully usable in helping to solve today's problems" (Harvey, 1997, p. 15). Particularly, he proposed the model to better explain the process of interactive advertising.

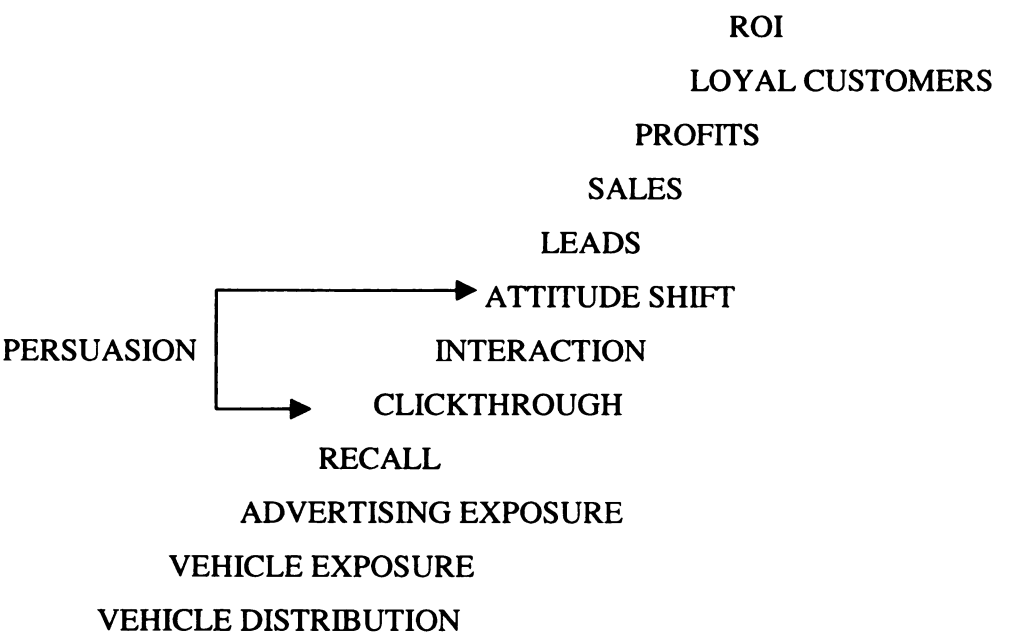


Figure 1. ARF Model Expanded for Interactive (from "The expanded ARF model: bridge to the accountable advertising figure," by B. Harvey, 1997, Journal of Advertising Research, 37, p. 17)

Readers may note that there are two important elements in the new ARF model regarding the banner ad effects. As the idea of double-duty mass ad emphasize two components of advertising effects, brand building and direct response, the new ARF

model also emphasizes both Attitude Shift (brand building) and Clickthrough (direct response) effects.

However, this new ARF model raises an interesting question regarding banner ad effects, which is a focal point of this dissertation. From a practical viewpoint, the new ARF model as a process model ignores an important reality in banner ad processing. As noted in the previous section of this study, the average click-through rate is below 0.5 %. That is, if two hundred viewers view a web page posting an advertiser's banner ad, only one viewer may click on the ad. This implies that the part of the process represented by the upper eight stages in the new ARF model (from Clickthrough to ROI) has an extremely low level of occurrence probability. If the sizable portion (two-third of the stages) of the model so rarely occurs, concerns may be raised about the utility of the model. This concern highlights a need for a new approach in understanding the effects of banner advertising, and pinpoints a key question regarding the weak relationship between Advertising Exposure and Clickthrough.

To answer this question, we first need to understand the characteristics of click-through in the Internet medium. For advertisements in traditional media, it may be reasonable to expect a strong relationship between brand attitude and purchase behavior. Thus, if an advertisement can create a favorable brand attitude, it is likely to increase attitude toward purchase and purchase behavior. For banner advertising, however, the following question arises; although a banner ad can create a favorable brand attitude, does it necessarily induce an immediate click-through behavior? Unlike purchase behavior, click-through is an action requiring an immediate response. A purchase of a favorable brand may be conducted with a time delay. Although a consumer may

postpone buying a brand for situational reasons, she may purchase the favorable brand at some later time. However, click-through may not occur if viewers do not respond immediately to a banner ad even for a favorable brand. For example, a viewer may believe that "the NextCard Visa advertised by a banner ad is a low-APR credit card" whereas she may also believe that "clicking the banner ad for NextCard will interrupt my web processing." This may be because viewers tend to have a compelling motivation to process web materials, which might suppress the viewers' immediate responses to banner ads. As Fishbein and Ajzen argue, therefore, an explanation for a person's behavior may differ from the reasons she has a particular attitude toward target. Particularly, this conceptual framework might explain why viewers do not click banner ads even with a persuasive banner ad message inducing a favorable brand attitude. It therefore promises to be a good framework for understanding click-through behavior.

The effects of banner advertising must be understood given the unique and relatively new context of the web medium. Web viewers tend to experience a deep involvement or flow state (Hoffman & Novak, 1999) with the web content due to various interactive functions of the web medium. In contrast, the interactive process of banner advertising may interrupt viewers' web process.

Although brand attitude and click-through are important outcomes that the two frameworks (double-duty mass ad and the new ARF model) emphasize, both frameworks fail to provide an understanding of how the outcomes are related to banner ad processing. According to the attitude-behavior literature in the field of social psychology, behavior is assumed to be motivated by attitude (Eagly & Chaiken, 1993). Further, Fishbein and Ajzen suggest that behavior may be motivated more by attitude toward the behavior than

by attitude toward the target. On the basis of this conceptual framework, this study examines (1) the effect of banner ad size on brand attitude, such an effect is expected to be found, (2) the effect of banner ad size on click-through behavior, such a relationship is not expected to be found, and (3) other factors which effect click-through behavior.

Effects of Banner Ad Size: Heuristic-Systematic Model (HSM)

To understand the effects of banner ad size, Chapter 1 includes a moderating variable, involvement. This is because (1) theoretically, involvement is found to moderate effects of various advertising executional cues (Petty, Cacioppo, & Shumann, 1983) and (2) involvement itself is reported to explain up to 80 % of the variance in ad effectiveness (e.g., ad recall) (Ducoffe, 1996). The heuristic-systematic model (Chaiken, 1980; Chaiken, Liberman, & Eagly, 1989) promises to be a useful theory for explaining why and when banner ad size is effective.

The model assumes "that the primary processing goal of accuracy-motivated recipients is to assess the validity of persuasive messages, and that there are two mediational paths to persuasion" (Eagly & Chaiken, 1993, p. 326). Chaiken and her colleages (1989) define systematic processing as a logical, analytical, and comprehensive processing of information to gain accurate attitudes whereas heuristic processing is "a more limited mode of information processing that requires less cognitive effort and fewer cognitive resources than systematic processing" (Eagly & Chaiken, 1993, p. 327).

They assume that systematic processing dominates when motivation and capacity for message processing are high. The quality of persuasive arguments exerts an influence on attitude judgments when processing systematically. However, the HSM does not exclude heuristic processing in such conditions. The HSM expects that "heuristic and

systematic processing can co-occur, but systematic processing typically provides people with more judgment-relevant information than heuristic processing and attenuates the judgmental impact of heuristic processing" (Eagly and Chaiken, 1993, p. 328).

In contrast, when either motivation or capacity for effortful processing is low, people judge the validity of a persuasive message by a strategic use of heuristic cues. Heuristic cues refer to "any variable whose judgmental impact is hypothesized to be mediated by a simple decision rule such as "experts' statements can be trusted" (Eagly & Chaiken, 1993, p. 327).

Because the HSM provides an important implication--different kinds of advertising appeals may be most effective for different conditions (or audiences)--the theory is useful to examine when banner ad size affects attitudes and click-through. To apply the HSM to banner ad size, the following section explores the literature on ad size in both the Internet and traditional media. In particular, the literature review focuses on why banner ad size may function as a potential heuristic cue.

Effects of Banner Ad Size on Brand Attitude

For traditional media, large ads are suggested as being more effective than small ads in getting attention and enhancing memory (e.g., Hendon, 1973). Past research on traditional media has reported that the increase in attention (often measured as recognition or recall of ad content) is proportionate to the square root of the increase in an ad area. For example, an advertiser must increase an ad's size by four times in order to double its attention value (Adams, 1926; Burtt, 1938; Franken, 1925). According to Trohdahl and Jones (1965), ad size also explains about 40% of the variation in newspaper ad readership.

More recently, it is argued that ad size is effective in communicating brand quality perceptions due to consumer inferences about the perceived cost of advertisement (Homer, 1995; Kirmani, 1990; Kirmani & Wright, 1989). According to advocates of this position, quality inferences are evoked because ad size (1) affects perceived costs, which in turn acts as a signal of advertising effort, (2) is perceived as having a correlation with product quality, and (3) mirrors a company's financial strength. In a similar vein, Moriarty (1986) also has argued that people judge the success or reputation of the business by ad size based on the idea that the larger an ad is, the more credible the business is. In sum, ad size is expected to (1) attract viewers' attention, (2) enhance viewers' memory and readership, and (3) affect viewers' brand perceptions.

Of particular interest in this research is that ad size might operate as a heuristic cue for brand attitude. If people reliably (or automatically) associate ad size with product quality and a company's financial strength, ad size would be a learned knowledge structure, which is an "available, accessible, and reliable cognitive principle," in evaluating brand quality (see Smith, 1984).

If ad size functions as such a heuristic for brands, the HSM predicts that it is effective in forming or changing brand attitude under some conditions—e.g., when people do not have ability and motivation for processing an ad message. Applying the HSM to banner ads, it is likely that banner ad size also functions as a heuristic cue for brand attitude and that it affects brand attitude for low-involved viewers.

H1: Under low involvement conditions, large banner ads are likely to be more effective than small banner ads in affecting brand attitude.

On the other hand, if banner ad size operates as a heuristic cue for brand attitude, is its operation effective under high involvement conditions? That is, if banner ad size affects viewers' judgment about the quality or image of a brand via heuristic processing, does the effect not occur when viewers are highly interested in the product or the brand?

A banner ad in the Web environment may be uninformative about brand quality because (1) the space for a banner ad is limited due to unique characteristics of the Web medium, (2) most banner ads adopt a call-to-action model (i.e., they heavily use promotions or call-to-action messages which are not relevant to brand information), and (3) the substantial portion of most banner ads is designed to attract attention. If banner ads are uninformative about brand quality, the heuristic cue (i.e., banner ad size) might exert an independent influence on brand attitude even under high involvement conditions. As the HSM expects, however, the judgmental impact of the heuristic processing may be attenuated due to viewers' high-desired confidence in their decision, which is achieved through a confident assessment of message validity. Therefore, it is expected that the judgmental impact of such a heuristic cue for brand attitude might be attenuated by systematic processing.

H2: Under high involvement conditions, large banner ads are likely to be equally effective as small banner ads in affecting brand attitude.

Effects of Banner Ad Size on Click-Through

Since the Internet emerged as a new advertising medium, there have been many efforts to develop effective banner ad techniques. The industry researchers have conducted much of research whereas few studies are found in academic circles. The content of industry research is difficult to access due to their focus on results and

recommendations without reporting the methods and analyses. The so-called "industry wisdom" seems to be derived from these industry research results as well as professionals' insights based on their career success. The review on past studies, therefore, includes only 7 academic articles that have been found by searching 4 advertising journals--Journal of Advertising Research, Journal of Current Issues and Research in Advertising, Journal of Advertising, and Proceedings of the American Academy of Advertising from 1994 to 1999—as well as using the ProQuest information system. These studies deal exclusively with the effectiveness of banner ad.

One of interesting findings in this review is that the studies focus on click-through behavior as their major dependent variable. Although brand building is another important aspect of banner advertising as a criterion of the industry evaluation of banner ads (see an example at http://www.adrelevance.com), 6 of 7 studies examined the effectiveness of banner ad techniques in terms of click-through (see Table 2).

One outcome regarding banner ad size is that large banner ads do not affect click-through although they generate attention (Li, 1998), yet Cho (1999), Cho and Leckenby (2000), and Li and Bukovac (1999) have observed that large banner ads do affect click-through. The studies employed different types of products (e.g., Levi jeans in Li and Bukovak and US Robotics in Cho), different banner ad sizes (e.g., different definition of small banners; 234 x 60 pilxels in Li and Li and Bukovak or 390 x 50 pilxels in Cho and Leckenby study), and different experimental settings (lab or field experiment), As a result, these inconsistent findings imply that there are methodological or statistical artifacts that produce differences across studies or that a moderator variable, or variables, exists.

Table 2

Studies on the Effectiveness of Banner Ad

Authors	Indep. Variables	Methods	Sample	Dependent Variables	Findings
Briggs & Hollis (1997)	Ad exposure -one exposure vs. controlled	Field experiment	1,232	Brand- awareness Consumer-loyalty	Ad exposure awareness: positiv loyalty: positive
Li (1998)	Animation -dynamic vs. still Size -large vs. small Incentive offer -Incentive vs. no	Field experiment	-	CTR	Animation n.s. Size n.s. Incentive offer sig.
Li & Bukovac (1999)	Animation -animated vs. still Size -large vs. small Search mode -surfer vs. seeker	Lab experiment	224 students	Brand recall Response time CTR	Animation recall, reaction: sig. Size reaction, CTR: sig. Search mode recall, CTR: n.s.
Cho (1999)	Animation -dynamic vs. still Size -large vs. small Relevance -relevant vs. no	Lab experiment	203 students	Intention-to-click	Animation & Size under LV condition sig. Relevance: sig. Involvement: sig.
Daugherty (2000)	Ad type -direct response vs. image ad	Lab experiment	120 students	Intention-to-click Ad likability	Ad type & Invol. intention: sig. liking: sig. Inv. x Ad type intention: sig. liking: n.s.
Cho & Leckenby (2000)	Size -large vs. small Animation -animated vs. still Involvement -high vs. low	Field experiment	817	CTR	Size & Animation under LV condition sig. Involvement: sig.
Micael Dahlén (2000)	Involvement -high vs. low	Field experiment	1,753	CTR	Involvement: sig.

Note. CTR = click-through, LV cond. = low involvement conditions

Interestingly, several studies (Cho, 1999; Dahlén, 2000; Daugherty, 2000) consistently found a main effect of product involvement on click-through behavior. The studies concluded that banner ads for high involvement products were clicked more than banner ads for low involvement products. These results might well be explained by the framework of the HSM. According to the HSM, people are motivated to assess message validity or to have a correct attitude when they process a persuasive message. Thus, people continue to invest whatever amount of effort is required to attain a sufficiently confident assessment of message validity. The sufficient confidence is achieved when people's actual confidence equals or exceeds the *sufficiency threshold*, which is a desired amount of judgmental confidence (see Eagly & Chaiken, 1993). Applying these assumptions to banner ads, viewers who are highly involved with a product might think that their actual judgmental confidence falls below the sufficiency threshold because they may have a high sufficiency threshold, but are unable to assess specific brand attributes only by processing the uninformative banner ad. In order to meet the high sufficiency threshold, the high-involved viewers might be more motivated to invest their resources, and might be more likely to click banner ads than low-involved viewers. Low involvement viewers, on the other hand, might be less motivated to assess the validity of banner ad messages, and they may be less interested in having a correct attitude toward the brand compared to high-involved viewers. They may have a low sufficiency threshold (i.e., low desired confidence level). As a result, they might be less motivated to process more information about the brand than high-involved viewers. Because click-through brings more information, which in turn requires further cognitive effort, there would be no particular motivation to click banner ads when viewers are in low

involvement conditions. They are not as likely to find it necessary to seek more information about the brand. Consequently, viewers who are low involved are less likely to click banner ads than highly involved viewers. The following hypothesis is proposed.

H3: Viewers are more likely to click banner ads when they are in high involvement conditions than when they are in low involvement conditions.

However if the size of the banner ad is increased (or decreased), can the expectation of hypothesis three be modified? In short, does the size of banner ads influence click-through? For the Internet medium, large banner ads are assumed to generate "site expectations" (Li & Bukovac, 1999) or "curiosity" (Cho & Leckenby, 2000). Although past studies did not test banner ad size relative to site expectations (or curiosity), scholars who found a positive relationship between banner ad size and click-through seem to reason that viewers expected higher quality information from the home site linked by larger banner ads. Therefore, they reason that this site expectation (or curiosity) might have a positive effect on click-through.

As discussed in the previous section, when viewers are highly involved, they might be motivated to click banner ads due to their high-desired confidence. Therefore the judgmental impact of banner ad size (as such a heuristic cue) on click-through might be attenuated due to the viewers' high-sufficiency threshold (high-desired confidence). In addition, because banner ad size also may not affect actual confidence significantly, it might not contribute to reducing viewers' processing effort, which is assumed to be "a function of the discrepancy between actual and desired levels of confidence" (Eagly & Chaiken, 1993, p. 331). As a result, it is likely that banner ad size does not affect click-through under high involvement conditions. This expectation is supported by the results

of studies conducted by Cho (1999) and Cho and Leckenby (2000). They found that under high involvement conditions, the size of banner ads made no difference in affecting click-through.

The most intriguing question is "does banner ad size affect click-through behavior under low involvement conditions?" Banner ad size may operate as a heuristic cue in affecting the attitude toward click-through when involvement is low. It may generate site expectations (Li & Bukovac, 1999) or curiosity (Cho & Leckenby, 2000). Thus, the banner ad size via heuristic processing may increase the low sufficiency threshold that low-involved viewers have.

However, click-through generally requires viewers' time (i.e., waiting time to download material and processing time of the downloaded material) and cognitive effort to process the downloaded material. Low-involved viewers should invest their additional time and cognitive resources in order to satisfy their increased sufficiency threshold created through the heuristic processing. These resource requirements might be a significant barrier for the low-involved viewers to click banner ads even with the increased sufficiency threshold. Particularly, as most viewers in Web environments often experience involvement or flow with Web content (see Hoffman & Novak, 1999), it may be an economically or psychologically huge investment for viewers to click when not involved with a banner's message content.

Eagly and Chaiken (1993) pointed out that "attitudes formed on the basis of heuristic processing alone will tend to be less stable and less predictive of subsequent behavior than those formed on the basis of systematic processing" (p. 327, also see Chaiken, 1980). This might be because behavioral choices require that viewers invest

their resources, however rudimentary. Thus, the click-through behavior might be motivated not only by the banner ad stimulus but also by factors such as resource investment related with the behavior. Consequently, it is likely that the judgmental impact of a heuristic cue (banner ad size) on click-through will be attenuated by the influence of other factors uniquely related to click-through behavior. This may be consistent with the reasoning by Fishbein and Ajzen (1975), i.e., attitude toward action should be distinguished from attitude toward target.

In sum, banner ad size might not play any role in making viewers click banner ads under both high and low involvement conditions. Although banner ad size might function as a heuristic cue for brand attitude, it may not be effective as a heuristic cue for click-through behavior.

H4: Regardless of involvement conditions, large banner ads are likely to be equally effective as small banner ads in affecting click-through.

CHAPTER 1-2. METHOD

Design and Participants

Chapter 1 investigates whether under certain conditions large banner ads will enhance viewers' brand attitude and click-through in comparison with small banner ads. Chapter 1 uses a 2 x 2 between-subjects factorial design. The design consists of 2 factors: banner ad size (large vs. small) and involvement (high vs. low). Sixty-one students participated in this experiment on a voluntary basis.

Stimuli

Two test banner ads for a fictitious brand of sunglasses were professionally prepared. The sunglasses were selected for the study because it was salient for student consumers. Following the new Interactive Marketing Units (IMUs) banner ad standard (IAB, 2001), a large banner ad was defined as 336 by 280 pixels. The Internet Advertising Bureau (IAB) recently announced its guidelines for seven new ad units; two vertical units and five large rectangular units. According to the IAB report (2001), these units are currently being introduced by Web publishers. A small banner ad was defined as one that is "50 % proportionally reduced from those in large banner ads" (Li & Bukovac, 1999, p. 345).

The use of the new IMU banner ad standard was (1) to reflect the current use of banners, and (2) to induce more perceivable size variation between the test banner ads. Compared with the traditional banner ads, which are long in the horizontal direction, this new shape of banners, which are long in both vertical as well as horizontal directions, might induce more perceivable size variation when they are proportionally reduced by 50 % .

The test banner ads in each group were identical except for their size. Similar to most banner ads in reality, each test banner ad had 5 elements (i.e., product picture, company logo, brand name, body copy, and call-to-action message). The banner ads were executed on a red background (see Appendix A).

Involvement Induction

Involvement was varied by outcome-relevance instructions because "they make salient to message recipients the relevance of an issue to their currently important goals or outcomes (Johnson & Eagly, 1989, p. 292)." First of all, participants were told that the purpose of the experiment was to obtain their responses to a new brand of sunglasses. However, to induce high involvement, half of the participants were told that (1) the sunglasses will be introduced this summer to the Michigan area, which is the place most participants are assumed to reside. (2) according to Consumer Reports, there are substantial differences in quality and style among leading brands of sunglasses (see Park & Young, 1986). (3) Their responses to the brand would provide critical information to the marketer and researchers. Participants in this high involvement condition were also told that (4) they would make a choice between $1 cash payment as compensation for participation, or a chance to win the advertised sunglasses (see Appendix B).

For the low involvement condition, the other half of the participants were told that (1) the sunglasses would be introduced next year in the Southern U.S., a region in which most participants are assumed not to reside. (2) according to Consumer Reports, there are few differences in quality among leading brands of sunglasses. (3) They would be given a chance to be selected as a winner of one of three $ 10 cash gift among three hundred participants (see Appendix B).

The banner ad for the sunglasses was expected to be more personally relevant to participants who anticipate that they can immediately purchase the brand within their living area. Also, involvement was expected to be high (or low) when emphasizing critical differences (or no differences) among leading brands of sunglasses (Park & Young, 1986). In addition, the sunglasses ad was expected to be more personally relevant to participants who anticipated making a choice if they received either the cash or the product than to those expecting to receive only a low probability chance to win a small cash gift (see Celsi & Olson, 1988; Miniard, Bhatla, Lord, Dickson, & Unnava, 1991; Petty, Cacioppo, & Shumann, 1983). A pretest using 30 students confirmed that the involvement induction worked as intended ($t(28)=2.40$, $r=.31$, $p=.023$).

Procedure

The experiment was conducted in a computer lab on the campus of a Midwest university. When participants checked in for a session, they were assigned randomly to a seat. After all participants were seated, they were given a consent form to sign. Then, they were instructed to read the first page of a computer screen. The content of the first page varied depending on whether they were in the high or low involvement group. Next, they were instructed to click to see a second page that was designed to induce a normal viewing environment (Macinnis & Park, 1991).

To induce a normal Web processing environment, (1) the stimulus (banner ads) were posted on a Web site titled PsychWeb 2001 which was designed by a professional Web designer for this experiment. (2) Participants were instructed to read all the content of the Web site, and (3) they were told that they could scroll or click when they wanted to do so.

After they read the second page, they were asked to click the mouse to begin the session. The experimental website titled PsychWeb 2001 consisted of three pages. The content of the web site deals with an issue of how people judge the attractiveness of human faces. The content was designed to attract viewers' attention and interest because web viewers in reality are assumed to navigate mostly relevant web sites in terms of their interest or curiosity and to experience a sizable level of involvement or flow. Therefore, the experimental web site was intended to make the participants feel involved, and this might represent the actual process of web content and banner ads viewing(see Appendix A).

As soon as they finished reading the Web content, an instruction page popped up guiding them to respond to a print questionnaire. The questions in this booklet specifically addressed this study's dependent variables. One session lasted about 20 minutes.

Dependent Measures

Brand Attitude. Brand attitude was measured on a three item, seven-point semantic differential scale, with subjects' evaluations of the brand ranging from good to bad, superior to inferior, high quality to low quality (Kirmani & Zeithaml, 1993) (see Appendix D). Although there are various measures for brand attitude, this scale was selected because ad size is argued to be related with quality perceptions (Homer, 1995; Kirmani, 1990; Kirmani & Wright, 1989). Items were coded from 1 to 7, with larger numbers indicating more positive outcomes.

Click-Through. Click-through was measured by differentiating ID numbers that were self- reported on the print questionnaire. Participants were assigned an ID number

and asked to enter the number on the print questionnaire. If the participant clicked on the concluding text, a new web page opened up with the assigned ID number. If the participant instead clicked on the banner ad, a page opened assigning a different ID number. Click-through was measured, therefore, by the ID entered on the print questionnaire (see Appendix E).

Involvement. Involvement was measured to check if the induction worked. As high-involvement viewers should attend to a banner ad more than low-involvement viewers (Macinnis & Park, 1991), involvement is assessed by a two-item scale that asked whether they paid not much (1) or very much (7) attention to the banner ad and whether they concentrated very little (1) or very hard (7) (see Appendix D). Items were coded from 1 to 7, with larger numbers indicating more involvement.

Demographic and Use Variables. Age, gender, Internet-surfing hours, web content involvement, perceived mouse functionality, perceived modem speed, and product familiarity were measured to check any differences between groups. Web content involvement was measured because the stimulus banner ads were placed in the Web site (PsychWeb2001) and viewer web content processing efforts may affect the banner ad processing efforts. Four involvement items from the Personal Involvement Inventory (Zaichkowsky, 1994) were employed to measure web content involvement (see Appendix D). This scale was used because it is known as a context-free measure applicable to involvement with advertising (Zaichkowsky, 1994). This study selected a subset (four items) of the PII scale which the author believed best represented involvement. Another reason for the use of four items instead of ten items is to reduce the participants' response time and effort. The reliability and uni-dimensionality of the

selected items were reported in the result section. The perceived mouse functionality was also measured because click-through behavior may be influenced by the functionality of the mouse in the computer lab (see Appendix D). Perceived modem speed was measured because modem speed may affect viewers' processing of web content and banner ads. Product familiarity (see Appendix D) was also measured because it is reported to influence information processing activities (Bettman, & Park, 1980; Srull, 1983). If a person is interested in or familiar with sunglasses, he or she might be more interested in the banner ad and may click-through.

CHAPTER 1-3. RESULTS

The data analyzed were from 61 participants, 29.5 % of whom were male and 70.5 % of whom were female. The ages ranged from 18 to 32 years old ($\underline{M}$ = 20.49). To assess the content validity of the scales it was necessary to test them for unidimensionality. To this end confirmatory factor analysis was performed (Hunter & Gerbing, 1982), and tests of internal consistency and parallelism were conducted for each of the measures. The data were fitted with the posited five-construct model (i.e., web content involvement, brand attitude, banner ad involvement, product knowledge, and mouse functionality). Inspection of the factor loadings and errors produced from the discrepancy between the obtained and predicted correlations resulted in exclusion of one item (one item for web involvement). This one item (see Appendix D) was excluded from the data analysis because it lacked parallelism (Hunter & Gerbing, 1982).

For all participants, an average-scale score on each construct was computed using the included items (see Appendix D). Web content involvement was represented by three items. The mean score was 4.84 ($\underline{SD}$ =1.17). The reliability of this scale was assessed using coefficient alpha, and was $\underline{\alpha}$ = .71. Brand attitude was measured by three items. The mean scale score was 4.60 ($\underline{SD}$ =1.04) with a reliability of $\underline{\alpha}$ = .90. Banner ad involvement was measured by two items. The mean scale score was 3.00 ($\underline{SD}$ =1.64) with a reliability of $\underline{\alpha}$ = .93. Product knowledge was measured with two items. The mean scale score was 3.84 ($\underline{SD}$ =1.48) with a reliability of $\underline{\alpha}$ = .86. Mouse functionality also was measured with two items. The mean scale score was 4.42 ($\underline{SD}$ =2.02) with a reliability of $\underline{\alpha}$ = .72. Each of five scales formed uni-dimensional solutions in which both checks for internal consistency and parallelism yielded trivial errors. The other scales--

perceived connection speed (M=5.87 & SD =0.90), reading speed (M=4.31 & SD =1.29), and average web surfing hour (M=2.36 & SD =1.14)-- were represented by a single item. Thus, their reliability cannot be estimated.

Control Checks

A t-test suggested that the involvement induction was successful (t(59)=2.43, r=.30, p=.018). The results revealed that high involvement participants concentrated more and paid more attention to the banner ad (M=3.50) than did low involvement participants (M=2.52).

A two-way independent groups analysis of variance (ANOVA) was performed to assess any differences among the four groups (high involvement & large banner ad, high involvement & small banner ad, low involvement & large banner ad, and low involvement & small banner ad) on each of the control variables. No difference was found for product knowledge ($F(3,57)=1.27$, $p > .10$), web content involvement ($F(3,57)=.41$, $p > .10$), mouse functionality ($F(3,57)=.33$, $p > .10$), perceived connection speed ($F(3,57)=.53$, $p > .10$), reading speed ($F(3,57)= .37$, $p > .10$), gender ($\chi^2(3, N=61) = 4.27$, $p > .10$), age ($F(3,57)= .24$, $p > .10$), and average web surfing time ($F(3,57)= 1.71$, $p > .10$).

Hypotheses Tests

Hypothesis one posited that under low involvement conditions large banner ads are likely to be more effective than small banner ads in affecting brand attitude. Hypothesis two expected that under high involvement conditions large banner ads are likely to be equally effective as small banner ads in affecting brand attitude. A two-way independent groups analysis of variance was performed to test these hypotheses. Table 3

presents the ANOVA results, and indicates no contradictory interaction effect between banner ad size and involvement on brand attitude ($F(1,60)=2.04$, $p>.10$). Thus, the data are not consistent with hypothesis one and two.

Table 3

Effects of Banner Ad Size and Involvement on Brand Attitude: Chapter 1

Variable	SS	df	MS	F	P
Involvement	3.38	1	3.38	3.50	.07
Size	4.63	1	4.63	4.80	.03
I X S	1.97	1	1.97	2.04	.16
Total	64.91	60			

Table 4

Brand Attitude Means and (standard deviations): Chapter 1

	High involvement	Low involvement
Small banner ad	5.29 (.94)	4.46 (.82)
Large banner ad	4.38 (1.12)	4.27 (1.03)

Note. Brand attitude is a three 7-point scale ranging from 1 (bad, inferior, and low quality) to 7 (good, superior, and high quality) for the advertised sunglasses brand.

As Table 4 shows, however, the high mean (5.29) in the high involvement and small banner ad condition is substantially different from the others (t value for the contrast = 3.15, $p< .01$; t values for other contrasts < 1.52, $p> .14$). Banner ads induced a more favorable brand attitude when highly involved viewers saw small banner ads than any other condition (i.e., low involvement and small banner ad condition, low involvement and large banner ad condition, and high involvement and large banner ad

condition). The results indicate an interaction between involvement and banner ad size, although not the type of interaction predicted (Rosenthal & Rosnow, 1985).

Hypothesis three predicted that viewers are more likely to click banner ads when they are in high involvement conditions than when they are in low involvement conditions. Table 5 shows no explicit interaction effect on click-through between involvement and size. A two-way independent groups analysis of variance also revealed no interaction effect ($F(1,60)= .821$, $p>.10$).

Table 5

Click-Through Proportions: Chapter 1

	High involvement	Low involvement
Small banner ad	.53	.13
Large banner ad	.40	.20

Therefore, a chi-square analysis was performed to test hypothesis three which predicts a positive relationship between involvement and click-through (see Table 6). Participants who were in the high involvement conditions clicked the banner ads more often (46%) than those who were in the low involvement conditions (16%) ($\chi^2(1, N=61) = 6.63$, $p<.05$, $r=.33$). These data were consistent with the hypothesis.

Hypothesis four posited that large banner ads are likely to be equally effective as small banner ads in affecting click-through. The data are consistent with this hypothesis. Table 7 indicates no main effect of banner ad size on click-through. No substantial difference in click-through was found between the large banner ads (30%) and the small banner ads (48%) ($\chi^2(1, N=61) = .04$, $p>.10$, $r= -.01$).

Table 6

Relationship between Involvement and Click-Through: Chapter 1

	High involvement	Low involvement
Click	14 (46%)	5 (16%)
No Click	16 (54%)	26 (84%)
Total	30 (100%)	31 (100%)

$\chi^2(1, N=61) = 6.63, p<.05, r=.33$

Table 7

Relationship between Banner Ad Size and Click-Through: Chapter 1

	Large Banner Ads	Small Banner Ads
Click	9 (30%)	10 (48%)
No Click	21 (70%)	21 (52%)
Total	30 (100%)	31 (100%)

$\chi^2(1, N=61) = .04, p>.10, r= -.01$

CHAPTER 1-4. DISCUSSION

Effects of Ad Size and Involvement on Brand Attitude

The analysis of the data revealed two unexpected findings. First, the effects of banner ad size on brand attitude were found under the high involvement conditions rather than under the low involvement conditions. Second, small banner ads were more effective in affecting brand attitude than large banner ads, although this effect is overridden by the substantial interaction effect.

Banner ad size was expected to be a heuristic cue affecting brand attitude under *low* involvement conditions. Why, then, was it effective under the *high* involvement condition in this study? One possible reason might be explained by the actual levels of involvement, which were induced in this study. The involvement induction check revealed that the low involved participants had a low involvement level (M=2.5) and the highly involved participants actually had a moderate level of involvement (M=3.5) (Involvement was a 7-point scale ranging from 1, not much attention and very little concentration, to 7, very much attention and very hard concentration, for the banner ads).

Using Kahneman's (1973) Elastic Capacity Model, Stiff (1994) proposed that, under low outcome-relevant involvement conditions, people are unmotivated to engage in systematic or heuristic processing. At moderate levels of involvement, people are motivated to engage in both modes of processing. At high involvement conditions, people are primarily motivated to engage in systematic processing (see p. 185). To the extent that Stiff is correct, banner ad size might have had no influence at all for the low involved participants in this study. For the moderately involved participants, banner ad size as a heuristic might have had an effect in formulating brand attitude.

Hypothesis one predicted that *large banner ads are likely to be more effective than small banner ads* in affecting brand attitude under low involvement conditions. However, the findings revealed that *small banner ads were more effective than large banner ads* in inducing a favorable brand attitude under the moderate involvement conditions. These unexpected findings may be a result of the unique characteristics of the Web medium and Web advertising. Hoffman and Novak (1996) report that web viewers often experience a "loss of their sense of time and self-consciousness" due to the interactive nature of Web surfing. They defined the viewers' experience as a flow-state, and argue that flow is a central construct in Web navigation. In particular, when people are in the flow-state, they might filter out unrelated thoughts and stimuli (e.g., banner ad) to focus on the activity. In such a case, banner ads may distract viewers and induce a negative experience. Interestingly, subtle changes in web advertising design and technique can demand viewers' behavioral efforts (e.g., mouse click and scrolling), which make it more difficult to filter out or avoid unwanted web advertisements. Further, these behavioral costs may result in a negative perception due to "irritation" and "interruption" (see Li, Edwards, & Lee, 2001). Simply put, a larger banner ad requires more effort to avoid it.

In fact, the participants in this study may have experienced such a flow state. They were required to participate in a voting process and the data show that they were involved ($\underline{M}$=4.84) with the Web content. They also were unwittingly required to invest behavioral effort (i.e., scrolling down) to avoid the banner ads because (1) the stimulus banner ads were placed in a middle point of the web page, and (2) the banner ads were not a traditional full banner size (big wide and short length) but a new IAB rectangular

shape (medium wide and medium length). A post-hoc analysis of the banner ads revealed that the large banner ad required four mouse click scrolls to see the entire banner ad whereas the small banner ad required only two mouse click scrolls. Also, the participants in the large banner ad conditions had eight mouse click scrolls to arrive to the concluding text of the web page whereas the participants in the small banner ad size conditions had six mouse click scrolls to reach the concluding text. Therefore, the large banner ads required more time and effort than the small banner ads.

To summarize, larger ads required greater time and effort if the participant wished to avoid it. That effort may have fostered a negative attitude toward that advertisement and perhaps the brand. Chapter 1 raises a question of our traditional understanding of ad size effect on brand attitude. Contrary to the advertising literature on ad size (Homer, 1995; Kirmani, 1990; Kirmani & Wright, 1989; Moriarty, 1986), ad size in the web medium may operate negatively in formulating brand attitude.

Effects of Ad Size and Involvement on Click-Through

Consistent with previous studies (Cho: 1999; Dahlén, 2000; Daugherty, 2000), participants clicked banner ads more when they were in high involvement conditions than when they were in low involvement conditions. The results, however, showed that banner ad size did not affect click-through. Scholars who suggest that large banner ads are more effective than small banner ads in affecting click-through (Cho, 1999; Cho & Leckenby, 2000; Li & Bukovac, 1999) will not find evidence to support their results in this study. Instead, these results are consistent with those suggesting that banner ad size does not affect click-through (Li, 1998) or that "ad size does not influence choice for electronic directories" (Hoque, & Lohse, 1999).

It is concluded that factors motivating target attitude are not necessarily the factors motivating behavior. Specifically, banner ad size is an important factor affecting brand attitude whereas it is not a factor affecting click-through. As Fishbein and Ajzen suggest in their Theory of Reasoned Action, a particular behavior may be predicted from the attitude toward the behavior, not the attitude toward the target. Applying their theory to the banner-advertising context, a viewer's click-through (i.e., volitional behavior) may be determined by the viewer's attitude toward clicking it (the subjective norm component in the theory may be eliminated in explaining click-through because the click-through in cyber-space is not likely to be sensitive to group pressure). The findings in this study support Fishbein and Ajzen's conceptual framework, and suggest a need for a further study that examines the belief components of click-through attitudes.

Chapter 2 was conducted to see if the results obtained through Chapter 1 might be generalized across banner ad colors, and, therefore, validate the concluding arguments in Study1.

CHAPTER 2. TEST OF EXTERNAL VALIDITY OF CHAPTER 1: USING DIFFERENT BANNER AD COLOR

CHAPTER 2-1. INTRODUCTION

The purpose of Chapter 2 is to test the external validity of Chapter 1. To do this, it examined whether the effects of banner ad size were influenced by the color of the banner ads. It is commonly assumed that color affects viewers' physiological reactions, preferences, emotions, and behavior. Experimental studies that have employed physiological scales such as galvanic skin response have reported that red and yellow were more arousing than blue and green (Wilson, 1966). Also many studies on the psychological effects of color in marketing suggest that red-colored backgrounds induce greater arousal than blue-colored backgrounds, whereas products presented with blue-colored backgrounds are preferred over products presented with red-colored backgrounds (Middlestadt, 1989, Bellizzi & Hite, 1992). Importantly, Boettiger (1998) argues that green, blue, and yellow colors in banner ads outperform red, white, and black in terms of click-through (also see Marx, 1996). Because viewers may be accustomed to clicking linked messages, which are mostly colored by blue, it is reasonable to expect a main effect of banner ad colors on click-through.

However, a theoretical interest in this study is not in the main effect of the banner ad color. The interest is to test whether the hypotheses in Chapter 1 will be supported across different colors of the banner ads.

Thus, Chapter 2 used the exact same methods, procedures, and measures as used in Chapter 1, the only difference being the color of the banner ad stimulus. Whereas the background color of the banner ad used in Chapter 1 was red, Chapter 2 employed blue.

It is widely accepted by color theorists that there are three dimensions of color (i.e., hue, saturation, and brightness, see Gorn, Chattopadhyay, Yi, & Dahl, 1997; Valdez & Mehrabian, 1994), and recent ads often use a sophisticated mixture of these dimensions. In Chapter 2, the blue color of the banner ads was defined as 0.0.255 RGB values whereas the red color of the banner ads in Chapter 1 was defined as 255.0.0 RGB values. The two colors were among 216 Web-Safe Colors (Aquent, 2000), and were selected for the induction of hue, as these two hues represented the "bluest" blue and the "reddest" red, respectively.

As discussed in Chapter 1, the same hypotheses were proposed and tested to support the conceptual arguments of Chapter 1.

Although the banner ad color varies,

H5: Under low involvement conditions, large banner ads are likely to be more effective than small banner ads in affecting brand attitude.

H6: Under high involvement conditions, large banner ads are likely to be equally effective as small banner ads in affecting brand attitude.

H7: Viewers are more likely to click banner ads when they are in high involvement conditions than when they are in low involvement conditions.

H8: Large banner ads are likely to be equally effective as small banner ads in affecting click-through.

CHAPTER 2-2. RESULTS

The data analyzed were from 67 participants, 41.8 % of whom were male and 58.2 % of whom were female. The ages ranged from 18 to 25 years old (M = 20.30). A confirmatory factor analysis was performed to assess the uni-dimensionality of each scale. The data were fitted with the posited five-construct model (i.e., web involvement, brand attitude, banner ad involvement, product knowledge, and mouse functionality). Inspection of the factor loadings and errors produced from the discrepancy between the obtained and predicted correlations resulted in the exclusion of one item (one item for web involvement). This one item was excluded from the data analysis because it lacked parallelism (Hunter & Gerbing, 1982).

For all participants, an average-scale score on each construct was computed using included items (see Appendix D). Web involvement was represented by three items. The mean score was 4.94 (SD =1.17). The reliability of this scale was assessed using coefficient alpha, and was α = .74. Brand attitude was measured by three items. The mean scale score was 4.54 (SD =1.02) with a reliability of α = .90. Banner ad involvement was measured by two items. The mean scale score was 2.79 (SD =1.15) with a reliability of α = .82. Product knowledge was measured with two items. The mean scale score was 3.88 (SD =1.45) with a reliability of α = .84. Mouse functionality also was measured with two items. The mean scale score was 4.43 (SD =2.00) with a reliability of α = .73. Each of five scales formed uni-dimensional solutions in which both checks for internal consistency and parallelism yielded trivial errors. The other scales--perceived connection speed (M=5.73 & SD =0.95), reading speed (M=4.25 & SD =1.13), and average web surfing hour (M=2.56 & SD =1.05)-- were represented by a single item.

Control Checks

A t-test suggested that the involvement induction was successful ($t(65)=2.79$, $r=.33$, $p<.01$). The results revealed that high involvement participants paid more attention and concentration to the banner ad ($M=3.15$) than did low involvement participants ($M=2.44$).

A two-way independent groups analysis of variance was performed to assess any differences among the four groups (high involvement and large banner ad, high involvement and small banner ad, low involvement and large banner ad, and low involvement and small banner ad) on each of the control variables. No difference was found for product knowledge ($F(3,63)=.09$, $p>.10$), web content involvement ($F(3,63)=.06$, $p>.10$), mouse functionality ($F(3,63)=.63$, $p>.10$), perceived connection speed ($F(3,63)=1.82$, $p>.10$), reading speed ($F(3,63)= .63$, $p>.10$), gender ($\chi^2(3, N=67) = 5.83$, $p>.10$), age ($F(3,63)= 1.36$, $p>.10$), and average web surfing time ($F(3,63)= .87$, $p>.10$).

Hypotheses Tests

Hypothesis five posited that under low involvement conditions large banner ads are likely to be more effective than small banner ads in affecting brand attitude. Hypothesis six expected that under high involvement conditions large banner ads are likely to be equally effective as small banner ads in affecting brand attitude. A two-way independent groups analysis of variance was performed to test these hypotheses. Table 8 presents the ANOVA results, and indicates no interaction effect of banner ad size and involvement on brand attitude ($F(1,66)= .24$, $p>.10$). Thus, the data are not consistent with hypothesis five and six.

Table 8

Effects of Banner Ad Size and Involvement on Brand Attitude: Chapter 2

Variable	SS	df	MS	F	P
Involvement	.53	1	.53	.57	.453
Size	8.86	1	8.86	9.51	.003
I X S	.24	1	.24	.26	.614
Total	68.19	66			

As Table 9 shows, however, the mean number (5.06) of the high involvement and small banner ad condition is significantly different from the others (t value for the contrast = 2.47, $p < .05$; t values for other contrasts < 1.94, $p > .05$). Banner ads induced a more favorable brand attitude when highly involved viewers saw small banner ads than any other condition (i.e., low involvement and small banner ad condition, low involvement and large banner ad condition, and high involvement and large banner ad condition). The results indicate the interaction between involvement and banner ad size, although not the type of interaction predicted.

Table 9

Brand Attitude Means and (standard deviations): Chapter 2

	High involvement	Low involvement
Small banner ad	5.06 (.95)	4.76 (.94)
Large banner ad	4.22 (.98)	4.16 (.98)

Note. Brand attitude is a three 7-point scale ranging from 1 (bad, inferior, and low quality) to 7 (good, superior, and high quality) for the advertised sunglasses brand.

Hypothesis seven predicted that viewers are more likely to click banner ads when they are in high involvement conditions than when they are in low involvement conditions. Table 10 shows no interaction effect on click-through between involvement and size. A two-way independent groups analysis of variance also revealed no interaction effect ($F(1,66)=.01$, $p>.10$).

Table 10

Click-Through Proportions: Chapter 2

	High involvement	Low involvement
Small banner ad	.56	.24
Large banner ad	.47	.12

Therefore, a chi-square analysis was performed to test hypothesis seven which predicts the positive relationship between involvement and click-through (see Table 11). Participants who were in the high involvement conditions clicked more banner ads (52%) than those who were in the low involvement conditions (18%) ($\chi^2(1, N=67) = 8.52$, $p<.01$, $r=.36$). These data were consistent with the hypothesis.

Table 11

Relationship between Involvement and Click-Through: Chapter 2

	High involvement	Low involvement
Click	17 (52%)	6 (18%)
No Click	16 (48%)	28 (82%)
Total	33 (100%)	34 (100%)

$\chi^2(1, N=67) = 8.52$, $p<.01$, $r=.36$

Hypothesis eight posited that large banner ads are likely to be equally effective as small banner ads in affecting click-through. The data are consistent with this hypothesis. Table 12 indicates no main effect of banner ad size on click-through. No significant difference in click-through was found between the large banner ads (29%) and the small banner ads (39%) ($\chi^2(1, N=67) = .74, p>.10, r= -.11$).

Table 12

Relationship between Banner Ad Size and Click-Through: Chapter 2

	Large Banner Ads	Small Banner Ads
Click	10 (29%)	13 (39%)
No Click	24 (71%)	20 (61%)
Total	34 (100%)	33 (100%)

$\chi^2(1, N=67) = .74, p>.10, r= -.11$

CHAPTER 2-3. DISCUSSION

Chapter 2 replicates Chapter 1 with banner ad color variation. One interesting finding was that there was no main effect for color when comparing the results of Study2 with those of Study1. Chapters 1 and 2 treated color as if it was perceived the same way by all participants. However, the participants within each group might have experienced color variation as individual color perception is *subjective* and *relative* to context (Barry, 1997; Romano, Lee, Rodrigues, & Sankarshana, 1999). For example, a color may be perceived to be lighter or darker depending on each person's physical, mental, and environmental situations. Thus, the effects of the color difference between Study1 and 2 might have been attenuated if the participants had responded to the experimental colors with individual differences of sensation.

In addition, because the color variation in Chapters 1 and 2 was executed on the top and bottom border of the banner ad background (not on the product and ad messages), the main effect of color might have been weak in affecting brand attitude and click-through. While no differences were found, it may be that the experiment was insufficiently sensitive to reveal those differences if they did exist.

Analyses suggest that (1) under moderate involvement conditions small banner ads are more effective than large banner ads in affecting brand attitude, (2) viewers more frequently click through banner ads when they are in higher involvement conditions than when they are in lower involvement conditions, and (3) banner ad size does not affect click-through. The results are consistent with those in Chapter 1. Combined with the results of Chapter 1, these findings provide strong evidence that factors motivating brand

attitude are not necessarily the factors motivating click-through behavior. To follow up, two studies were conducted to identify factors that might affect click-through.

CHAPTER 3: EFFECTS OF WAITING TIME ON CLICK-THROUGH

CHAPTER 3-1. INTORDUCTION

Chapters 1 and 2 found that banner ad size did not affect click-through, although it did affect brand attitude. The following question is, then, "what factor affects click-through?" Because the current click-through rate on banner ads is extremely low, it would be reasonable to ask, "why do so few viewers click banner ads?"

Both the industry researchers and scholars note waiting time in the Web process as a significant barrier to the future success of the medium. The waiting time during Web surfing can be defined as the time for downloading materials. To solve the waiting time problem, the Internet industry has focused on connection speed, and recent researchers have explored the effect of "perceptions control" (Weinberg, 2000) or "uncertainty reduction" (Dellaert & Kahn, 1999).

The literature on service evaluation suggests a negative relationship between waiting time and service quality evaluations (Katz, Larson, & Larson, 1991; Taylor, 1994). Within a computer-based context, it is found that system response time is negatively related to computer user satisfaction (Schleifer & Amick, 1989).

It is expected that this waiting time also affect viewers' click-through on banner ads. Because time is considered by many to be a scarce resource (Leclerc, Schmitt, & Dubé, 1995), waiting time in the Web process may also imply a resource investment (or additional cost) to viewers.

According to the HSM, the amount of a resource people are motivated to invest is a function of the discrepancy between actual and desired levels of confidence (The HSM predicts that people are motivated to assess message validity when they process a

persuasive message, and that people continue to allot a sizable portion of their resource to attain a sufficiently confident assessment of message validity. People invest their maximum amount of a resource until their actual confidence equals or exceeds the sufficiency threshold). As discussed in Chapters 1 and 2, when viewers are highly involved with a banner ad, they may have a high sufficiency threshold but have insufficient information about the product advertised. They are likely to be motivated to invest a large amount of their resource not only to process the banner ad message but also to acquire enough information about the product from the linked Web site. In contrast, when viewers are less involved with a banner ad, they may have a low sufficiency threshold. They might have less motivation to process the banner ad systematically, and are less motivated to acquire any further information about the product compared to highly involved viewers. Therefore, Chapters 1 and 2 expected that under high involvement conditions viewers would click banner ads, but under low involvement conditions they would click banner ads less frequently (i.e., Hypothesis 3 & 7).

However if the cost of click-through is increased due to slow connection speed, the expectations of Chapters 1 and 2 might be modified. Particularly, viewers might not click low involvement banner ads because they have to invest a large amount of time to meet their low sufficiency threshold. This is because waiting time increases the total cost which viewers have to invest for their sufficiency threshold. As the study of economics of information argues, it may be the case that the marginal cost of search exceeds the marginal benefit (Smith, Venkatraman, & Dholakia, 1999). As a result, when viewers are less involved with a banner ad, they are unlikely to click the banner ad because of the increased cost.

H9: Under long waiting time (i.e., slow speed of modem connection) conditions, viewers are unlikely to click low involving banner ads, and when involvement is high or waiting time is short they are likely to click banner ads.

CHAPTER 3-2. METHOD

Design and Participants

Chapter 3 investigates whether under certain conditions waiting time affects viewers' click-through. Chapter 3 uses a 2 x 2 between-subjects factorial design. The design consists of 2 factors: duration of waiting time (long vs. short) and involvement (high vs. low). Sixty one students participated in this experiment on a voluntary basis.

Stimuli

Given the importance of maintaining precise control over waiting time, a professional Web designer developed a personal Web site. The delivery speed of information was altered using the Adobe Photoshop™ software package. Because it is technically difficult to vary modem speed of the computers in the computer lab, speed of connection was defined by the number of invisible (i.e., a transparent color that viewers cannot actually recognize) snow balls designed to activate the experimental web pages. The average file size of the fast connection conditions was 6,784 bytes (i.e., the connection speed of a cable modem: the speed of data going through the cable modem is about 100 times faster than in a standard 56K computer) whereas the size of the slow connection conditions was 10,647 bytes (i.e., the average waiting time of the three web pages was around 14 seconds to download). Simply put, the large file web page loads more slowly simulating a slower modem speed, but is otherwise identical to the small file web page. Half of the participants were assigned to the fast connection conditions, and the other half to the slow connection conditions.

The banner ad used in Chapter 1 was posted on the Web site. The size of the banner ad was 336 by 280 pixels. The test banner ads in each group were identical. Each

banner ad also had 5 elements (i.e., product picture, company logo, brand name, body copy, and call-to-action message) on a red background (see Appendix A).

Involvement Induction

The method and procedure for involvement induction were the same as Chapter 1.

Procedure

The procedure also was the same as used in Chapter 1.

Dependent Measures

This study used the same measures of click-through, involvement, web involvement, product knowledge, mouse functionality, perceived connection speed, reading speed, and web surfing hour as used in Chapter 1.

CHAPTER 3-3. RESULTS

The data analyzed were from 61 participants, 37.7 % of whom were male and 62.3 % of whom were female. The ages ranged from 18 to 31 years old (M = 20.08). A confirmatory factor analysis was performed to assess the uni-dimensionality of each scale. The data were fitted with the posited four-construct model (i.e., web involvement, banner ad involvement, product knowledge, and mouse functionality). Inspection of the factor loadings and errors produced from the discrepancy between the obtained and predicted correlations resulted in the exclusion of no items.

For all participants, an average-scale score on each construct was computed (see Appendix D). Web involvement was represented by three items. The mean score was 4.51 (SD =1.30). The reliability of this scale was assessed using coefficient alpha, and was α = .80. Banner ad involvement was measured by two items. The mean scale score was 2.88 (SD =1.55) with a reliability of α = .96. Product knowledge was measured with two items. The mean scale score was 3.63 (SD =1.55) with a reliability of α = .86. Mouse functionality also was measured with two items. The mean scale score was 4.36 (SD =1.99) with a reliability of α = .77. Each of four scales formed uni-dimensional solutions in which both checks for internal consistency and parallelism yielded trivial errors. The other scales--perceived connection speed (M=5.41 & SD =1.31), reading speed (M=4.11 & SD =1.37), and average web surfing hour (M=2.18 & SD =1.13)-- were represented by a single item.

Control Checks

A t-test suggested that the involvement induction was successful ($t(59)=2.75$, $r=.34$, $p<.01$). The results revealed that high involvement participants paid more

attention and concentration to the banner ad (M=3.38) than did low involvement participants (M=2.35). The other control check also showed that the participants assigned to the fast modem speed conditions perceived a faster connection speed (M=6.00) than those assigned to the slow modem speed conditions (M=4.88) ((t(59)=3.67, r=.43, p<.001).

A two-way independent groups analysis of variance was performed to assess any differences among the four groups (high involvement and fast modem speed, high involvement and slow modem speed, low involvement and fast modem speed, and low involvement and slow modem speed) on each of the control variables. No difference was found on product knowledge (F(3,57)=.41, p >.10), web content involvement (F(3,57)= 1.50, p >.10), mouse functionality (F(3,57)= .93, p >.10), gender (χ^2(3, N=61) = 1.89, p>.10), age (F(3,57)= 1.10, p >.10), and average web surfing time (F(3,57)= .86, p >.10).

Hypothesis Test (H 9)

Hypothesis nine posited that under long waiting time (i.e., slow speed of modem connection) conditions, viewers are unlikely to click low involved banner ads, and when involvement is high or waiting time is short they are likely to click banner ads.

Table 13 shows no interaction effect on click-through between involvement (high vs. low) and modem speed (long waiting vs. short waiting time for downloading). A two-way independent groups analysis of variance also revealed no interaction effect (F(1,60)=.45, p>.10).

Because there is no interaction, a chi-square analysis was performed to assess the relationship between involvement and click-through (see Table 14). There is a substantial effect for involvement (χ2(1, N=61)=6.78, r=.33, OR=5.68). The odds of

someone clicking through in the high involvement conditions is 5.68 times that of the odds of someone clicking through in the low involvement conditions.

Table 13

Click-Through Proportions: Chapter 3

	High involvement	Low involvement
Fast connection speed	.57	.20
Slow connection speed	.23	.00

Table 14

Relationship between Involvement and Click-Through: Chapter 3

	High involvement	Low involvement
Click	12 (38%)	3 (10%)
No Click	19 (62%)	27 (90%)
Total	31 (100%)	30 (100%)

$\chi^2(1, N=61) = 6.77, p<.01, r=.33$

There is also a substantial effect for waiting time ($\chi 2(1, N=61)=5.31, r=.29$, OR=4.28) (see Table 15). The odds of someone clicking through when the waiting time is short are 4.28 times greater than the odds of someone clicking through when the waiting time is longer.

As a result, the data are not consistent with the hypothesis nine. Instead, this study found that both involvement and waiting time affected click-through, but they did so additively.

Table 15

Relationship between Connection speed and Click-Through: Chapter 3

	Fast connection	Slow connection
Click	11 (38%)	4 (13%)
No Click	18 (62%)	28 (87%)
Total	29 (100%)	32 (100%)

$\chi^2(1, N=61) = 5.31, p<.01, r=.29$

CHAPTER 3-4. DISCUSSION

The results just described concerning impacts of connection speed and involvement on click-through show that the data are not consistent with hypothesis nine, and that both involvement and waiting time affect click-through additively.

The findings in Study3 support the literature which suggests that waiting time affects viewers' surfing behavior (Dellaert & Kahn, 1999; Weinberg, 2000). In the context of banner advertising, this study confirms that viewers are more likely to click through banner ads when they are in short waiting time conditions than when they are in long waiting time conditions. However, one may raise a question, "why are viewers averse to waiting for a few seconds in their Web surfing process?" A time cost of downloading may not be a big waste in terms of the absolute time spent. One click-through may take only a few seconds. In addition, waiting time does not demand any cognitive effort from viewers. Compared with waiting time in off-line service process (e.g., waiting time for riding an airplane), it might be a minimal time cost. However, it seems that waiting time in Web environments is treated with greater importance than that in off-line service process.

Interestingly, waiting time in the Web surfing process may require something more than the actual time cost to viewers. As mentioned in the discussion section of Study1, unique web characteristics may be a reason. One may consider the psychological impact of "flow" to understand why viewers are averse to waiting in their Web surfing process. If the Web surfing process is a consistent sequence of mentality and activity such as playing tennis, and it is characterized by flow, waiting time may be perceived as a significant disturbance for the Web surfing process. In short, although waiting time in

the Web process may be trivial in terms of the absolute time cost, it may be a tremendous obstacle for most Web users who are experiencing flow.

CHAPTER 4: EFFECTS OF TIME FOR TASK ON CLICK-THROUGH

CHAPTER 4-1. INTRODUCTION

The purpose of Chapter 4 is to further examine the impact of time. Instead of varying the downloading time (i.e., waiting time) as in Chapter 3, this study varies time requirements for a specified task to measure its effect on click-through behavior of banner ads. For example, viewers may have enough time (resource) to complete their Web task. They may not perceive time as a significant issue and feel no need to rush. On the other hand, when the time for an assigned Web task is limited, the viewer may feel rushed. The former viewer might not consider time as a critical factor while the latter viewer might place a high premium on time as a resource. For each condition, a relative time value might vary remarkably.

This relative value of time resources is likely to affect click-through behavior on banner ads. Chapters 1 and 2 proposed that under high involvement conditions viewers would click banner ads, but even under low involvement conditions they would click banner ads, but only somewhat less frequently (i.e., Hypothesis 3 & 7). However, if the cost of click-through is increased (or decreased) due to the added premium on time, the expectations of Chapters 1 and 2 might be modified. Particularly, viewers might not click low involved banner ads because they will not invest their invaluable resource (i.e., time) to satisfy their low sufficiency threshold. The increased value of time resources due to insufficient time for task might prevent viewers from clicking any low involving banner ads. The following hypothesis is proposed.

H10: Under rush for task conditions, viewers are unlikely to click low involving banner ads, and under high involvement or no-rush for task conditions they are likely to click banner ads.

CHAPTER 4-2. METHOD

Design

Chapter 4 investigates whether under certain conditions viewers' time for a Web task will affect click-through. This study uses the same methods, procedures, and measures as Chapter 3, and the only difference between Chapter 3 and Chapter 4 is the source of time limitations when viewers click banner ads. Whereas the connection speed of the information delivery was used as the source of time cost in Chapter 3, Chapter 4 varies time for the task. The design consists of 2 factors: time for task (rush vs. no rush) and involvement (high vs. low). Sixty students participated in this experiment on a voluntary basis.

Induction of Time for task

The time for task was varied by different instructions during the participants' processing of the Web site. To induce the rush conditions, the following two instructions were inserted between the Web pages:

- Between the first page and the second page of the experimental Web site

Sorry to interrupt your Web viewing. Your processing speed is somewhat slower than the average speed of other students. Your reading speed is a very important factor in this study. Can you please try to read more quickly.

- Between the second page and the third (last) page of the Web site

Sorry again! Your Web processing is still slow compared the average of other students. Please try to read more quickly.

To induce the no-rush conditions, the instructions read:

- Between the first page and the second page of the Web site

Sorry to interrupt your Web viewing. Your processing speed is somewhat faster than the average speed of other students. Your reading speed is a very important factor in this study. Please take your time and read more carefully.

- Between the second page and the third (last) page of the Web site

Sorry again! Your Web processing is still fast compared the average of other students. Please take your time and read more carefully.

CHAPTER 4-3. RESULTS

The data analyzed were from 60 participants, 35 % of whom were male and 65 % of whom were female. The ages ranged from 18 to 24 years old (M = 20.55). A confirmatory factor analysis was performed to assess the uni-dimensionality of each scale. The data were fitted with the posited four-construct model (i.e., web involvement, banner ad involvement, product knowledge, and mouse functionality). Inspection of the factor loadings and errors produced from the discrepancy between the obtained and predicted correlations resulted in the exclusion of no items.

For all participants, an average-scale score for each construct was computed (see Appendix D). Web involvement was represented by three items. The mean score was 4.33 (SD =1.45). The reliability of this scale was assessed using coefficient alpha, and was α = .86. Banner ad involvement was measured by two items. The mean scale score was 3.10 (SD =1.74) with a reliability of α = .93. Product knowledge was measured with two items. The mean scale score was 3.68 (SD =1.63) with a reliability of α = .90. Mouse functionality also was measured with two items. The mean scale score was 4.71 (SD =1.85) with a reliability of α = .70. Each of four scales formed uni-dimensional solutions in which both checks for internal consistency and parallelism yielded trivial errors. The other scales--perceived connection speed (M=5.52 & SD =1.41), and average web surfing hour (M=2.77 & SD =1.28)-- were represented by a single item.

Control Checks

A t-test suggested that the involvement induction was successful ($t(58)=2.27$, $r=.29$, $p<.05$). The results revealed that high involvement participants paid more attention and concentration on the banner ad (M=3.60) than did low involvement

participants (M=2.63). The other control check also showed that the participants who were assigned to the rush conditions perceived faster reading speed (M=5.31) than those who were assigned to the no-rush conditions (M=2.79) ((t(58)=6.29, r=.64, p<.001).

A two-way independent groups analysis of variance was performed to assess any differences among the four groups (high involvement and rush, high involvement and no-rush, low involvement and rush, and low involvement and no-rush) on each of the control variables. No difference was found on product knowledge (F(3,58)=2.03, p >.10), web content involvement (F(3,58)= .45, p >.10), mouse functionality (F(3,58)= .84, p >.10), gender (χ2(3, N=60)=4.44, p>.10), age (F(3,58)= .35, p >.10), and average web surfing time (F(3,58)= .25, p >.10).

Hypothesis Test (H 10)

Hypothesis ten predicts that under rush for task conditions, viewers are unlikely to click low involving banner ads, and under high involvement or no-rush for task conditions they are likely to click banner ads.

Table 16 shows no interaction effect on click-through of involvement (high vs. low) and time for task (rush vs. no-rush). A two-way independent groups analysis of variance also revealed no interaction effect (F(1,59) <.01, p >.10).

Table 16

Click-Through Proportions: Chapter 4

	High involvement	Low involvement
No rush	.38	.13
Rush	.44	.19

Because there is no interaction, a chi-square analysis was performed to examine the relationship between involvement and click-through (see Table 17). There is a substantial effect for involvement ($\chi 2(1, N=60)=4.71$, r=.28, OR=3.44). The odds of someone clicking through in the high involvement conditions is 3.44 times that of the odds of someone clicking through in the low involvement conditions.

Table 17

Relationship between Involvement and Click-Through: Chapter 4

	High involvement	Low involvement
Click	12 (41%)	5 (16%)
No Click	17 (59%)	26 (84%)
Total	29 (100%)	31 (100%)

$\chi 2(1, N=60)=4.71$, r=.28

There is no significant effect for time for rush ($\chi 2(1, N=60) = .28$, p>.10, r=.07) (see Table 18). In sum, the data are not consistent with hypothesis ten. Instead, this study found that only involvement affected click-through.

Table 18

Relationship between Time for Rush and Click-Through: Chapter 4

	No-rush condition	Rush condition
Click	7 (25%)	10 (31%)
No Click	21 (75%)	22 (69%)
Total	28 (100%)	32 (100%)

$\chi 2(1, N=60) = .28$, p>.10, r=.07

CHAPTER 4-4. DISCUSSION

The results of Study4 are not consistent with hypothesis ten. The finding indicates that only involvement affects click-through. Participants who were highly involved with the banner ads clicked more than participants who were less involved with the banner ads. An unexpected finding in this study was that no difference between rush and no-rush conditions was found in click-through behavior. One possible explanation is that the participants actually might not have rushed (or no-rushed) in processing the banner ads because the induction of time for task was based on web content overall, not just the banner ads.

GENERAL DISCUSSION

One of the most critical questions on this study from web ad experts asks "why do you study banner ads, which have been proved to be ineffective (i.e., most people do not click banner ads)?" There are two reasons; (1) the comment suggests that we do not need to understand why most people do not click banner ads. If a lesson, or a strategy for future development of web ad technology exists, it may be learned from our previous failures. If we understand why most people do not click banner ads, then we gain valuable insight for future web ad development. (2) Web advertising technology has shown remarkable speed in its development. As a result, many academicians and practitioners in the web-advertising field seem to be interested in new technologies and their practical applications. However, few have raised questions of the conceptual issues of why some advertising techniques do (or do not) work in the new medium. To fill a void in the research literature, and to establish a strong theoretical foundation, studies questioning conceptual issues are essential to advertising research.

This study showed that banner ad size affected brand attitude. Interestingly, the small banner ads were found to be more effective in producing positive brand attitude than the large banner ads. A possible explanation for this unexpected finding is that larger ads may require greater time and effort if the participant wishes to avoid it than small banner ads. That effort may induce a negative attitude toward that advertisement, and perhaps the brand. The results signal a warning for web advertisers to be cautious in designing web ads. In particular, web advertisers and designers need to understand unique characteristics of the web medium, because the negative effects of banner ad size are thought to be related to web characteristics (see discussion section in Chapter 1). For

example, many recent banner ads employ techniques that attract viewers' attention, however, it may be problematic in terms of brand attitude. Pop-up ads, warning-message ads, and moving banners may be irritating, and thus, may result in a negative outcome for brand. An implication from the findings in this study is that banner ads should be designed to require no behavioral efforts which may distract viewers' web content processing.

One interesting trend in web advertising research is that most studies investigate a direct relationship between stimulus (ad technique) and behavioral response (click-through) without examining intervening hypothetical constructs, e.g., brand attitude and click-through attitude. This is because the new advertising medium provides easy-to-use online tracking software, and click-through is a critical concern for web advertisers. However, to have a rich understanding of the phenomenon of web ad processing, researchers need to investigate the attitude construct "which has been postulated to motivate behavior and to exert selective effects at various stages of information processing" (Eagley & Chaiken, 1993, p.1). In particular, the attitude toward click-through may be a key construct to understand why people click or not click. The conceptual base is derived from the idea of Fishbein and Ajzen; actions can be explained via attitude toward the actions rather than attitude toward targets. The findings in this study also emphasize the importance of attitude toward behavior (i.e., click-through attitude).

The findings of a waiting time effect on click-through in this study explain one aspect of interactive technology applications in web advertising. Recent developments of rich media technology help viewers to save downloading or extra time effort (e.g., a

drop-down menu or direct links to a specific page, not a initial home page). In addition, the technology lets viewers interact with banner ads without ever having to leave their current site (e.g., see examples at http:// www.enliven.com). The greatest strength of these rich media banners may be to lessen viewers' processing efforts on banner ads as well as to provide rich information.

This study raises more questions than it answers. First, why are small banner ads more effective in affecting brand attitude than large banner ads? Second, what is the effect of the flow experience on banner ads? Third, how can the components of click-through attitude be clearly identified. Answers to these questions will further our understanding and provide guidelines for web advertising development.

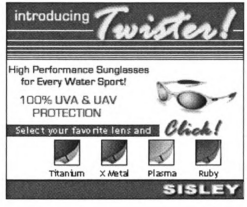
To extend the scope of this study's findings, future research needs to employ diverse types of products, banner shapes, and banner ad positions. Because this study used only one product, one shape and one position of banners as the stimulus, the findings are limited to the product, shape and position tested.

APPENDICES

APPENDIX A

Large Banner Ad (Chapters 1, 3, & 4)

Small Banner Ad (Chapters 1, 3, & 4)



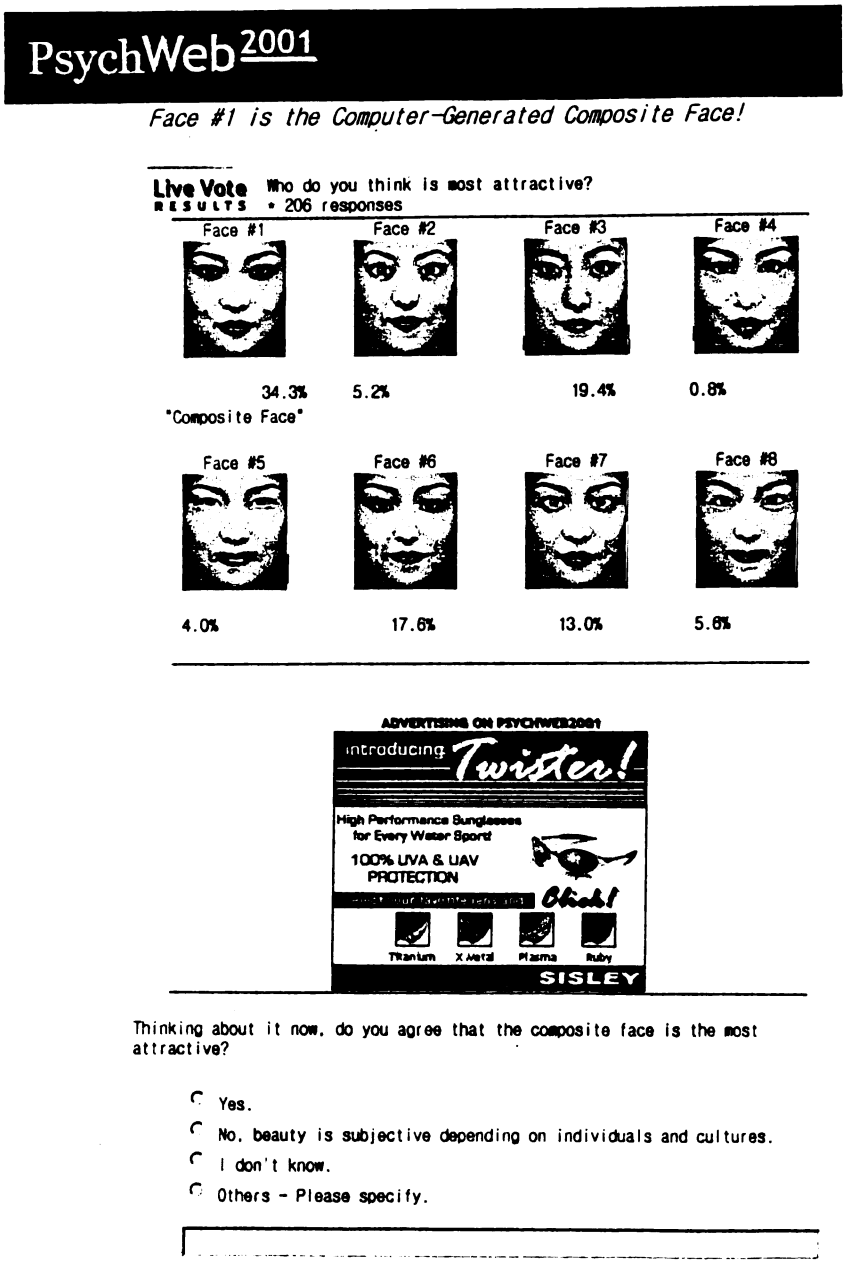
Experimental Web Pages Posting Banner Ads

Page 1. Title page: "Attractive Faces Are Only Average?"

Page 2. Voting page: "Who Do You Think Is Most Attractive?"

Page 3. Voting result page: "Face #1 is the Computer-Generated Composite Face!"

Page 3 (Example)



APPENDIX B

High Involvement Induction

Thank you for your participation in this study.

The purpose of this study is to obtain your reactions to a new brand of sunglasses. The sunglasses will be introduced to the Michigan area this summer.

According to Consumer Reports, there are substantial differences in quality and style among leading brands of sunglasses sold in the U.S. Therefore, before launching its on-line marketing, the manufacturer of the sunglasses, as well as this MSU research project team, is interested in your reactions to the new brand and a Web ad for the brand. Your responses to the brand will provide critical information to the marketer and researchers.

To compensate you for participation in this study, we will give you one of two options.

- The first option is $1 cash for participating.
- The second option is a chance to win the advertised sunglasses instead of the $1 cash payment. We will select randomly three winners among those who choose this second option.

After finishing this experiment, you will be asked to choose if you want the cash gift or if you want to enter the lottery.

Please click HERE to view the next page.

Low Involvement Induction

Thank you for your participation in this study.

The purpose of this study is to obtain your reactions to a new brand of sunglasses. The sunglasses will be introduced in the Southern U.S. market next year.

According to Consumer Reports, there are few differences in quality among leading brands of sunglasses sold in the U.S. Therefore, before launching its on-line marketing, the manufacturer of the sunglasses is interested in your reactions to the brand and a Web ad for the brand.

To compensate you for participation in this study, we will randomly select three winners among 300 participants to receive $ 10 cash.

Please click HERE to view the next page.

APPENDIX C

Please carefully read the instructions below.

You will see a banner ad for the sunglasses. To create a normal viewing environment, you will see the banner ad posted on the last page of a 3-page Web site, titled "PsychWeb 2001." PsychWeb 2001 deals with an issue of how people know whether or not a face is beautiful.

We know this situation is somewhat different from an ordinary Web viewing experience, but we would like you to try to keep this instruction in mind. Just read all the content of the Web site. You may scroll down or click whatever you want as if you were processing an interesting Web site at home.

After viewing the content of the Web site, please respond to the print questionnaire booklet which includes 20 short multi-item questions.

This study will take less than 10 minutes. Please take your time.

CLICK HERE TO VIEW PSYCHWEB 2001.

APPENDIX D

Web Involvement

Please make a check that represents your opinion in the scales below.
Provide the best estimate you can. Be sure to complete all of the questions.

To me the content of PsychWeb 2001 is:

boring	____:____:____:____:____:____:____	interesting*
relevant	____:____:____:____:____:____:____	irrelevant
appealing	____:____:____:____:____:____:____	unappealing
involving	____:____:____:____:____:____:____	uninvolving

Note. * This item was excluded from the final analyses because it lacked parallelism (see Hunter & Gerbing, 1982).

Brand Attitude

> **Banner ads** are graphic images containing tempting information, inviting users to click for more information. For example, the PsychWeb 2001 site posts a banner ad for sunglasses.

What is your overall evaluation on the **sunglasses** advertised by the banner?
Please provide the best estimate you can.

good	____:____:____:____:____:____:____	bad
superior	____:____:____:____:____:____:____	inferior
high quality	____:____:____:____:____:____:____	low quality

Banner Ad Involvement

How much attention did you pay to the **banner ad** for the sunglasses?

not much ____:____:____:____:____:____:____ very much

How much did you concentrate on the **banner ad** for the sunglasses?

very little ____:____:____:____:____:____:____ very hard

Product Knowledge

Rate your knowledge of sunglasses, as compared to the average college student

One of the least Knowledgeable____:____:____:____:____:____:____ One of the most knowledgeable

Please make a check that describes your familiarity with sunglasses.

not at all familiar____:____:____:____:____:____:____extremely familiar

Mouse Functionality

What is your overall evaluation on the mouse that you are using?

easy to use ____:____:____:____:____:____:____ difficult to use

fit in my hand ____:____:____:____:____:____:____ does not fit in my hand

Connection Speed

Do you think the connection speed of the PsychWeb 2001 is slow or fast?

very slow ____:____:____:____:____:____:____ very fast

Reading Speed

Did you read the PsychWeb 2001 fast or slowly, compared with your normal web viewing ?

very slow ____:____:____:____:____:____:____ very fast

Average Web Use

How much time do you spend Web surfing in a day?

- less than 10 minutes - 11 to 30 minutes - 31 minutes to an hour

- one to two hours - more than two hours

APPENDIX E

Method of Click-through Measure

1. Click-through: If participants clicked on the experimental banner ad, the following page opened up with an assigned ID number (i.e., C12), which indicates click-through.

> You have successfully finished the Web viewing exercise.
>
> Before responding to the print questionnaire,
>
> (1) Please enter your ID number (your id is **C12**) in the box at the bottom right of your print questionnaire.
>
> (2) Close this window, and complete your print questionnaire.

2. No Click-through: If participants instead clicked on the concluding text, the following page opened up with an assigned ID number (i.e., N12), which indicates no click-through.

> You have successfully finished the Web viewing exercise.
>
> Before responding to the print questionnaire,
>
> (1) Please enter your ID number (your id is **N12**) in the box at the bottom right of your print questionnaire.
>
> (2) Close this window, and complete your print questionnaire.

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