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Intrusive Technology: Bartering and Stealing Consumer Attention

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When you eat, just eat. When you read the newspaper, just read the newspaper. Don't do anything other than what you are doing.—Zen teacher Seung Sahn

We live in an age full of distractions with an ever-increasing number of stimuli competing for our attention. Our cell phones ring, our pagers beep, our computers herald the arrival of instant messages and e-mail. When we watch television, the bottom third of the screen is often devoted to advertisements for upcoming shows. On the typical TV news program, we must simultaneously parse the main story, the news ticker running underneath, the stock market indexes in the corner, as well as the ubiquitous network logo or “bug.”

Marketers, well aware of the myriad of competing stimuli, have

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become quite adept at placing ads anywhere our eyes may stray. Advertisements now adorn supermarket floors, the screens of exercise bikes, airport baggage carousels, the stickers on bananas, even the bottoms of urinals (although one might wonder what symbolic associations that type of ad elicits). Unfortunately, as Seung Sahn's words highlight, there are costs associated with distraction and divided attention—costs vividly demonstrated in Strayer, Drews, Crouch and Johnston's (chapter 4 this volume) work on cell phone use while driving. However, despite their differences, there is one point on which marketers, Zen masters, and psychological researchers are in full agreement: Attention is a limited and valuable resource.

The recognition that attention is a limited and valuable resource has a number of ethical implications for marketing. First, because attention to advertisements represents an allocation of limited resources, consumers should receive something of worth in exchange for their attention. Thus, an ethical distinction may be drawn between situations in which consumers barter their attention (e.g., commercial television, ad-sponsored web sites) and situations in which marketers steal consumer attention (e.g., unsolicited telemarketing, billboards). Second, for bartering-related arrangements to be truly ethical, both consumers and marketers must have an accurate sense of the worth of the resources being exchanged. This chapter begins by considering the distinction between bartering and stealing attention and the ways in which consumers perceive their own attentional resources. These points are then examined empirically in a series of studies that explore the distraction and persuasion effects of online advertisements.

Bartering and Stealing Consumer Attention

Bartering attention refers to situations in which consumers opt to attend to advertisements in exchange for products or services they receive at reduced or no monetary cost. Bartered attention can be seen most prominently in the mass media. Television programs are broadcast along with the sponsoring commercials. Newspapers and magazines are subsidized in part by the ads interspersed with the articles. Internet web sites are paid for by the banner ads that border each page. In these cases, consumers receive desired content in exchange for their attention.

Over time, however, marketers have steadily eroded the exchange rate by demanding more attention for less content. The half-hour television program today is substantially shorter than it was 30 years ago. Tech-

nologies such as CASH (Kuczynski, 2000) are used to harvest up to four minutes of extra advertising time out of an hour of talk radio by cutting superfluous pauses between words and shortening extended phonemes within words. On the Internet, yesterday's rectangular banner ads have evolved into today's pop-ups, "skyscraper" ads, and sponsored links atop a page of search engine results.

By providing the same (or, in some cases, reduced) content in exchange for greater quantities of attention, these developments could be seen as questionably ethical alterations to the consumer-marketer relationship. Of course, consumers retain the option to reject the content if the attentional cost grows too high. But marketers often attempt to phase in additional advertisements gradually, so the change will not be noticed by consumers. Even more clearly unethical are situations in which marketers obtain consumer attention but consumers receive nothing in return—in other words, situations in which marketers steal consumer attention. Telemarketing and unsolicited commercial e-mail ("spam") are probably the most salient and reviled examples of this type of advertising, but they are far from the only ones. Ads steal consumers' attention while consumers ride the bus, drive down the highway, wait on hold, and stand in line at the supermarket.

It has been argued that consumers receive valuable information in exchange for their attention to these types of ads. However, this exchange differs in an important respect from the bartering transactions described earlier. Consumers bartering their attention retain the option to say no—to turn off the TV, to close their web browser. Consumers whose attention is stolen cannot opt out. Their resources are allocated and expended without their consent. It is notable, in this regard, that junk faxes were outlawed because the lost resources (e.g., paper, telephone lines) were tangible. Cognitive resources, in contrast, enjoy far less protection. How do consumers perceive the distinction between bartering and stealing attention? It seems to depend on whether the advertisement is focal (i.e., in the center of attention) or peripheral (i.e., in the visual or sensory periphery).

Focal versus Peripheral Advertisements

Consumers seem to have little patience for focal media that steal their attention. Consumer sentiment against telemarketing and spam—two highly focal media—is sufficiently negative that both media have been targeted by legislation. Consumers also seem to resent attempts to add an attentional cost to a product that already has a monetary cost. For example, New York City recently ended a pilot program that placed television

sets with custom programming and advertisements in taxis, in part because of negative reactions to the ads (Feuer, 2003). There has also been a backlash, publicized by organizations such as Commercial Alert and the aptly named didntialreadypayforthismovie.com, against movie theaters that show commercials before the previews. However, both of these examples consisted of focal advertisements targeted at a captive audience, and as such, they are precisely the type of ad likely to incur consumer ire.

Consumers appear to have substantially greater tolerance for peripheral ads, even those for which they get nothing in return. Billboards, for example, are considered quite innocuous (Wood et al., 2002). Why do consumers care so much less about peripheral advertising? Perhaps because they perceive that the presence of peripheral ads costs them nothing. This stands in contrast to the visceral experience of expending resources attending to unwanted focal advertisements (e.g., a telephone solicitation during dinner). Such perceptions would have both practical and ethical implications for consumers' decisions to barter their attention. First, if consumers perceive that peripheral ads consume no attentional resources, they may require little in return for their attention to such ads. Second, if consumers are incorrect in their perceptions, then they cannot barter their attention knowledgeably and ethically.

These considerations are particularly relevant in the context of a new marketing model that enables individual consumers to choose whether to pay money for a product or to barter their attention for an ad-sponsored version (e.g., Eudora in "Paid mode" versus "Sponsored mode," Qualcomm, 2000; NetZero's "Platinum Service" versus "free service," NetZero, n.d.). Eudora's "Sponsored mode," for example, provides the same functionality as the "Paid mode," but instead of paying \$49.95, customers accept the presence of visually peripheral ads that appear whenever the product is used.

To examine consumers' perceptions of ads similar to those found in these ad-sponsored products, we asked 90 undergraduate Internet users how much they believe they are affected by Internet banner ads. On a 7-point scale, with 1 indicating that "Banner ads don't affect me at all" and 7 indicating "Banner ads have a very strong effect on me," respondents reported that Internet banner ads were almost completely ineffective, with fully 49 percent reporting that banner ads had no effect whatsoever. Interestingly, this invulnerability to advertising appears to apply only to the respondents themselves and not to their peers. Participants indicated that a comparable peer-group member ("the typical NIU student") is significantly more affected by Internet banner ads than they are themselves.

Clearly, marketers and consumers have very different perspectives

regarding consumers' attentional resources. By forgoing monetary payment, marketers demonstrate that they believe they are getting something of value (consumer attention) in exchange for the products they are providing. The results of our survey suggest that consumers, in contrast, perceive that they are getting something of value (desired products) at no cost whatsoever—a perspective that marketers may encourage by describing the products as “free” (e.g., “The Eudora 4.3 release offers three user-selectable modes, including a new sponsor-supported mode that provides the full-featured program to consumers for free”; Qualcomm, 2000, ¶1).

The Present Experiments

To test whether marketers or consumers are correct in their beliefs regarding consumers' attentional resources, we conducted a series of studies that examined the distraction and persuasion effects of online advertising. In order to provide the most stringent test of the effects of online advertising, we modeled our ads after the least intrusive type of online advertising we could find: the nonanimated, static, visually peripheral ads that appear in Eudora's “Sponsored Mode” (about which one reviewer explained, “Personally, I find the little ads so inoffensive that I can't imagine why anyone would choose the partly disabled Light mode over the ad-sponsored one”; Moore, 2000, ¶36).

We focused on three possible effects of online ads: distraction, recognition, and persuasion. Significant distraction and persuasion effects would suggest that consumers are affected by visually peripheral ads in ways they currently deny, whereas significant recognition and persuasion effects would suggest that marketers are correct in their assumptions regarding the efficacy of visually peripheral ads.

In the present experiments, participants performed a focal task (solving anagrams) in the center of a computer screen while, depending upon condition, zero, one, or more than one advertisement appeared in the periphery. In order to examine the effects of ad competition and ad clutter (a problem of increasing concern for Internet advertisers), three ad-present conditions were included. The first ad-present condition (one ad) had one static ad on the screen. The second ad-present condition (two ads) introduced ad competition by simultaneously placing a second static ad on the screen. In the third ad-present condition (dynamic ads), the ads moved across the screen and became animated when the participant moved the mouse over either ad.

The focal task consisted of solving a series of anagrams. An anagram is a word puzzle that consists of a series of scrambled letters that can be

reordered to form one or more words. For example, "rissneoapu" can be rearranged to form the word *persuasion*. Anagrams were selected because (1) they are cognitively demanding; (2) they require complex input from the participant to solve; (3) they require visual attention to the center of the screen, but only for a limited portion of the solving time; and (4) they are engaging and enjoyable, as suggested by the variety of anagram-related web sites on Google's (n.d.) Recreation > Humor > Wordplay > Anagrams directory and as rated by participants in our studies.

We manipulated the difficulty of the focal task by increasing the number of letters in the anagram. Participants in the difficult anagram condition solved five-letter anagrams (which are frequently used in other studies—see Mayzner and Tresselt, 1958), while those in the easy anagram condition solved four-letter anagrams. Several factors are known to influence anagram solution speed, the most important of which are, word frequency (Mayzner and Tresselt, 1958; Tresselt and Mayzner, 1968), word imagery (Dewing and Hetherington, 1974), and letter repetition (Mayzner and Tresselt, 1966). Therefore, word frequency and word imagery were equated across difficulty conditions. Words with repeated letters were not used.

Participants were instructed to solve as many anagrams as possible in 10 minutes. After one minute, participants were given the option to skip to the next anagram. This provided two measures of distraction: the number of anagrams solved and the number of anagrams skipped.

After the anagram task, recognition and persuasion were assessed. It was predicted that the presence of ads would distract participants from the focal task. It was further predicted that participants would show significant recognition of the ads displayed during the anagram task compared to a set of distractors, and that the displayed ads would be rated as significantly more persuasive than the distractors. Finally, it was predicted that competition would reduce an ad's effectiveness (as measured by recognition and persuasion), but that this reduced effectiveness would be mitigated, at least in part, by increased ad salience. Specifically, it was predicted that making the competing ads dynamic and interactive would increase recognition and persuasion, possibly to the level of a single static ad presented without competition. This latter prediction is consistent with Li and Bukovac (1999), who found that animation increased recall for banner ads.

Distraction-related predictions were tested using between-subjects ANOVAs that examined the number of anagrams solved (and, separately, the number of anagrams skipped) across the anagram difficulty and ad type conditions. Recognition-related predictions were tested using mixed-

model ANOVAs that examined recognition accuracy for viewed versus unviewed ads across the anagram difficulty and ad type conditions. Persuasion-related predictions were tested with analogous mixed-model ANOVAs.

Experiment 1

Three hundred forty-three Northern Illinois University undergraduates were randomly assigned to solve either easy (4-letter) or difficult (5-letter) anagrams in the presence of no ads, one static ad, two static ads, or two dynamic ads. The ads varied in size from 143×144 pixels to 153×150 pixels. Each ad consisted of the name of a fictitious web site printed next to a picture (e.g., professor.com with a drawing of professor lecturing to students; see Sagarin, Britt, Heider, Wood, and Lynch, in press, for an extended discussion of the materials and results of these studies). Eight stimulus ads were created for the experiment, and four additional distractor ads were created for the two static ads and two dynamic ads conditions.

Upon entering the laboratory, participants were seated in front of a computer running a custom computer program written in Microsoft Visual Basic. The experimenter typed in the participant's randomly assigned participant number, which indicated the difficulty of the anagrams the participant would solve and whether there would be advertisements on the screen while the participant solved the anagrams. The experimenter then left the room, and the participant completed the experiment at his or her own pace. The initial screen contained the following instructions:

Hi. Welcome to the Software Study. In this study, you will be using a custom software program written to simulate the types of software that people typically use on personal computers (such as the Eudora e-mail program or software to connect to the Internet and surf the Web). As with some of these other programs, this program was available for free because it contains advertisements.

For participants in the no ads condition, the instructions then said, "After finishing the task (described below) you will be asked to rate a short series of ads." The rest of the instructions were the same for all participants:

The experiment should take approximately 30 minutes to complete. During the experiment, you'll be solving a series of anagrams. Each anagram consists of a word with the letters rearranged. Your task is to figure out what the word is. Anagrams will appear one at a time on the screen. When you've figured out the word, type it in and press the button. If you're correct, the next anagram will appear. Each anagram will remain on the screen for a maximum of 3 minutes, but if you get stuck, you can skip to the next anagram after 1 minute. If you take longer than 3 minutes on an anagram, the next one will appear automatically. You'll have a total of 10 minutes to finish as many anagrams as possible.

When the participant finished reading the instructions, a practice screen appeared. The practice screen was included to ensure that participants knew what anagrams were and how to solve them before beginning the anagram task. In a Preliminary Experiment that did not have a practice screen, a substantially higher proportion of participants skipped the first anagram than any subsequent anagrams, suggesting that participants may not have fully understood the anagram task until the answer to the first anagram was revealed. The number of letters in the practice anagrams corresponded to the participant's Anagram Difficulty condition. For example, a participant in the easy anagram condition saw the following instructions, "Here are some practice anagrams. For example, if the anagram is 'adso,' you can rearrange the letters to make the word 'soda.'" Below these instructions were two anagrams for the participant to solve. When he or she had solved both anagrams (or pressed the corresponding "Show the solution to this anagram" button), the anagram task began.

The anagram task consisted of a series of anagrams presented in the same order for all participants. As described in the instructions, participants had 10 minutes to solve as many anagrams as possible. If the participant took longer than one minute to solve an anagram, the "Skip to next anagram" button became active. If participants solved the anagram correctly, the next anagram appeared. If participants entered an incorrect answer, the program indicated that the answer was incorrect and highlighted the incorrect answer so participants could type in a new answer without having to erase the old one. If participants pressed the "Skip to next anagram" button after it was activated, the answer to the current anagram was revealed and the next anagram appeared. The program was designed so that an anagram was skipped automatically after three minutes. Messages to the participant were displayed on the screen above the "Anagram" field, and these messages disappeared automatically after 10 seconds. Within each anagram difficulty condition, all participants solved the same anagrams in the same order.

For participants in the one ad condition, an ad appeared in the upper left corner of the screen throughout the anagram task. The program randomly selected four of the eight stimulus ads to display and randomly selected an order in which to display the four ads. The ads appeared one at a time, with the next ad replacing the current one every 45 seconds (a replacement rate corresponding to the approximate rate of ad replacement in Eudora's "Sponsored Mode").

In the two ads condition, a second ad appeared in the upper right-hand corner of the screen. Like the ad in the upper left-hand corner, this ad changed to a new ad every 45 seconds. These ads appeared in a random order, and they only appeared during the anagram task. These distractor ads were not rated for recognition or persuasion.

In the dynamic ads condition, the first ad was placed at the top of the screen to the left. Throughout the anagram task, the ad moved slowly right and left from one side to the other. Similarly, the second ad was placed at the bottom of the screen to the right. This ad moved slowly left and right, always in the opposite direction of the ad at the top of the screen. When the participant moved the mouse over either ad, the ad would change to one of seven randomly selected transformations (90, 180, and 270 degree rotations, vertical and horizontal reflections, color inversion, and embossing), and if the participant clicked on either ad, a message would appear (either "Visit us on the web!" or "Hey, shouldn't you be solving anagrams!") with this latter message included to simulate the type of humor often found in online advertising). Results indicated that 86.5 percent of participants in the dynamic ads condition moused over one of the ads and 10.1 percent of participants clicked on one of the ads.

Participants in the no ad condition completed the task without ads appearing on the screen.

After 10 minutes, the program displayed a dialog box that indicated that time was up and gave the answer to the final anagram. Once the participant acknowledged the dialog box by pressing a button, the participant was prompted to begin the ad-rating task.

In this task, eight ads were presented to participants in a random order. Participants in the ad condition were asked, "Did you see this ad while doing the anagrams?" (answered yes or no) and "How confident are you about whether or not you saw this ad?" (answered on a 7-point scale from "I definitely saw this ad" to "I definitely did not see this ad"). All participants were asked "What do you think would be the quality of the web site advertised above?" (answered on a 7-point scale from "Low quality" to "High quality"), "How interested are you in visiting this web site?" (answered on a 7-point scale from "Uninterested" to "Interested"), and

"Please indicate how you feel about this ad" (answered on a 7-point scale from "Bad" to "Good"). The final page consisted of a debriefing letter that thanked the participant, provided some background on the study, and instructed the participant to get a credit slip from the experimenter.

Results

Experiment 1 consisted of a 2 (Anagram Difficulty: easy vs. difficult) \times 4 (Ad Type: no ads, one ad, two ads, vs. dynamic ads) \times 2 (Ad Experience: previously viewed vs. unviewed) factorial design. Anagram Difficulty and Ad Type were between-subjects; Ad Experience was within-subject. Ad Experience was manipulated only for participants in the one ad, two ads, and dynamic ads conditions.

Distraction. Distraction was assessed using two dependent variables: the number of anagrams solved and the number of anagrams skipped. Participants solved significantly more four-letter anagrams ($M = 51.54$, $SD = 23.78$) than five-letter anagrams ($M = 14.34$, $SD = 7.00$), and skipped significantly fewer four-letter anagrams ($M = 1.47$, $SD = 1.25$) than five-letter anagrams ($M = 3.81$, $SD = 1.83$), $F(1, 335) = 372.58$, $p < .001$, $F(1, 335) = 201.53$, $p < .001$, respectively (see Table 5.1). Ad Type (i.e., no ads, one ad, two ads, vs. dynamic ads) did not impact the number of anagrams solved, but Ad Type significantly affected the number of anagrams skipped, $F(3, 335) = 4.15$, $p = .007$. An examination of the means reveals that the results were opposite to those predicted: Participants who completed anagrams while one static ad was on the screen skipped significantly fewer anagrams compared to participants in the control condition, $F(1, 335) = 6.48$, $p = .011$. Two static ads showed a similar, non-significant effect, $F(1, 335) = 2.31$, $p = .13$.

These results suggest that minor distractions have the potential to facilitate task performance. While solving anagrams, solvers may get into a "mental set" resulting in a lack of flexibility necessary to make transformations to produce hypothesized solution word sets. Like other problems of functional fixedness, this may require a fresh perspective to help break out of the set (Duncker, 1945), and a minor distraction such as an advertisement may facilitate this fresh perspective. Indeed, people have more difficulty solving anagrams that require them to break up highly frequent letter pairs (e.g., "gatuch" to form "caught") (Mayzner and Tresselt, 1959, 1966), and distractions may break the mental sets induced by those frequent letter pairs.

Recognition. Recognition was assessed by examining participants' responses to the question asking whether they had seen the ad while doing

TABLE 5.1. NUMBER OF ANAGRAMS SOLVED AND SKIPPED, AND NUMBER OF HINTS REQUESTED IN EXPERIMENTS 1 AND 2

<i>Anagrams</i>	<i>Ads</i>	<i>Solved</i>	<i>Skipped</i>	<i>Hints</i>
Experiment 1				
Easy	No ads ($n = 42$)	48.07 (23.08)	1.55 (1.47)	
	One ad ($n = 44$)	53.07 (22.34)	1.18 (1.08)	
	Two ads ($n = 42$)	53.40 (21.41)	1.50 (1.25)	
	Dynamic ads ($n = 48$)	51.54 (27.73)	1.62 (1.16)	
Difficult	No ads ($n = 40$)	14.58 (6.66)	4.15 (1.61)	
	One ad ($n = 42$)	14.60 (5.46)	3.31 (1.69)	
	Two ads ($n = 44$)	14.70 (8.54)	3.48 (2.04)	
	Dynamic ads ($n = 41$)	13.46 (7.08)	4.34 (1.77)	
Experiment 2				
Difficult	No ads ($n = 48$)	18.00 (7.48)	2.06 (1.38)	6.27 (2.08)
	One ad ($n = 47$)	18.26 (9.40)	2.36 (1.61)	7.13 (1.78)
	Two ads ($n = 48$)	18.56 (9.85)	2.25 (1.64)	6.83 (1.68)
	Dynamic ads ($n = 48$)	18.00 (7.01)	1.71 (1.29)	6.31 (1.84)

Note. After 1 minute, participants were given the option to skip to the next anagram. In experiment 2, after 30 seconds, participants were given the option to request a hint.

the anagrams. Responses were coded as 0 if the participant indicated that he or she had not seen the ad while doing the anagrams and 1 if the participant reported having seen the ad. Composite scores for recognition of viewed and unviewed ads were created by averaging the responses for the four viewed ads and the four unviewed ads. Perfect recognition would be indicated by a composite score of 1 for viewed ads and 0 for unviewed ads. Because recognition was not assessed in the no ads condition, recognition analyses include only participants in the 1 ad, 2 ads, and dynamic ads conditions.

Participants displayed highly accurate recognition of previously viewed ($M = .54$, $SD = .32$) versus unviewed ($M = .09$, $SD = .17$) ads, $F(1, 248) = 439.54$, $p < .001$ (see Table 5.2 and Figure 5.2). However, recognition was moderated by anagram difficulty, $F(1, 248) = 24.83$, $p < .001$. Participants solving difficult anagrams displayed significantly more accurate recognition compared to participants solving easy anagrams. This result offers additional evidence that participants may have glanced at the advertisements when they became stuck on a difficult anagram, leading to increased recognition of the ad. Consistent with this explanation, recognition accuracy was positively correlated with the number of anagrams skipped, $r(252) = .26$, $p < .001$. In other words, participants who were more distracted (i.e., participants who skipped more anagrams) displayed more accurate ad recognition.

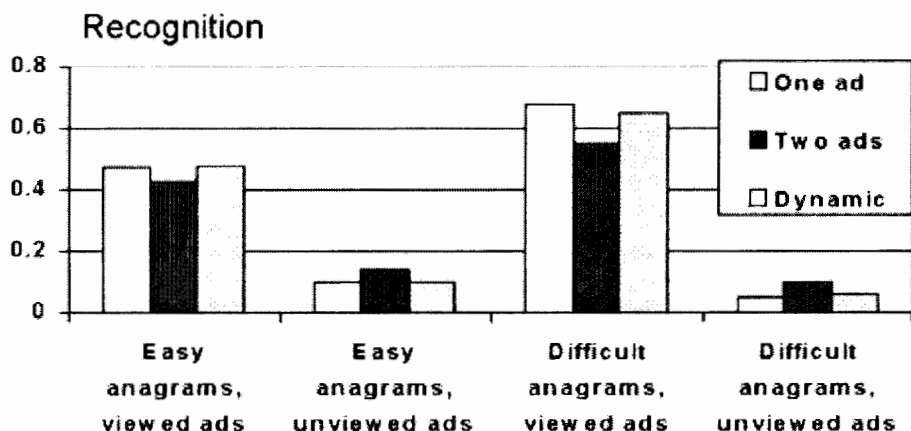


Figure 5.2. Recognition of viewed and unviewed ads in Experiment 1.

TABLE 5.2. RECOGNITION OF VIEWED AND UNVIEWED ADS IN EXPERIMENTS 1 AND 2

Anagrams	Ads	Recognition of Viewed Ads	Recognition of Unviewed Ads
Experiment 1			
Easy	One ad ($n = 44$)	.47 (.35)	.10 (.20)***
	Two ads ($n = 42$)	.43 (.32)	.14 (.19)***
	Dynamic ads ($n = 48$)	.48 (.33)	.10 (.15)***
Difficult	One ad ($n = 42$)	.68 (.31)	.05 (.10)***
	Two ads ($n = 44$)	.55 (.29)	.10 (.21)***
	Dynamic ads ($n = 41$)	.65 (.27)	.06 (.12)***
Experiment 2			
Difficult	One ad ($n = 47$)	.58 (.30)	.04 (.10)***
	Two ads ($n = 48$)	.42 (.25)	.12 (.20)***
	Dynamic ads ($n = 48$)	.56 (.33)	.13 (.21)***

Note. Recognition measures for each participant represent the mean of the four viewed ads and the four unviewed ads. Recognition scores ranged from 0 to 1, with 0 indicating that the participant reported not having seen the ad, and 1 indicating that the participant reported having seen the ad. Perfect recognition was represented by a 1 for viewed ads and a 0 for unviewed ads. Significant simple effects of Ad Exposure (i.e., viewed vs. unviewed ads) within each condition are indicated by *** $p < .001$.

Recognition was also moderated by the number and type of ads present, as reflected in a significant interaction between Ad Type and Ad Experience, $F(2, 248) = 3.80, p = .024$. Comparisons between conditions within this significant omnibus interaction were tested with a series of interactions between Ad Experience and contrasts that compare two Ad Type

conditions against each other (e.g., the one ad vs. two ads contrast was represented by a vector with 1 for participants in the one ad condition, -1 for participants in the two ads condition, and 0 for participants in the dynamic ads condition).

An examination of the means reveals that, as predicted, recognition accuracy was highest in the one ad condition. Recognition accuracy suffered when a second ad was displayed, as reflected in a significant interaction between a one ad vs. two ads contrast and Ad Experience, $F(1, 248) = 6.02, p = .015$. This decrease was mitigated by making the ads dynamic and interactive; the interaction between a one ad vs. dynamic ads contrast and Ad Experience was nonsignificant.

Persuasion. Persuasion was assessed using the three questions regarding perceived quality of the web site, interest in visiting the web site, and feelings about the ad (Cronbach's alphas ranged from .86 to .88). Because exploratory factor analyses suggested that the three questions formed one factor, the questions were averaged to form a persuasion score. Then, as with recognition, composite persuasion scores were created that averaged across the four previously viewed ads and the four unviewed ads (see Table 5.3). As with the recognition variables, the analyses of the persuasion variables include only participants in the one ad, two ads, and dynamic ads conditions.

Overall, viewed ads were rated as significantly more persuasive ($M = 2.66, SD = 1.14$) than unviewed ads ($M = 2.35, SD = 1.10$), $F(1, 254) = 26.68, p < .001$, but this relationship was moderated by a significant 3-way Anagram Difficulty by Ad Type by Ad Experience interaction, $F(2, 254) = 4.23, p = .016$ (see Table 5.3 and Figure 5.3). An examination of the means reveals that, as predicted, a second ad reduces the persuasiveness of the first ad, as reflected in an interaction between a one ad versus two ads contrast and Ad Experience, $F(1, 254) = 2.70, p = .102$. The effects of two dynamic ads were moderated by anagram difficulty. For participants solving easy anagrams, two dynamic ads were no less persuasive than one static ad. For participants solving difficult anagrams, however, dynamic ads were significantly less persuasive than one ad, $F(1, 254) = 5.63, p = .018$.

In sum, Experiment 1 demonstrated that even relatively unobtrusive advertisements in the visual periphery are memorable and persuasive, but that ad competition reduces both recognition and persuasion. Increasing the salience of the ads by making them dynamic and interactive partially mitigated the effects of ad competition, but persuasion still suffered among participants solving difficult anagrams. Finally, experiment 1 demonstrated that static ads can facilitate performance on the focal task, possibly by helping participants break out of a mental set.

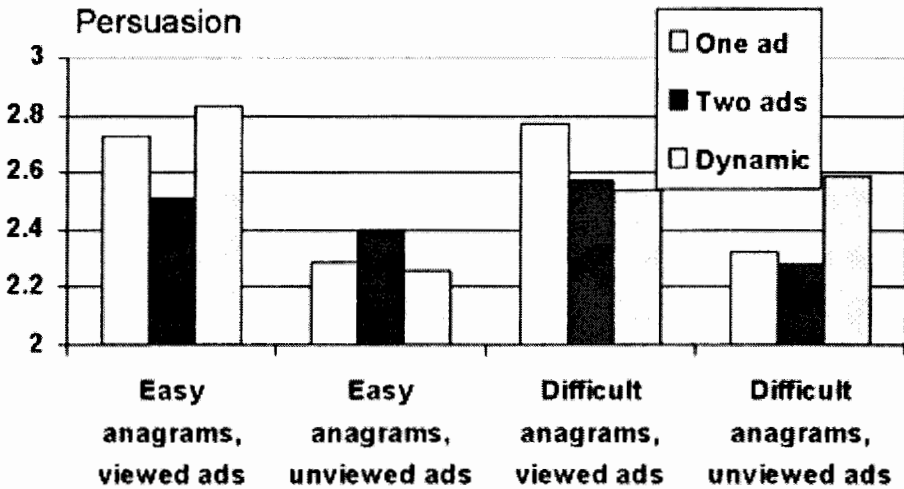


Figure 5.3. Persuasion of viewed and unviewed ads in experiment 1.

Experiment 2

The facilitation effect found in experiment 1 was particularly surprising in the context of a significant distraction effect found in the Preliminary Experiment mentioned earlier. The Preliminary Experiment was similar to experiment 1 with one notable exception: Participants did not complete any practice anagrams before beginning the anagram task. As a result, a substantial portion of participants skipped the first difficult anagram. Interestingly, while only 14.3 percent (2/14) of participants skipped the first anagram when there were no ads on the screen, 56.2 percent (9/16) of participants skipped the first anagram in the presence of an ad, $\chi^2(1, N = 30) = 5.66, p = .017$. For participants facing the difficult, ambiguous task of solving their first five-letter anagram, the ad apparently provided a welcome distraction, with over half the participants waiting 60 seconds until they were able to skip the anagram. However, the 85.7 percent success rate in the no ads condition suggests that most participants could have solved the problem had the presence of an advertisement not sapped their motivation to persevere.

The results of experiment 1 demonstrate that advertisements can facilitate task performance. The results of the Preliminary Experiment suggest that advertisements may also impact performance negatively by facilitating procrastination. Thus, by facilitating procrastination, the presence of an ad may cause individuals to fail to complete a task that they would have been able to accomplish had the ad not been present. This

hypothesized procrastination effect is reminiscent of the concern among employers that high-speed Internet connections distract employees from work. Support for the procrastination explanation would suggest that employers should be concerned not only with the availability of work-irrelevant web sites, but also with distracting ads in work-related software and on work-relevant web pages.

Experiment 2 was designed to replicate and extend the findings of experiment 1—most notably by providing a rigorous test of the procrastination explanation for the negative impact of peripheral ads on the focal task. To test this explanation, we modified the task to include a “procrastination option” that would help participants solve the current anagram if they were willing to procrastinate for a short time. This was operationalized as a hint button that became active after 30 seconds. When the hint button was pressed, the program revealed the first letter of the solution. Consistent with the procrastination explanation, it was predicted that participants solving difficult anagrams would request more hints in the presence of ads than in the absence of ads. Because the distraction effect in the Preliminary Study appeared only for participants solving difficult anagrams, all participants in experiment 2 solved difficult anagrams.

One hundred ninety-one Northern Illinois University undergraduates were randomly assigned to solve difficult (5-letter) anagrams in the presence of no ads, one static ad, two static ads, or two dynamic ads. After completing the anagram task, participants were asked to indicate how distracting the ads were on a 7-point scale from 0 (“not at all distracting”) to 6 (“very distracting”).

Results

Distraction. As in experiment 1, presence of an ad had no effect on the number of anagrams solved (see Table 5.1). In contrast to the results of experiment 1, presence of an ad also had no effect on the number of anagrams skipped, $F(3, 187) = 1.77, p = .154$. An examination of the means reveals that, if anything, participants skipped somewhat more anagrams with one or two ads on the screen than when there were no ads on the screen. The presence of an ad had a marginal effect on the number of hints requested, $F(3, 187) = 2.40, p = .069$. As predicted, participants in the one ad condition requested significantly more hints than participants in the no ads condition, $F(1, 187) = 5.10, p = .025$. Participants in the two ads condition also requested more hints than participants in the no ads condition, but this difference did not achieve statistical significance, $F(1, 187) = 2.22, p = .138$. Participants in the dynamic ads condition did not differ

from participants in the no ads condition with respect to hint request frequency.

Apparently, when participants encountered an anagram that they had trouble solving, the presence of an ad provided a ready distraction until they could request a hint. This result supports the procrastination explanation of the distracting effect of peripheral ads. Such ads facilitate procrastination by providing an available stimulus toward which individuals gravitate when the focal task becomes challenging.

Interestingly, although the static ads elicited greater distraction than the dynamic ads, participants rated the static ads as substantially less distracting (one ad: $M = .85$, $SD = 1.23$; two ads: $M = .77$, $SD = 1.15$) than the dynamic ads ($M = 1.96$, $SD = 1.99$), $F(1, 140) = 18.46$, $p < .001$. This suggests that participants were unaware that the static ads were facilitating procrastination. Instead, participants' experience of distraction seemed to be based on the challenge of maintaining focus on the anagram task in the presence of the ads (a challenge made substantially more difficult when the ads were animated).

Recognition. Overall, participants showed highly accurate recognition of previously viewed ($M = .52$, $SD = .30$) versus unviewed ($M = .10$, $SD = .18$) ads, $F(1, 133) = 247.73$, $p < .001$ (see Table 5.2). This effect was qualified by a significant interaction between Ad Type and Ad Experience, $F(2, 133) = 6.87$, $p = .001$. An examination of the means reveals that, compared to the one ad condition, recognition suffered significantly in the two ads condition, $F(1, 133) = 13.48$, $p < .001$, and non-significantly in the dynamic ads condition, $F(1, 133) = 1.98$, $p = .162$.

Persuasion. As in Experiment 1, previously viewed ads were significantly more persuasive ($M = 2.53$, $SD = 1.08$) than unviewed ads ($M = 2.31$, $SD = 1.10$), $F(1, 137) = 10.06$, $p = .002$ (see Table 5.3). This effect was not moderated by Ad Type, $F(1, 137) < 1$.

Overall, experiment 2 demonstrated that visually peripheral ads can facilitate procrastination by distracting people from a challenging focal task. Experiment 2 also replicated the findings from experiment 1 that visually peripheral ads are memorable and persuasive.

The Ethics of Attention

This chapter began by distinguishing marketing contexts in which consumers barter their attention for desired products from other contexts in which marketers steal consumers' attention without providing anything in return. We argued that, because attention is a limited and valuable

TABLE 3. PERSUASION OF VIEWED AND UNVIEWED ADS IN EXPERIMENTS 1 AND 2.

<i>Anagrams</i>	<i>Ads</i>	<i>Persuasion of Viewed Ads</i>	<i>Persuasion of Unviewed Ads</i>
Experiment 1			
Easy	One ad ($n = 44$)	2.73 (1.26)	2.29 (1.19)**
	Two ads ($n = 42$)	2.51 (1.12)	2.39 (1.18)
	Dynamic ads ($n = 48$)	2.83 (1.15)	2.26 (1.00)***
Difficult	One ad ($n = 42$)	2.77 (1.21)	2.32 (1.12)**
	Two ads ($n = 44$)	2.57 (.99)	2.28 (.81)*
	Dynamic ads ($n = 41$)	2.54 (1.12)	2.59 (1.29)
Experiment 2			
Difficult	One ad ($n = 47$)	2.57 (1.08)	2.29 (1.04)*
	Two ads ($n = 48$)	2.52 (1.11)	2.33 (1.16)
	Dynamic ads ($n = 48$)	2.52 (1.07)	2.31 (1.11)+

Note. Persuasion measures for each participant represent the mean of the four viewed ads and the four unviewed ads. Persuasion scores ranged from 0 to 6 with a higher number indicating greater persuasion. Significant simple effects of Ad Exposure (i.e., viewed vs. unviewed ads) within each condition are indicated by *: * indicating $p \leq .05$; ** indicating $p < .01$; *** indicating $p < .001$; + indicating a marginal effect at $p < .10$.

resource, stealing attention is unethical. This distinction clearly differentiates marketing media such as TV and radio commercials (both of which sponsor content that consumers may desire, and both of which can be avoided by consumers who also reject the associated content) from marketing media such as telemarketing and billboards (which are neither sponsors of desired content nor avoidable by consumers).

Recent technological innovations have created a new marketing model that appears, at first glance, to provide a remarkably ethical opportunity for consumers to barter their attention. Companies such as Qualcomm, NetZero, and Salon.com, have begun offering their products and services for free in exchange for consumers' willingness to view and, in some cases, interact with advertisements (Qualcomm, 2000; Ives, 2003).

It appears, however, that marketers and consumers have very different perceptions of this relationship. Marketers clearly perceive it as a profitable reciprocal relationship in which consumers receive a desired product or service, and in exchange, marketers receive a highly prized and increasingly scarce commodity: consumer attention. Consumers may believe, in contrast, that they are receiving a desired product or service at no cost whatsoever—a belief exacerbated by their illusions of personal invulnerability to advertising (Perloff, 1987; Sagarin, Cialdini, Rice, and Serna, 2002).

If consumers underestimate the effects that the sponsoring advertisements have on them, then the ethics of the situation become somewhat murky—consumers may have an accurate idea of the value of the product offered to them, but they are misinformed of its cost. Unfortunately, the results of the present experiments suggest that this is the case. Despite the claim by participants that online ads have little effect on them (including 49 percent who claimed that such ads have no effect whatsoever), across both experiments, peripheral ads had substantial persuasive and subtle distracting effects.

Distraction. The results of experiment 2 and our Preliminary Experiment suggest that advertisements may distract individuals from a difficult focal task by encouraging procrastination. In the Preliminary Experiment, 56.2 percent of participants solving difficult anagrams skipped the first anagram when there was an ad on the screen. This relatively high proportion may seem unsurprising at first, given that participants may not have fully understood the task they were asked to perform. However, it is notable that only 14.3 percent of participants skipped the identical first anagram when there were no ads on the screen. Apparently, the first anagram was solvable by the vast majority of participants, but the presence of an ad led over half of participants to fail on a task that most could have performed in the absence of the ad.

Experiment 2 confirmed this procrastination explanation. In experiment 2, participants were given the option of receiving a hint 30 seconds after an anagram first appeared. Consistent with the prediction that advertisements facilitate procrastination, participants requested significantly more hints in the presence of an advertisement compared to the absence of an advertisement. Participants solving anagrams in the presence of two ads showed a similar, but nonsignificant trend toward requesting more hints.

Ironically, the presence of an advertisement may also sometimes facilitate task performance. In experiment 1, participants skipped significantly fewer anagrams in the presence of one static ad than in the absence of ads. This facilitation effect may be specific to tasks such as anagrams during which participants may get stuck in a mental set. Glancing briefly at an advertisement may help participants break out of this mental set and achieve fresh insight into the anagram. Although facilitation may have been present in experiment 2, it seems likely that the addition of the hint option caused the procrastination effect to overwhelm any facilitative effects of advertisements.

Persuasion. A clear finding across both experiments is that visually peripheral ads are highly memorable and persuasive. Participants in all

nine conditions showed significant recognition effects, and participants in five out of nine conditions showed significant persuasion effects, with three of the remaining four conditions showing nonsignificant effects in the direction of increased persuasiveness (see Tables 5.2 and 5.3). Although the effects occurred most strongly when participants were exposed to a single, static ad, increases in ad persuasiveness also tended to occur when two static ads were presented or when the ads were dynamic. In sum, visually peripheral advertisements can have substantial persuasive impact, particularly if they are presented without simultaneous competition from other ads.

Epilogue

One day a student saw [Seung Sahn] reading the newspaper while he was eating. The student asked if this did not contradict his teaching. Seung Sahn said, "When you eat and read the newspaper, just eat and read the newspaper" [Tanahashi and Schneider, 1996, p. 15].

There is nothing inherently wrong with divided attention. Indeed, such a state may be impossible to avoid. But as Seung Sahn's response to the student suggests, when we choose to divide our attention, we should make an informed choice. Unfortunately, the results of the present experiments, as well as the results of Strayer et al. (chapter 4 this volume), demonstrate that we may chronically underestimate the costs of divided attention. This is not to say that we should never barter our attention. But unless we are aware of the value and scarcity of the commodity we bring to the table, we are likely to demand far too low a price.

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