
Context Effects on Recall and Recognition of Magazine Advertisements

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This experiment tested the hypothesis that depth of involvement in a magazine article is inversely related to subsequent recall and recognition of accompanying advertisements. Subjects read magazine articles interspersed with unfamiliar advertisements for common product types. Results showed that the more deeply the subjects were involved in the articles, the less they remembered about the accompanying advertisements. Articles about recipes were rated least interesting, enjoyable, and absorbing, and they elicited less attention and concentration from the readers than fiction and feature articles, but subjects who read the recipes remembered the advertisements best and subjects who read the fiction article remembered the advertisements worst.

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A decade ago, Soldow and Principe (1981) put forward the following interesting hypothesis:

When an absorbing article in a magazine is read, it is unlikely that ads separating parts of that article will be noticed when the reader flips through the pages to find various points of continuation of the article. On the other hand, when a magazine is casually glanced through—e.g., in a waiting room—advertising that separates editorial parts is much more likely to be attended to. It could be said that in the former situation the reader is highly involved in the editorial content, and in the latter situation the reader is uninvolved in the editorial content (p. 59).

An implication of the Soldow-Principe hypothesis is that, if other relevant factors are held constant, psychologically involving editorial material surrounding magazine advertisements will tend to reduce the effectiveness of those advertisements, whereas relatively uninvolved editorial material will tend to enhance the effectiveness of the advertisements.

This hypothesis has not previously been tested empirically, although the literature contains indirectly relevant data from television research. In the case of television advertising, the published findings on program-induced viewer involvement are contradictory, some studies suggesting that highly involving programs result in greater advertisement effectiveness than relatively uninvolved programs (e.g., Clancy and Kweskin 1971; Krugman 1983; Leach 1981; Menneer 1987; Siebert 1978; Television Audience Assessment 1984) and other studies suggesting a negative correlation between viewer involvement and advertising effectiveness (e.g., Bryant and Comisky 1978; Kennedy 1971; Soldow and Principe 1981; Thorson, Reeves and Schleuder 1985). The investigation reported in this article focuses on context effects in magazine rather than television advertising, but the findings may also throw some light on the contradictory findings of television research.

Television and print media differ in many ways, including the manner in which the information they transmit is processed by the recipients. One difference is that televisual information is processed both visually and auditorily whereas printed information is processed only visually; a second is that recipients have control over the speed of information processing only in the case of the print media. A magazine reader who is

deeply involved in an article can easily skip over the accompanying advertisements and continue reading the article without any significant delay, whereas a deeply involved television viewer in the analogous situation has no alternative but to wait until the commercial break is over. The television viewer is not compelled to attend to the advertisements while waiting for the program to resume and can even turn off the signal or leave the room to avoid receiving the advertisement's message. But whereas the deeply involved magazine reader has the option of continuing to attend to the absorbing material virtually without interruption, the television viewer, however deeply involved, is forced at least to stop viewing the program during the commercial break and may consequently be more likely to assimilate some of the advertising material. In this sense the print media present a slightly simpler case, and it seems reasonable to hypothesize, as first suggested by Soldow and Principe (1981), that reader involvement will correlate negatively with subsequent recall and recognition of the accompanying advertisements and with other measures of advertisement impact.

The cost of an advertisement in the mass media is determined primarily by the expected number of its recipients. Estimates of television audience sizes are based on Nielsen ratings in the United States, Broadcasters' Audience Research Board (BARB) ratings in Britain, and similar ratings in other countries. In the case of magazine advertising, the expected number of recipients of an advertisement is derived from the magazine's circulation figures. In both cases a tacit assumption is made that the number of people attending to, comprehending, and remembering the advertising message corresponds to the number exposed to it. This assumption is questionable, because psychological research has established that it is possible to perceive an advertisement or other stimulus without processing it sufficiently deeply to remember it later (Baddeley 1982; Craik and Lockhart 1972). Although remembering an advertisement is not the same thing as being persuaded by it (Srull 1983, 1984), an advertisement that has no lasting effect on those who are exposed to it can obviously have no commercially significant impact. What advertisers therefore need to know is not how many people are likely to see the advertisement, but how many are likely to retain some lasting effect and respond to it.

Among the factors that may influence memory for advertisements are context effects. Mass media advertisements do not ordinarily appear in isolation, although experimental subjects have often been ex-

posed to them in isolation in laboratory research; they normally appear embedded in non-advertising context material. It is reasonable to assume that the surrounding program material (in the case of television) or editorial material (in the case of the print media) is likely to have some effect on subsequent memory for an advertisement. The effectiveness of an advertisement, in other words, may depend partly on the informational context in which it is embedded.

Context effects are often omitted from reviews of the literature on attitude change and persuasion (e.g., Chaiken and Stangor 1987; Cooper and Croyle 1984; Kiesler, Collins and Miller 1969), partly, no doubt, because they do not fit into the standard classification of variables assumed to determine the effectiveness of mass media persuasive messages in general. This classification, originally popularized in early publications of the Yale Communication Program (Hovland, Janis and Kelley 1953), is encapsulated in the famous mnemonic "who says what to whom" (Smith, Lasswell and Casey 1946). The categories are, in order, variables influencing source credibility, message variables, and variables associated with audience/recipient persuasibility. Within each of these three categories, numerous factors have been investigated by researchers (Chaiken and Stangor 1987; Cooper and Croyle 1984) and a great deal has been learned about the effects of source, message, and audience/recipient variables on the effectiveness of persuasive messages. But the convenient classification has tended to distract attention from the possibility that the same source delivering the same message to the same audience on separate occasions might produce very different effects depending on the differing programming or editorial contexts in which the message appears.

In what way might context material affect the recipients' memory for an advertisement? In the case of television advertising, a start has been made at investigating the effects of surrounding program material on the effectiveness of the embedded advertisements. Among the aspects of program context that have been found to influence advertisement effectiveness are the following: program genre (Schwerin 1958; Schwerin and Newell 1981), program-induced viewer mood (Axelrod 1963; Goldberg and Gorn 1987; Kamins, Marks and Skinner 1991), program-advertisement congruity (Bello, Pitts and Etzel 1983; Hansen, Barry, Reed and McGill 1976; Horn and McEwan 1977; Johnson 1981; Kamins, Marks and Skinner 1991; Lambert 1980; Murphy, Cunningham and Wilcox 1978), program-induced viewer excitement (Singh, Churchill and Hitchon 1987), and program-

induced viewer involvement (Bryant and Comisky 1978; Clancy and Kweskin 1971; Kennedy 1971; Krugman 1983; Leach 1981; Menneer 1987; Siebert 1978; Soldow and Principe, 1981; Television Audience Assessment 1984; Thorson, Reeves and Schleuder 1985). The findings that have been reported to date tend to suggest that the most important context variable, as far as advertisement effectiveness is concerned, is program-induced viewer involvement.

As regards magazines and other print media, the effects of context-induced reader involvement on advertising effectiveness have not previously been investigated empirically. For reasons mentioned earlier, context effects may operate slightly differently in the print and broadcasting media, and the results reported below may not be generalizable in any simple way to television, although they may help to shed some light on the contradictory findings from television research. Quite apart from its relevance to television advertising, however, the experiment will provide the first empirical evidence concerning context effects on memory for magazine advertisements, which is of interest in its own right. The main aim of the experiment is to test the hypothesis derived from Soldow and Principe (1981) that reader involvement with magazine articles will correlate negatively with subsequent recall and recognition of the accompanying advertisements, and with other measures of advertisement impact.

Method

Subjects

The subjects who participated in this experiment were 73 undergraduate psychology students (15 men and 58 women) at the University of Leicester, most of whom were between 19 and 20 years old. Subjects received course credits in return for their participation.

Design and Materials

The subjects were informed that they were participating in an experiment concerned with "people's responses to magazines." They were randomly assigned to five treatment conditions associated with different genres of magazine articles: fiction (a short story by Bernice Rubens), recipes (an article about techniques of steaming food, followed by several recipes), a feature article (about drug addiction and substance abuse), travel articles (descriptions of various Italian holiday resorts), and regular magazine sections (letters, tele-

vision and book reviews, and horoscopes). Appropriate magazine sections, equalized for length (four pages), were selected from glossy women's magazines (*Elle*, *Glamour*, *Women's World*, *New Woman*, and *Marie Claire*). The articles were specifically intended to vary widely, not only in the genres they represented but also in their capacity to involve and interest the subjects.

Each of the five magazine sections was separately bound with six advertisements (the same six in each case) following standard editorial conventions, two inserted before, two during, and two at the end of each article. The six advertisements were taken from American magazines not generally distributed in Britain (*Glamour*, *New York Woman*, *Vanity Fair*, and *Gentlemen's Quarterly*). The purpose of this was to enable a choice of advertisements that the subjects had never before seen featuring a wide range of familiar product types with brand names that are virtually unknown and not available in high street stores in Britain (Calgon body oil, Dep hair products, Tanqueray Sterling vodka, Capri cigarettes, Mayor's diamond rings, and Fendi wristwatches) so that uncontaminated measures of recall and recognition could later be made.

As a preliminary, pre-experimental manipulation check, and to confirm that the articles did not differ significantly in average reading times, three independent judges read all the articles and rated them on five-point scales (1 low, 5 high) for involvement. The results of this manipulation check are shown in Table 1.

The figures in the table show that the mean reading times were all close to 15 minutes and that the involvement ratings, on a scale of 1 (low) to 5 (high), ranged from 1.67 for the recipes to 4.00 for the feature article, which confirms that the chosen articles vary widely in involvement levels.

Article Ratings

As an additional manipulation check on the involvement properties of the articles and for later hypothesis testing, subjects responded to the following counterbalanced set of 12 seven-point rating scales which were scored from 0 (corresponding to the low-involvement anchor) to 6 (high) in each case: "I found the article(s) very entertaining—I found the article(s) not at all entertaining"; "I did not feel involved in the article(s)—I felt very involved in the article(s)"; "The article(s) were very suspenseful—the articles were not very suspenseful"; "I could not concentrate when

Table 1
Mean Reading Times (Minutes) and Involvement
Ratings (1 - 5) of Articles

Genre	Reading Time	Rated Involvement
Fiction	14.67	3.33
Recipes	16.33	1.67
Features	15.67	4.00
Travel	15.33	2.00
Regulars	14.67	2.67

Note. For all involvement ratings, 1 is low and 5 is high.

reading the article(s)—I could concentrate when reading the article(s)”; “I was very relaxed when reading the article(s)—I was not relaxed when reading the article(s)”; “I found the article(s) very interesting—I found the article(s) very boring”; “I learnt nothing from the article(s)—I learnt a great deal from the article(s)”; “I did not enjoy the article(s) at all—I enjoyed the article(s) very much”; “I was not absorbed in the article(s)—I was very absorbed in the article(s)”; “I felt very tense when reading the article(s)—I did not feel very tense when reading the article(s)”; “I attended very closely to the article(s)—I did not attend very closely to the article(s)”; “the general quality of the article(s) was very high—the general quality of the article(s) was very low.” These rating scales, which were designed to assess subjects’ involvement in the articles, were taken from earlier investigations in which recipient involvement was measured (Bryant and Comisky 1978; Colman and Grimes 1989; Schwerin 1958; Soldow and Principe 1981) and from the appreciation indices used by the Broadcasters’ Audience Research Board (BARB) in the United Kingdom and Television Audience Assessment (TAA) in the United States (Taylor 1989).

One-way analyses of variance were performed to evaluate the significance of differences between the mean ratings given to the articles by the subjects. The results generally confirmed those of the pre-experimental manipulation check. Differences between the five means were, as expected, significant for ratings of involvement, $F(4,68) = 6.81$; suspense, $F(4,68) = 8.04$; concentration, $F(4,68) = 5.97$; interest, $F(4,68) = 10.54$; enjoyment, $F(4,68) = 8.47$; absorption, $F(4,68)$

$= 13.40$; and attention, $F(4,68) = 6.03$ ($p < .05$ in each case). The results of a posteriori Tukey-HSD tests showed that the recipes material was rated as significantly less interesting, enjoyable, and absorbing than the fiction, travel, and feature articles and significantly less involving than the travel and feature articles ($p < .05$ in each case). The feature and fiction articles commanded significantly ($p < .05$) higher ratings of attention and concentration than the recipes, and the fiction was rated as significantly ($p < .05$) more suspenseful than the features, travel, and recipes.

Recall and Recognition Measures

Subjects’ recall and recognition of the six advertisements were assessed with the following measures: (a) Free recall—subjects were asked to write down all they could remember about all six brand names, product types, and advertisements; (b) Recognition of product types—a randomized list of 48 product types, including the six associated with the target advertisements, was shown to the subjects, who were asked to try to pick out the six featured in the target advertisements; (c) Cued recall of brand names—the six product types were listed and the subjects were asked to try to recall the corresponding brand names; (d) Recognition of brand names—five possible brand names taken from American magazines, including the brand name used in the target advertisement, were listed in random order under each of the six product types, and the subjects were asked to try to pick out the correct ones; (e) Recognition of advertisements—the six target advertisements were randomly inserted among 12 other American advertisements, featuring similar product types also with unfamiliar brand names, and the subjects were asked to try to pick out the target advertisements. These measures, which were adapted from those used in previous investigations of memory for commercials (Colman and Grimes 1989; Heflin and Haygood 1985; Thorson, Friestad, and Zhao 1987), were administered in the order shown above, and subjects were not allowed to backtrack when filling them in, because later questionnaires contain information that supplies cues to the answers to preceding questionnaires.

Advertisement Ratings

In addition to possible context effects on memory for advertisements, there is evidence to suggest that context might also affect recipients’ perceptions of

accompanying advertisements (Colman and Grimes 1989; Horn and McEwan 1977; Kennedy 1971; Schumann 1986; Soldow and Principe 1981; Thorson, Friestad and Zhao 1987). Advertisers are, in fact, often concerned about how their advertisements are perceived by their recipients. The subjects' perceptions of the six target advertisements were therefore measured with the following counterbalanced set of five seven-point rating scales: "I do not remember this ad at all—I remember this ad very well"; "I enjoyed this ad—I did not enjoy this ad"; "the ad was poorly made—the ad was well made"; "I attended closely to the ad—I did not attend closely to the ad"; "The ad did not make me want to buy the product—the ad made me want to buy the product."

Procedure

Subjects were assigned to treatment conditions randomly and tested in small groups (up to five). Each subject was handed a copy of the appropriate magazine section and asked to relax and to read the article contained in it as he or she might read a magazine at home. No mention was made of the advertisements. The pre-experimental manipulation check mentioned above had established that the average reading time for each of the five articles was approximately 15 minutes; accordingly, 15 minutes after receiving the articles the questionnaires (article ratings, measures of recall and recognition of advertisements, and advertisement ratings) were handed out in the order in which they were described above. Subjects were not allowed to backtrack in order to change or supplement their responses to earlier questionnaires on the basis of information provided in subsequent questionnaires. After completing all the questionnaires, subjects were asked if they had seen the articles before the experiment (none of them had done so), and they were debriefed and thanked for their participation.

Scoring of Questionnaires

The seven-point rating scales were each scored from zero (low) to six (high). The scoring of the recognition measures was also straightforward: in each case one point was awarded for a correct choice and zero for an incorrect choice.

The recall questionnaires yielded four primary scores: free recall of advertisements, product types, and brand names, and cued recall of brand names. Subjects' descriptions of each of the advertisements

were scored out of 24 according to a list, prepared in advance, of 24 salient points which covered virtually all details mentioned by the subjects. Free recall of product types was scored on a three-point scale: two points for a response that was perfectly or virtually correct (e.g., skin oil instead of body oil), one point for a substantially correct but insufficiently precise response (e.g., drink instead of vodka), and zero for an incorrect response. Free recall and cued recall of brand names were scored on five-point scales: four points for a response that was perfectly or virtually correct (e.g., Calgen instead of Calgon), three points for a substantially correct response with a significant error (e.g., Calgor), two points for a response that was not almost correct but which contained recognisable elements of the brand name's sound or appearance (e.g., Calvin), one point for a response with only the initial letter correct (e.g., C....), and zero for a completely incorrect answer.

The scoring of the free recall and cued recall questionnaires was carried out independently by two judges; in cases of discrepancies the final score was taken as the mean of the two separate scores. As a check on the reliability of the scoring procedures, correlations between the judges' scores were calculated. The correlations were found to be $r = .996$ for free recall and $r = .967$ for cued recall ($p < .05$ in each case).

Scores from all free and cued recall measures were summed to yield a total recall score for each subject. Scores from all recognition measures were similarly summed to yield a total recognition score for each subject. Finally, scores from all recall and recognition measures were summed to yield a global memory score for each subject.

Results

Article Ratings and Recall and Recognition of Advertisements

The correlations between subjects' ratings of the magazine articles and their recall, recognition, and global memory for the advertisements are shown in Table 2.

The first thing to notice in Table 2 is that every single correlation coefficient is negative. Every one of the 12 rating scales designed to measure aspects of psychological involvement in the magazine articles correlated negatively with recall, recognition, and global memory scores for the associated advertising material. Many of the correlations, especially some

Table 2
Correlations Between Article Ratings and Recall, Recognition, and Global Memory for Advertisements

Scale	Recall	Recognition	Global Memory
Very entertaining	-.32*	-.34*	-.33*
Very involved	-.11	-.15	-.13
Very suspenseful	-.20	-.29*	-.22
Could concentrate	-.40*	-.47*	-.42*
Very relaxed	-.08	-.14	-.10
Very interesting	-.36*	-.35*	-.37*
Learned a great deal	-.03	-.05	-.02
Enjoyed very much	-.33*	-.33*	-.34*
Very absorbed	-.43*	-.46*	-.49*
Very tense	-.04	-.11	-.05
Attended very closely	-.35*	-.47*	-.38*
General quality very high	-.02	-.09	-.03

*p < .05.

Table 3
Mean Recall and Recognition Scores Across Article Genres

Scale	Article Genre				
	Fiction	Recipes	Feature	Travel	Regulars
Free recall	19.04	32.13	23.71	21.07	27.40
Recognition of products	4.14	5.20	4.36	4.67	4.53
Cued recall of brand names	5.79	10.53	7.07	6.33	8.73
Recognition of brand names	3.29	4.80	3.86	3.33	4.00
Recognition of ads	5.36	5.80	5.86	5.80	5.80

Table 4
Correlations Between Advertisement Ratings and Recall, Recognition, and Global Memory Scores

Rating Scale	Recall	Recognition	Global Memory
"I remember this ad very well"	.43*	.45*	.45*
"I enjoyed this ad"	.33*	.39*	.34*
"The ad was well made"	.21	.25*	.22
"I attended closely to the ad"	.38*	.50*	.41*
"The ad made me want to buy..."	.23*	.36*	.26*

* $p < .05$.

that seem most closely associated with involvement ("I found the article[s] very entertaining"; "I could concentrate when reading the article[s]"; "I found the article[s] very interesting"; "I enjoyed the article[s] very much"; "I was very absorbed in the article[s]"; "I attended very closely to the article[s]") yielded correlations that were significant and strongly negative.

Mean recall and recognition scores for the five article genres are shown in Table 3.

Analyses of variance were used to test the significance of the differences between these means. Only the free recall measure yielded significant differences between article genres: $F(4,68) = 3.17$, $p < .05$. Using Cohen's (1988) index an effect size of $f = .42$ was found. Given this effect size, which is classified by Cohen as large, the power of the F test at the five per cent significance level (given by Cohen on p. 317) is 81 percent, which is very high; it means that the sample size was sufficiently large to ensure an 81 percent probability of correctly rejecting the null hypothesis. A composite total recall measure formed by summing free recall and cued recall measures also showed significant differences: $F(4,68) = 2.82$, $p < .05$. In this case, $f = .39$, which is at the top of Cohen's medium effect size range, and the power is 77 percent. Finally, a global memory score based on the sum of all measures of recall and recognition also showed significant differences: $F(4,68) = 2.91$, $p < .05$. The effect size is large ($f = .40$) and the power is high (78 percent). In all three cases, a posteriori Tukey-HSD tests showed that the only significant difference lay between the recipes articles (which yielded the highest recall and global memory scores) and the fiction article (which yielded the lowest recall and glo-

bal memory scores). All other differences were non-significant.

Correlations Between Advertisement and Article Ratings

Several correlations between advertisement and article ratings were significantly different from zero. "I attended closely to the ad" correlated negatively with the following three article ratings: "I was very absorbed in the article(s)" ($r = -.28$), "I felt very tense when reading the article(s)" ($r = -.30$), and "I attended very closely to the article(s)" ($r = -.27$); $p < .05$ in each case. The correlation between "I attended closely to the ad" and "I could concentrate when reading the article(s)" was negative but not significant ($r = -.22$, $p > .05$).

Recall, Recognition, Global Memory, and Ratings of Advertisements

Correlations between subjects' ratings of the advertisements and their recall, recognition, and global memory scores for the advertisements are shown in Table 4.

All these correlations are positive and many of them are statistically significant. In particular, subjects' ratings of how well they remembered the advertisements are significantly correlated with objective measures of their recall, recognition, and global memory for the advertisements; also, subjects' ratings of their enjoyment of and attention to the advertisements are also substantially and significantly corre-

lated with their recall, recognition, and global memory scores. Interesting exceptions relate to subjects' ratings of the quality of the advertisements, which are not significantly correlated with recall and global memory for the advertisements. As expected, rated desire to buy the advertised products was found to be positively, though not very highly, correlated with recall, recognition, and global memory for the corresponding advertisements.

Discussion

The results of this experiment confirm our main hypothesis regarding the effects of article involvement on the impact of accompanying magazine advertisements. To begin with, every one of the twelve article rating scales, each of which was designed to measure a particular aspect of the subjects' involvement in the magazine articles, yielded a negative correlation with the objective measures of recall, recognition, and global memory for the accompanying advertisements. The remarkable consistency of these findings is reinforced by the strength and statistical significance of many of the correlations. To mention three of the most striking examples, ratings on the scale *I could concentrate when reading the article(s)* correlated -.40 with recall of the advertisements, -.47 with recognition of the advertisements, and -.42 with the global memory index; *I was very absorbed in the article(s)* correlated -.43 with recall of the advertisements, -.46 with recognition of the advertisements, and -.49 with the global memory index; and *I attended very closely to the article(s)* correlated -.35 with recall of the advertisements, -.47 with recognition of the advertisements, -.38 with the global memory index; and all of these correlations are statistically significant. These data show unambiguously that the more the subjects felt they had concentrated, been absorbed in, and attended closely to the articles, the less they remembered about the accompanying advertisements. Other significant correlations show that the more entertaining, interesting, and enjoyable the subjects rated the articles, the less they remembered about the advertisements. Soldow and Principe's (1981) hypothesis, according to which magazine advertisements are expected to have least impact on readers who are highly involved in the articles and most impact on readers who are relatively uninvolved in the articles, is strongly corroborated by these data. The most obvious explanation is that deep involvement in an article is likely to be accompanied by a narrowing and focusing of attention and a consequent lack of attention to extraneous,

distracting stimuli, which may include advertising material. In other words, readers who are deeply involved in a magazine article are more likely to skip over any accompanying advertisements than readers who are less involved.

Previous research into the effects of involvement on recall and recognition of accompanying advertisements has focused on television advertising. This research has yielded contradictory findings, with some studies (e.g., Clancy and Kweskin 1971; Krugman 1983; Leach 1981; Menneer 1987; Siebert 1978; Television Audience Assessment 1984) showing a positive relationship between program involvement and advertisement effectiveness and other studies (e.g., Bryant and Comisky 1978; Kennedy 1971; Soldow and Principe 1981; Thorson, Reeves and Schleuder 1985) showing a negative relationship. The results of our study of magazine advertising clearly support the latter group of findings. The relationship between television and print media is complex, and the relevance of our findings to television are uncertain. It is possible that the positive relationship between program involvement and advertising impact reported by some television researchers is a result of selective exposure (Schumann, Thorson and Rosen 1989) since it has generally emerged only from non-experimental, survey-type research in which viewers are free to choose whether or not to watch the target programs. In those circumstances a positive relationship between program involvement and advertisement effectiveness can arise from the fact that viewers are more likely to choose programs they find involving and less likely to view uninvolved programs. A television viewer cannot skip over the advertising material accompanying a program in order to continue viewing the program without interruption. Selective attention does, of course, allow a viewer to ignore the advertisements, but a viewer who is deeply involved in the program and is in an aroused and attentive state of mind is relatively unlikely to change channels or to turn off the signal and is therefore likely to absorb at least some of the advertising material. An uninvolved viewer, by contrast, is more likely to change channels, to turn off the signal, or to leave the room, and is therefore less likely to be exposed to the advertisements. With selective exposure free to operate, therefore, a positive relationship between program involvement and advertisement effectiveness is perhaps not very surprising.

A magazine reader, on the other hand, can easily skip over advertising material in order to continue reading an article uninterrupted, and a reader who is

deeply involved in an article is more likely than an uninvolved reader to do this. With magazine advertising, therefore, a negative relationship between program involvement and advertisement effectiveness is to be expected. The results reported in this paper are consistent with this assumption and with the findings of experimental studies of television advertising in which selective exposure has been controlled for.

Analysis of our subjects' ratings of the magazine articles showed that the fiction and feature articles were perceived as more interesting, enjoyable, and absorbing, and that they engendered more attention and concentration in the readers, than the other articles, especially the recipes. Further analysis showed, however, that subjects who read the recipes remembered significantly more about the accompanying advertisements than subjects who read the other material, especially the fiction. Measures of recall and global memory for the advertisements yielded significantly higher scores among subjects who read the recipes than among those who read the fiction. Measures of recognition of advertisements produced a similar pattern of results, but the differences failed to reach significance. The probable reason for the non-significance of the recognition results is a ceiling effect: many subjects achieved maximum scores on the recognition scales, which artificially restricted the variance in these scores.

Readers' perceptions of their subjective reactions to advertisements are of some interest to advertisers, and their relation to article ratings were therefore investigated. Only three of the correlations between ratings of the articles and ratings of the advertisements were statistically significant, and they add further evidence in support of Soldow and Principe's (1981) hypothesis. Self-rated attention to the advertisements correlated negatively with self-rated absorption in the articles ($r = -.28$), with feelings of tension when reading the articles ($r = -.30$), and with attention to the articles ($r = -.27$). There was a tendency for ratings of attention to the advertisements to correlate negatively with ratings of concentration on the articles ($r = -.22$). These correlations are all consistent with the hypothesis that involvement in the articles tended to reduce the impact of the advertisements, which further corroborates the evidence based on objective measures of the recall and recognition of the advertisements.

The correlations between ratings of the articles and ratings of the advertisements are especially interesting in the light of correlations between ratings of the

advertisements and objective recall, recognition, and global memory scores. Subjects' ratings of how well they thought they remembered the advertisements, how much they enjoyed them, how closely they attended to them, and how much the advertisements made them want to buy the product all correlated positively and significantly with objective measures of recall, recognition, and global memory for the advertisements. This suggests that subjects' self-ratings of memory for and impact of the advertisements provided a fairly reliable guide to the actual impact of the advertisements and, according to these self-ratings, advertisement impact was inversely related to article involvement.

The findings of this study provide clear evidence regarding the effects of contextual material on the impact of magazine advertisements. The evidence shows that recall, recognition, and global memory for advertisements are influenced by the context-induced involvement of the readers. The results of this investigation suggest that one single dimension of the context material, namely its capacity to involve the readers, is strongly predictive of low advertisement effectiveness, at least as indexed by objective recall and recognition scores and subjective perceptions of the advertisements. This negative relationship is somewhat counterintuitive, although it was predicted from theoretical considerations. It is likely that there are other dimensions of context material that influence advertisement effectiveness in the print media; these should now be sought and subjected to experimental investigation.

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