AN EXPERIMENTAL INVESTIGATION OF SEX DIFFERENCES IN RECALL OF VERBAL VERSUS VISUAL ADVERTISING STIMULI: A CONTENT ANALYSIS APPROACH

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Abstract

A study was designed to explore the effects of sex, ad components, and their interaction on the recall of information from printed ads. Total recall did not vary by sex, but recall of ad components showed significant differences as did the interaction of sex and components. Implications for advertisers and suggestions for future research are given.

Introduction

Marketers, in the past several years, have paid increasing attention to consumer information processing (CIP)--particularly marketer-dominated information. Several CIP models exist which differ in terms of number and precise character of stages involved. However, they have overall similarity in progressing from exposure through retention and recall.

Included in most models is an "interpretation" stage wherein the consumer assigns meaning to the incoming stimuli. What meaning is assigned to stimuli is difficult to determine because interpretation is a function of both stimuli and individual characteristics (Myers and Reynolds, 1968). When the stimulus is complex such as an ad containing illustration and copy, the determination of meaning is even more difficult. Gestalt psychology would suggest that pictures and words are perceived together as a "whole." In fact, the FTC is now beginning to consider the total ad (rather than copy only) in deciding whether ads are misleading (Advertising Age, 1979; Crock, 1979).

Nonetheless, there is a substantial amount of research that suggests that people react differently to verbal versus visual material. Hanes (1973), Snowman (1973), and Seymour (1973) all report findings that demonstrate the superiority of pictures over words in terms of recognition and task responses. Haller (1972) and Beik (1962) found that the picture was superior to the words in producing recall of TV commercials. These findings suggest that the illustrations in ads are more important than copy in generating unaided recall of information.

However, pictorial recall superiority may be moderated by sex. There is some evidence suggesting that females deduce more meaning than men from pictures (Family Weekly, 1976) and are faster in translating pictures into words (Posnansky and Rayner, 1977). Males' strength tends to lie with verbal material (Kail and Siegal, 1977) or numeric reasoning (Dwyer, 1973) resulting in a more conceptual approach to stimuli (Biery, Bradburn and Galinsky, 1958). Girls tend to gaze longer (Kleinke, Desautels and Knapp, 1977) and fixate longer than males (Harrison and Soderstrom, 1977).

These findings suggest that the pictorial component of an ad will produce recall scores higher than the recall scores for the copy component. Females may sustain attention longer than males so that female recall scores should exceed those of males; female attention, however, should focus more on the illustration while males more than females will devote attention to the copy.

Study Objectives

This study focused on two objectives--to determine whether the illustration copy cues from printed advertisements differed in terms of respondents' ability to recall information from each of them and to see if the recall of illustration versus copy cues varied by the sex of the respondent.

The primary area of implications from the study will lie with the creative strategy aspect of advertising management. Should illustration recall prove superior to copy recall, this would provide suggestions for both content of information and the relative emphasis to be placed on copy versus illustrations. If sex is a moderating variable, then this would provide additional insights for advertisers whose intended audience is segmented by sex.

Methodology

Hypotheses

In order to accomplish the research objectives, the following hypotheses were developed for testing:

H_1: People recall equal amounts of information from pictorial versus verbal cues contained in a printed ad.

H_2: Males and females do not differ in their recall of pictorial versus copy-related information from printed ads.

Advertisements

Six ads were selected that represented three product categories (cigarettes, automobiles, liquor) with one brand per category. Each brand had two advertisements: one that was mostly illustration in nature and the second which was copy dominated. All six advertisements were full page, four-color ads selected from current magazines. Prior to showing the ads to the subjects, slides of the ads were made to assure uniform exposure and viewing conditions.

Subjects

To collect the data for the study, 48 students (24 males and 24 females) were recruited. One half of the students (12 males and 12 females) viewed the three

ads (one ad per product category) that were predominately illustration oriented. The remaining subjects viewed the three copy-dominated ads. In each case the subjects were sent in small groups to a separate room and were instructed to arrange themselves around a screen so that they could comfortably view some slides. Each of the three ads was shown for thirty seconds. After ad exposure, each group was escorted to a different room to complete a questionnaire. Subjects were not informed of the intent of the study.

Dependent Variable

The total number of verbal (visual) stimuli recalled in a given ad served as the dependent variable of this study. To operationalize the variable, subjects were asked to describe completely the three ads they had just seen. These written descriptions were then subjected to a content analysis following a procedure recommended by Budd, Thorp and Donohew (1967). Accordind to their procedure, the contents of a description are compared to a master checklist and a value of 1 is awarded for each item that appears in the description as well as on the master checklist. Anything contained in the written description that does not appear in the master checklist is not counted.

Simple addition of the values yields a score for each respondent's description. Because each ad differed in terms of the number of possible items that could be mentioned, it was necessary to transform scores to a common denominator before statistical analyses could be done.

Three researchers independently evaluated each of the ads and created an independent master checklist. This, in essence, is a test-retest form of reliability evaluation (Budd, Thorp and Donohew, 1967). A simple formula used to determine the reliability of two coders (North, Holsti and Zanimovich, 1963) was modified to three coders as follows:

$$R = \frac{3\,(C_{1,\,2,\,3})}{C_1 + C_2 + C_3} \qquad (1)$$

where $C_{1,\,2,\,3}$ = number of agreements of three coders
C_i = number of category assignments by coder i.

In the present case the illustration and copy cues of each of the six advertisements were evaluated separately so that twelve master checklists were created. Applying the reliability formula to each of the twelve checklists yielded coefficients of .92 and above, indicating the checklists are reliable. Simple counting of the number of items mentioned in the written descriptions was straight forward and did not require multiple coders or, therefore, reliability assessments (North, Holsti and Zanimovich, 1963).

Method of Analysis

The ANOVA procedure was applied to the mean recall scores of pictorial and verbal cues for each of the six ads. In those instances where the F-test indicated that a treatment effect was present, Tukey's HSD *a posteriori* test was conducted to determine the source(s) of the significant differences (Kirk, 1968). Visualizations of the interactions between sex and ad cues are provided in those instances where the interactions were significant.

Results

Results of the ANOVA procedure conducted for each of the six ads are shown in Table 1. In five cases (the one exception being the copy-dominated ad for the liquor brand) the recall of items does not significantly differ by respondent's sex. Males and females do not appear to differ much in terms of the total number of items recalled from ads, regardless of illustration- versus copy-domination of the ad. This holds true across the product categories included.

EXHIBIT 1
MEAN RECALL SCORES

Ads	Females		Males	
	Visual Cues	Verbal Cues	Visual Cues	Verbal Cues
Copy-Dominated				
1. Automobile	17.3	1.5	10.8	3.7
2. Cigarette	15.8	3.8	8.3	5.0
3. Liquor	17.4	2.8	5.5	4.8
Illustration-Dominated				
1. Automobile	2.3	0.7	1.4	2.1
2. Cigarette	15.3	4.5	12.7	7.5
3. Liquor	16.3	3.4	12.8	8.0

The F values associated with the ad cue breakdown are significant at $\alpha < .001$ for five of the six ads. A similar mean number of items were recalled from both the illustration and copy parts of the illustration-dominated automobile ad; in fact, there was very little recalled about this particular ad. (See Exhibit 1). For the other five ads, however, the mean number of items from the copy versus illustration were significantly different. In all five cases, the mean number

TABLE 1
ANOVA RESULTS

Ads	Variable	Sum of Squares	df	Mean Square	F	α
Copy-Dominated						
1. Automobile	Sex	60.75	1	60.75	1.90	.20
	Ad Cue	1611.84	1	1611.84	50.36	<.001
	Sex x Ad Cue	236.88	1	236.88	7.39	.01
	Error	1408.25	44	32.01		
2. Cigarette	Sex	116.64	1	116.64	2.72	.11
	Ad Cue	712.00	1	712.00	16.63	<.001
	Sex x Ad Cue	229.68	1	229.68	5.37	.026
	Error	1883.58	44	42.81		
3. Liquor	Sex	294.62	1	294.62	15.73	<.001
	Ad Cue	711.48	1	711.48	37.99	<.001
	Sex x Ad Cue	580.94	1	580.94	31.02	<.001
	Error	824.44	44	824.44		
Illustration-Dominated						
1. Automobile	Sex	1.03	1	1.03	.62	.45
	Ad Cue	2.51	1	2.51	1.51	.24
	Sex x Ad Cue	14.94	1	14.94	9.01	<.005
	Error	73.00	44	1.66		
2. Cigarette	Sex	.31	1	.31	.01	.98
	Ad Cue	768.00	1	768.00	20.49	<.001
	Sex x Ad Cue	96.44	1	96.44	2.57	.13
	Error	1649.25	44	37.48		
3. Liquor	Sex	8.78	1	8.78	.26	.64
	Ad Cue	945.19	1	945.19	28.16	<.001
	Sex x Ad Cue	209.97	1	209.97	6.26	.02
	Error	1476.84	44	33.56		

of recalled items from the illustration cues exceeded the mean recall values from the copy component. In light of this evidence, then, H_1 may be rejected. In most cases, the visual component produces a significantly higher level of recall than does the verbal part of an ad. This held true even for the copy-dominated ads and across product categories.

Five of the six F values for the interaction of sex and ad cues are significant. In this case, the illustration-dominated cigarette ad did not produce significant results. The five significant cases suggest that males and females differ in terms of their recall of verbal versus visual cues of an ad. This evidence means that H_2 may be rejected. Again, this interaction significance holds for both illustration- and copy-dominated ads and across product categories.

Tukey's HSD test was performed on the data and lead to significant treatment interactions. These test results are shown in Table 2. One interesting observation is

TABLE 2
PAIRWISE COMPARISONS : RECALL SCORES[a,b]

Ads	Female: Illustration Versus Copy Cues	Male: Illustration Versus Copy Cues	Illustration: Female Versus Male	Copy: Female Versus Male
Copy-Dominated				
1. Automobile	15.8[c]	7.1[c]	6.5[c]	-2.2
2. Cigarette	12.0[c]	3.3	7.5	-1.2
3. Liquor	14.6[c]	0.7	11.9[c]	-2.0
Illustration-Dominated				
1. Automobile	1.6[c]	-0.7	-0.9	-1.4
2. Cigarette	12.9[c]	4.8	3.5	-4.6
3. Liquor	----[d]	----[d]	----[d]	----[d]

[a] Comparisons are made by using Tukey's HSD test

[b] Values are differences between means reported in Exhibit 1

[c] $p < .05$

[d] Tukey HSD test not performed

that in all five cases the mean recall values of illustration versus copy cues are significant for females. For males, however, only one significant difference was found (for copy-oriented automobile ad). These differences are visually presented in Figure 1. It can be seen that the mean number of items recalled by females from the visual cues exceeds the mean number of copy items in all cases. The same is generally true for males, but the differences are far less pronounced (and thus were not significant). Males actually recalled more from the copy than from the illustration in the automobile illustration ad.

Figure 1 also shows that males have a higher mean recall of copy items than females, but the data in Table 2 indicate these differences are not sufficient to be significant at $\alpha \leq .05$. Similarly, Figure 1 indicates that females consistently recalled a greater number of items than males from the illustrations, but Table 2 data indicate that the differences are significant at $\alpha \leq .05$ in only two cases: the automobile and liquor copy-dominated ads.

Discussion

The purpose of this study was to explore whether the amount of information recalled from the illustration or the copy of ads exhibited higher recall. An additional purpose was to see if recall varied by the interaction of ad cues and respondent's sex. Although sex was not generally related to total recall, this conclusion must be modified when significant interactions are found (Kirk, 1968). It was found that the recall of ad cues differed, and the interaction findings showed that males and females respond differently to illustration and copy.

Expectations from the literature search were that women would more likely recall a greater amount of illustration-related information than men; whereas men would likely recall more copy-related material. The findings here conform to those expectations. Moreover, the findings also are in accordance with the literature in that the recall of illustration-derived information is greater than the recall of copy-related material for both men and women.

This implies that advertisers must pay particular attention to the illustrations used in ads. Not only are illustrations strong attention generators for the ad, but they also convey information that is more readily recalled than verbal information. Thus, the illustration should be designed to relay information the advertiser wishes to convey and should not simply contain decorative models.

Another implication is that the illustrations can induce readers to react (and thus retain) copy, whereas lengthy copy in the ad may discourage readership. Figure 1 clearly showed that the mean number of recalled copy items is low for all three copy-dominated ads but is higher for the cigarette and liquor illustration-oriented ads. The automobile illustration ad appears to have induced men to read the ad in that they recalled more from the copy than from the illustration.

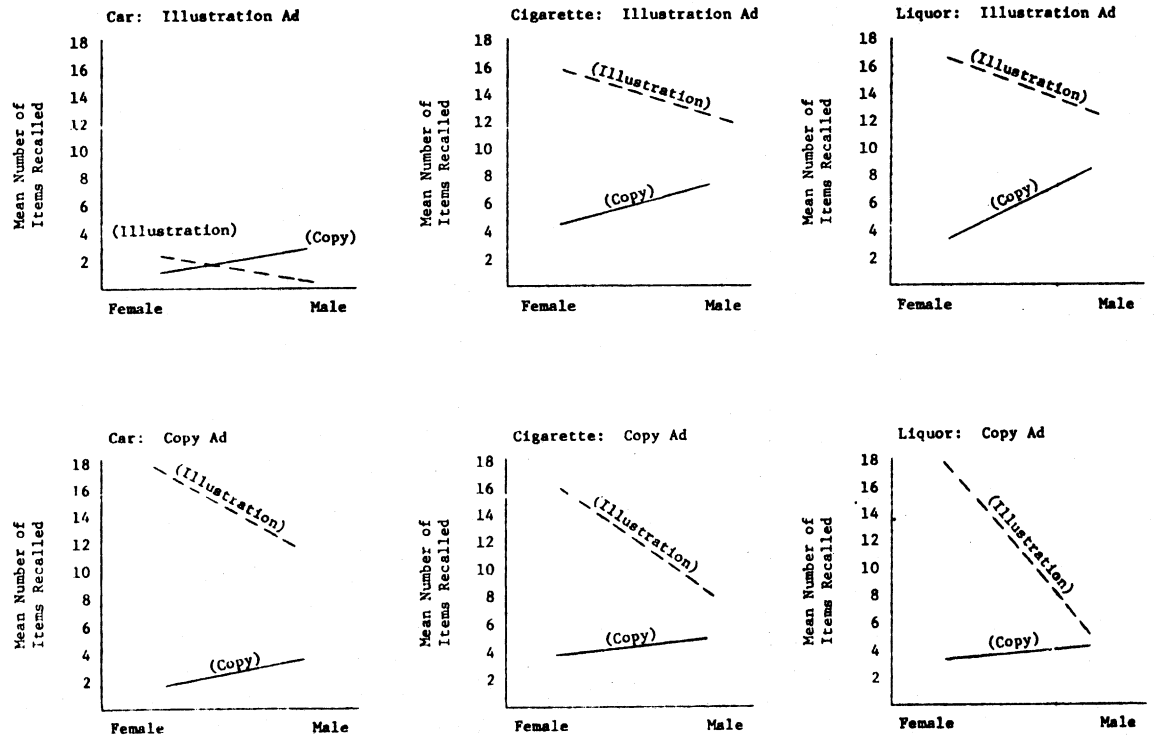
In general, then, much of the space should be devoted to illustrations carrying information the advertiser wishes to convey. For ads aimed specifically at women, this would hold especially true--copy should be minimized. Those ads aimed at male audiences may contain more copy.

Conclusion

Several avenues are open for further research. Since a limited number of products were included, an extension of the study would be to incorporate additional product groups to determine the extent to which these findings may be generalized. Another departure would be to hold a product category constant and include ads from several different brands within that category; this procedure would allow interbrand comparisons.

Additional research could focus on measures other than recall. Such variables could include item comprehension, preferences, interest, etc., or changes in those variables produced by ads.

FIGURE 1
INTERACTION EFFECTS



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