ABSTRACT

A model is developed and proposed to describe the underlying processing of the visual and verbal components of print advertisements. Based upon past research, the processing of these two components of print advertisements is viewed as consisting of (1) different levels of processing, (2) elaborative encoding, and (3) encoding distinctiveness. An empirical test of the model indicates that the visual/pictorial component of the print ad is more elaboratively and more distinctively encoded than the verbal component. Results of the research are discussed in terms of their implications for understanding vivid versus salient effects of information presentation.

Memory for the Visual and Verbal Components of Print Advertisements

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The integration of verbal and visual information is pervasive in the consumption environment. At the point of purchase, packages convey product information in verbal form while often conveying additional product information through color

*Authors are listed alphabetically since contributions to the study were equal. This research was supported in part, through a grant from the School of Management-University of Minnesota to the first author.
or graphics. In the mass media, only radio lacks the direct capability of integrating verbal and visual information in the message. Research in consumer behavior has recently focused on the relative effects of one form of information versus the second. For example, Rossiter and Percy (1978) observed that a pictorially oriented print advertisement had a more positive effect on attitudes than did a more verbally oriented ad. Kisielius and Sternthal (1984) found that a shampoo ad containing line drawings plus sentence descriptions had a greater negative impact on attitudes than did an ad containing only the sentences. Both Lutz and Lutz (1977) and Childers and Houston (1984) report that memory for brand names is enhanced when visual referents are used along with their verbally presented labels. Additionally, Edell and Staelin (1983) examined the nature of this relationship for framed and unframed pictures. For framed pictures, the verbal material was equivalent to pictorial content, whereas for unframed pictures the verbal message did not relate to the pictures. They observed a differential recall of brand relevant items in favor of framed pictures. Thus, an emerging and extensive body of research has developed within consumer behavior that has as its focus understanding the relationship and relative impact of verbally and visually presented messages, especially as they pertain to print advertising. (See Lutz and Lutz, 1978; Rossiter and Percy, 1982; and Alesandrini, 1983, for additional discussion.) One pervasive and consistent finding within this literature is that the pictorial element of the print ad results in better memory of message related attributes when compared with a verbal message, whereas effects for other advertising outcome measures, such as attitudes and persuasion, have been inconsistent (see Edell and Staelin, 1983, for further discussion). The focus of this paper is on the nature of the processing accompanying an exposure to a print advertisement containing both verbal and visual/pictorial content. The intent is to discuss the types of initial processing that consumers may utilize and the relationship of those processes to the previously reported effects of visual and verbal information on consumer memory. Given the reported consistency in memorial effects, it is now appropriate to explicate the processes underlying those effects. Additionally, results of an empirical study will be reported that examine the effects of different encoding processes on the memory for the verbal and pictorial content of a series of print advertisements.

MEMORY PROCESSES

Availability Versus Accessibility

Purchase decisions can be differentiated along a number of dimensions, including whether they take place in or out of the store (Bettman, 1979) or whether they are stimulus based or memory based (Lynch and Srull, 1982). For decisions that take place out of the store and are memory based, the retrieval of information, such as that contained in a previously seen print advertisement,
is a critical consideration. The information that is most retrievable from memory is very likely to have the greatest impact on the purchase decision (Tversky and Kahneman, 1973). For example, a parent may send a child to the store to buy a new box of laundry detergent upon discovering that they have none. The decision to buy "Tide" is based upon prior experience and other information that "comes to mind" upon discovering the shortage. The brand decision that was made is likely not to reflect all past information that the parent has accumulated about laundry detergents in general or about "Tide" in particular. This brings out an important difference between what comes to mind and potentially what "could" come to mind. As Lynch and Srull (1982) point out, an important distinction is made in discussions of memory processes between "availability" and "accessibility," a distinction first offered by Tulving and Pearlstone (1966).

Once information is fully comprehended and encoded into long-term memory it is thought to be always available. . . . However, only a small portion of the vast quantities of information that we learn is "accessible" at any given time—i.e., we are only capable of retrieving a fraction of the total information we have available (Lynch and Srull, 1982: p. 20).

One factor that impacts on the accessibility of information in memory is explained through the principle of encoding specificity (Thomson and Tulving, 1970). According to this principle, what is stored in memory is determined by what is perceived and how it is encoded. In turn, what is stored affects what retrieval cues are effective in providing access to that stored information. The importance of this principle is the observation that an interrelationship exists between encoding processes and retrieval. To the extent that cues guiding the storage of information in memory are present at a later point in time, access to that information is likely to be enhanced. Thus, to more completely understand how and why certain purchase information is easily accessed, it is important to also examine how it might be encoded into memory (Olson, 1978).

**Encoding Processes**

The nature of the encoding process can be distinguished along several dimensions. First, processing can occur at different levels or depths (Craik and Lockhart, 1972; Craik and Tulving, 1975). These levels range from sensory processing of object appearance to the semantic processing of the objects' meaning or significance. Additionally, processing can occur in greater breadth or can be more elaborate at a particular level of processing. Individuals can encode more information from a stimulus, whether it be sensory, acoustic, or semantic, into a larger memory trace. This elaborative processing forms the basis for a model of vividness proposed by Kieselius and Sternthal (1984). According to this model, vivid information is more elaboratively encoded in memory and is thus more "ac-
cessible” when forming later judgements. This process is the underlying mechanism for their availability-valence hypothesis. Using this hypothesis, they find that attitudinal judgements depend on the accessibility and valence of stored information. In particular, a vivid pictorial message was reported in their experiment to have a more negative impact on attitudes than did a more pallid verbally based message.

The underlying mechanism for differential access of verbal and visual information may stem not only from cognitive elaboration but also from encoding distinctiveness (Jacoby and Craik, 1979). Distinctiveness relates to the ability of individuals to discriminate one stimulus from another at encoding, which in turn aids in the unique access of that memory trace at retrieval. In comparison to the elaboration process, distinctiveness refers more to the contrastive value of information rather than the volume of information encoded. The contrastive value of the information enables a more distinctive memory trace that improves access/retrieval by reducing the amount of competing information that has been learned in the same context (Lynch and Srull, 1982).

A more complete characterization of the memory processes affecting retrieval or memory access is depicted in Figure 1. This framework reflects not only cognitive elaboration but also encoding distinctiveness. At exposure, an individual may engage in several forms of encoding. The individual may attend to or focus on one type of information, or may proceed from a more shallow, sensory level of processing to deeper, semantic based processing. Additionally, the individual may elaborate on the message and/or may encode the message in a distinct trace in memory. It is proposed that all three processes serve to determine the potential for differential accessibility of the message and its components at some later point in time. With respect to the processing of the verbal and visual components of a print ad, both elaborative and distinctive encoding processes appear to be potentially relevant (Kisielius and Sternthal, 1984; Childers and Houston, 1984). Additionally, Childers and Houston reported that the processing that occurred at different levels substantially affected both the amount and type of message information that subjects were able to recall. However, to more fully understand these various process effects, one further distinction must be made on the nature of memory accessibility.
Recall Versus Recognition

Memory accessibility may also be distinguished in terms of whether the individual is engaged in recall or recognition. The nature of this distinction has been extensively detailed by others (c.f., Lynch and Srull, 1982; Alba et al., 1981 for discussion and application) and will only be summarized here. Free recall requires an individual to independently produce cues that will enable retrieval and access to memory. For instance, choosing a brand of detergent at home rather than in the store (without the aid of the package) would probably require free recall. Alternatively, in recognition the generation of cues for access to memory are provided by re-presenting the stimulus, usually with a series of distractors (as is the case for in-store decision making). A two stage “generation recognition” model is often used to distinguish the accompanying processes. In free recall, the person must independently retrieve a particular item and then perform some recognition check on whether the item had been previously presented. In contrast, recognition is thought to bypass the retrieval stage and only involve the phase of discriminating the previous item from accompanying distractor items. As such, recall is more concerned with cues that serve to aid retrieval, whereas recognition depends more upon cues that differentiate items (Klatzky 1980; Mandler 1980). Given this distinction, and the types of encoding processes that also may occur, several predictions can be made about memory for the verbal and visual components of print ads.

HYPOTHESES

As indicated previously, a number of studies have reported that a pictorially based stimulus is remembered better than a verbally based stimulus. However, the source of this “picture superiority” effect on consumer memory may flow through the different processes previously identified in Figure 1. Elaborate encoding of the pictorial component should serve to increase the amount of information that is stored in the memory trace and thus increase the number of pathways in memory (Kisielius and Sternthal, 1984). With a greater number of linkages or memory pathways, access to stored information should be enhanced, since retrieval would be facilitated by the availability of more cues. Because free recall is heavily dependent upon the generation of retrieval cues, cognitive elaboration should enable better access of the pictorial versus the verbal component of the print ad. Thus, Hypothesis 1 states:

H1: Free recall of the pictorial component of the print ad should be greater than the free recall of the verbal component.

Alternatively, individuals may differentially process the verbal and visual components of an ad in terms of encoding distinctiveness. Research by Nelson (1979) and his colleagues (Nelson et al., 1976) supports this notion of picture superiority. They attribute superior memory access for pictures to the distinctive
lines and curves comprising pictures versus words. Nelson et al., (1976) demonstrate in a series of experiments that high schematic (appearance) similarity among pictorial stimuli reduces or reverses the superior recognition performance for pictures. As discussed earlier, recognition essentially bypasses retrieval and only requires a discrimination between the presented stimulus and the memory trace. Using the distinctive encoding principle, Hypothesis 2 predicts:

H2: There should be superior recognition of the pictorial component in comparison with the verbal component of the print ad.

In summary, elaborative encoding should increase the volume of pictorial based information contained in memory. This should result in a larger number of retrieval cues available for accessing the pictorial versus the verbal component of the print ad. Enhanced retrieval potential should then result in superior free recall of the pictorial component of the ad. Additionally, the discriminating sensory related or appearance related features of pictures, compared to ad copy, should support a more distinctive trace in memory. This distinctive trace would not be expected to increase the volume of information (and, therefore, increase retrieval potential); however, it is expected to enable more discriminating judgments to be made. Thus, distinctive coding should result in superior recognition of the pictorial versus the verbal component of the print advertisement.

METHODOLOGY

Procedures

Data utilized to evaluate the hypotheses developed above were collected in a larger experiment conducted to examine the memorial effects of combining pictures with verbal material that was consistent or inconsistent with the picture theme. In order to most effectively examine the memory for elements contained in the picture versus the verbal portion of the stimuli, the present discussion utilizes only data collected in the inconsistent information condition. In this condition subjects were presented with advertisements containing verbal information about a product attribute that was different from the attribute presented in the picture. Each subject was exposed to 10 advertisements containing pictures that had been previously shown to convey a product attribute (for example, a drawing of Superman holding a fence portrayed the attribute of strength) (Childers, 1982). The verbal portion of each ad contained information about some unrelated product attribute such as the custom designed fences available through the advertised company. The ads were designed to contain equivalent amounts of information by specifying three elements to be included in both the verbal and pictorial components of the ads. The elements were brand, product class, and message theme. In the above example, the picture consisted of Superman stretching a fence that corresponded to the name and product class described in the copy.
Fifty-six undergraduate students were exposed to the stimuli described above. The experiment was conducted in a group setting, with subjects told they would be evaluating a series of advertisements in the early stages of development. Booklets were distributed containing the 10 test ads, each followed by a page of semantic scales. Subjects were exposed to a stimulus ad for 15 seconds; they then turned a page and were given 45 seconds to complete the semantic scales. These scales were designed to direct subjects to process the ads at a constant level of processing and thus control for the third facet of encoding discussed earlier (Figure 1). Following the completion of this task for the 10 stimuli, the subjects were given a 3 minute distractor task. Next they were given 10 minutes to complete an unaided recall task in which they recorded all they could remember about the advertisements they had seen. There were 10 blank boxes provided for the task, and subjects were advised to record their information in any order.

Subjects were asked to participate in a recognition task 2 days after the completion of the first phase of the data collection. Again in a group setting, subjects were shown slides of the ads they had seen previously, randomly interspersed in a collection of ads that contained different picture elements, different copy elements, or new elements in both the picture and copy. It is important to note that the changes made to the ads were quite substantial—in the condition in which the verbal portion of the ad was changed, the product attribute discussed in the copy was completely altered. For example, copy that had previously discussed the durability of tires now indicated that the tires were a good value. Similarly, when the visual portion changed, a primary element of the picture was altered; for example, Superman in the fence ad was replaced with a gate and a fence. Subjects were asked to indicate if they had seen the ad before (yes or no). Each slide was shown for 15 seconds, during which time subjects recorded their responses.

Materials

As introduced above, the advertisements developed as the stimuli for the study were designed to be equivalent in content across all subjects. Through a series of pretests, ads were developed for the 10 product classes that contained verbal copy of 23–44 words and a picture with 2 primary objects. A check of information content indicated that equivalent amounts of superfluous copy and pictorial elements were recalled across the ads \((t = 0.24, p > 0.05)\). Pretests were also conducted to ensure that the picture elements conveyed a product attribute and that the ads were easily comprehended within the 15 second exposure time. Each subject saw one ad for each of the product classes, with the order of exposure randomized across subjects.

The slides utilized in the recognition test represented the stimulus ads together with distractor ads that were developed to contain equivalent content. All distractor ads used product classes previously seen by the subjects, contained two primary visual objects and 25–33 words, and utilized the same layout as those ads used as stimuli. The changes, as described above, replaced one of the primary
visual objects and/or changed the focus of the message substantially. In no case was the subject required to identify an insignificant change in wording or in the picture in order to correctly recognize a distractor ad. The original stimuli were randomly mixed with 30 of these carefully prepared distractor ads prior to presentation to the subjects.

**Measures**

Data collected using the procedure above relates to accessibility phenomena discussed in the theoretical development section. The unaided recall task yielded memory protocols that relate most directly to the retrievability of the information in stored memory. Each of the protocols was quantified using an extensive coding scheme designed to designate each element the subject recorded as originating from the picture or the copy portion of the advertisement. Two graduate students independently performed the coding task. Intercoder reliability was 91%, and all discrepancies were subsequently resolved through discussion by the coders prior to analysis of the data. In aggregating the information for the purposes of the present discussion, four measures of unaided recall were selected as most relevant in understanding the degree to which verbal versus pictorial information is accessible in memory. Specifically, for each subject, recall of the product attributes portrayed in the picture, the product attributes conveyed in the copy, the total number of picture elements, and the total number of verbal elements were summed across each of the 10 advertisements. These measures offer the clearest comparison of where the recalled information originated.

The procedures used in assessing recognition memory followed the signal detection theory paradigm (Green and Swets, 1966). In a recognition test consisting of a series of previously presented items and a set of distractors, four outcomes can be observed (Figure 2). If a subject views an "old" item and indicates
that it was an "old" item, a hit is observed. If the individual says the old item is "new," a miss is recorded. If the item is "new" it can either be acknowledged to be "new" (correct rejection) or incorrectly recognized as "old" (false alarm). The paradigm can be directly applied to the present research by manipulating the verbal and pictorial components during the recognition test. As also shown in Figure 2, manipulating each component produces a pattern of correct and incorrect recognition analogous to signal detection theory. Of importance to the current research is the pattern of incorrect responses, particularly the false alarms. Since this is a recognition test, the pattern of incorrect recognition scores should assess what is available in memory versus what is accessible. If subjects incorrectly recognize either of the components of the ad, then this should indicate that the components have been differentially encoded. For instance, more false alarms due to the picture component (i.e., the response is a result of memory for the picture) should indicate that there was superior encoding of the pictorial component and that the verbal component was less available in memory.

This recognition test offers the unique opportunity to examine the amount and type of information that has been encoded but is not easily retrieved from memory. The distractors utilized in the recognition task varied the picture elements, the copy elements, or both visual and verbal elements of the advertisement. In order to analyze the results of the test, each subject's responses were coded in correspondence to the signal detection theory categories discussed earlier. Each response was recorded as either a hit, miss, correct rejection, or false alarm (as described in Figure 2). In addition, any incorrect responses were coded as resulting from changes in the picture, changes in the copy, or changes in both portions of the ad. The latter represent entirely new ads and thus serve as a baseline for comparing the occurrence of picture based and copy based false alarms.

RESULTS

Free Recall

Table 1 contains results of the unaided recall task performed by the subjects. Significant differences are seen in both measures of recall between the verbal and visual portions of the ads. In tabulating the results of the task, the reported number of picture elements, of copy elements, of attributes derived from the picture, and of attributes conveyed in the copy were summed for each subject across the memory protocols they recorded. The results show that subjects reported an average of 18.16 picture attributes versus 12.21 copy attributes in the protocols they attempted. This difference is significant at $p \leq 0.01$ ($t = 9.14$) and offers support for the first hypothesis, indicating that more elaborative encoding occurs for the pictorial versus the verbal portion of the ad. Further support for this notion is found in the comparison of the number of product attributes reported that were derived from the picture versus those stated in the verbal portion of the ad. An average of
TABLE 1
Recall of Visual Versus Verbal Elements of the Stimuli

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of picture elements</td>
<td>18.16</td>
<td>9.14*</td>
</tr>
<tr>
<td>Total number of copy elements</td>
<td>12.21</td>
<td></td>
</tr>
<tr>
<td>Attributes portrayed in the pictures</td>
<td>3.91</td>
<td></td>
</tr>
<tr>
<td>Attributes conveyed in the copy</td>
<td>0.71</td>
<td>12.16*</td>
</tr>
</tbody>
</table>

*p < .01

3.91 picture attributes were mentioned (e.g., for a protocol dealing with the fence company, the subject would record something indicating that the ad conveyed the strength attribute), whereas an average of only 0.71 copy based attributes (the fences were custom-made) were mentioned (t = 12.16, p ≤ 0.01).

Recognition

The results of the recognition test are displayed in Table 2. The tabulation of results for each subject consisted of totalling the number of false alarms made when the copy changed, the picture changed, and when both picture and copy changed. This could be alternatively stated as false alarms because of the subject’s memory for the picture, memory for the copy, or memory for the product class. For example, it must be assumed that if subjects said “yes,” they had seen an ad containing a gate and a fence, with copy stressing the strength of the fence. In fact, what they had seen was an ad with Superman and a fence that stressed the custom design of the fences, and the subjects were remembering only that they had seen an ad for a fence company (memory of the product class).

The tabulated results were analyzed using a one-way repeated measures ANOVA, and following the determination of overall significance (F ratio = 80.99,

TABLE 2
Recognition False Alarms Because of Pictures Versus Copy

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th>F-ratio/ t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA results</td>
<td>—</td>
<td>80.99*</td>
</tr>
<tr>
<td>Picture vs. copy change</td>
<td>0.50</td>
<td>—9.20*</td>
</tr>
<tr>
<td></td>
<td>3.36</td>
<td></td>
</tr>
<tr>
<td>Copy vs. both change</td>
<td>3.36</td>
<td>9.84*</td>
</tr>
<tr>
<td></td>
<td>0.30</td>
<td></td>
</tr>
<tr>
<td>Picture vs. both change</td>
<td>0.50</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>0.30</td>
<td></td>
</tr>
</tbody>
</table>

*p < .01
$p < 0.01$), $t$-tests were performed to examine differences in the individual manipulations. As shown in Table 2, significantly fewer false alarms arise when the picture is changed than if the copy is changed. Less than one error per subject is made on average if the picture is altered (or if both picture and copy are changed), but an average of 3.36 false alarms occur when the copy is changed. This indicates support for Hypothesis 2, that the picture and copy are differentially encoded. In this case it appears that the pictures form more distinctive traces in memory and are thus less susceptible to memory error than are the verbal portions of the ads.

**DISCUSSION**

Results of the present study support previously reported research that has found superior memory for pictorially conveyed product information in comparison to verbally conveyed information. Additionally, results of this study identify that two forms of encoding appear to act in concert to produce a picture superiority effect. Memory tests of free recall support a cognitive elaboration process at encoding, whereas a pattern of false alarms for the recognition test support the distinctive encoding hypothesis. Subjects were able to recall more elements of the pictorial portion of the advertisement and, additionally, remembered more of the central messages conveyed through the picture versus the accompanying copy. The locus of this differential retrieval would, however, appear to lie at initial encoding rather than at later access. The recognition results indicate that pictorial information is more available in memory rather than simply more accessible. Several implications appear to emerge from this pattern of results.

A recent distinction has been drawn by Taylor and Thompson (1982) between a “vivid” presentation of information and a salient presentation. Salience refers to “the phenomenon that when one’s attention is differentially directed to one portion of the environment rather than to others, the information contained in that portion will receive disproportionate weighting in subsequent judgements” (Taylor and Thompson, 1982: p. 175). These authors note in their review that studies manipulating salience have generally found hypothesized effects, whereas studies of vividness have failed:

Salience and vividness would, on the face of it, appear to be conceptually related. Both refer to the fact that stimuli with certain striking properties attract attention and as result exert a disproportionate effect on judgments. Yet the two literatures obtain opposite patterns of effects (Taylor and Thompson, 1982: p. 176).

The authors’ explanation for this difference in effects for seemingly equivalent manipulations of such factors as pictures versus words, color, or person appearance is that salience studies manipulate differential attention, whereas vividness studies do not. The authors reflect prior research by McArthur (1980) in stating:
When attention is drawn to one actor, there is, by definition, less attentional time available for other actors, and hence salience effects may achieve their effect via \textit{differential encoding} of information (Taylor and Thompson, 1982: p. 177 [emphasis added]).

and

successful salience effects do not depend on differential recall of information. . . . Instead, the research suggests that salience effects occur directly at the \textit{encoding stage} of information processing (Taylor and Thompson, 1982: p. 177 [emphasis added]).

The present research study embraces the approach detailed by Taylor and Thompson for examining vividness. They propose that an assessment of vividness should be conducted on a within-subjects basis and that vivid versus pallid information should compete for the individual’s attention. Our design utilized a picture plus copy presentation of the advertising message similar to that employed in past research (c.f., Kisielius and Sterntahl, 1984). A large body of research attests to the differential imagery evoking capacity of pictures versus words (c.f., Lutz and Lutz, 1978; Childers and Houston, 1984). This is consistent with Nisbett and Ross (1980) who characterize vivid information as more “concrete and imagery provoking.” The present research utilized this approach on a within-subjects basis, given a limited exposure time, thereby providing the type of assessment advocated by Taylor and Thompson (1982). Clear differential effects of recall and recognition between the pictorial and copy components of the ads conform to a differential encoding explanation of vividness. However, one limitation of the present study is that only memory is examined. As stated earlier, this decision reflects the more consistent effects reported in memory versus judgment studies. Still to be studied are the effects on attitudes and judgments. A more complete test of the differential encoding hypotheses on memory and attitudes would, however, appear both promising and warranted based upon the results of the present research. We would agree with Taylor and Thompson (1982: p. 178) in saying: “The vividness effect may be far less elusive when it is searched for in a situation that reflects the informational competition found in everyday life.” What better context for this to occur than the informational competition confronting today’s consumer?

\section*{REFERENCES}


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