

*The left-brain reads, the
right-brain scans images.
This helps account for . . .*

MEMORY WITHOUT RECALL, EXPOSURE WITHOUT PERCEPTION

Herbert E. Krugman

In each of two recent talks, to the AMA Attitude Research Conference in Las Vegas and to the ANA Media Workshop in New York, I pointed out the limitations of recall as an indicator of memory and tried to reposition the concept of perception. In Las Vegas I reviewed the implications of the new brain research on the theory of low involvement; in New York I reinterpreted some earlier data which suggested that three advertising exposures represented an optimal frequency. That two so different talks converged on a common focus suggests that there may be some value in looking at them together.

High and Low Involvement: The Two Brains

In 1965 I had rejected what I thought was an over-emphasis on the importance of attitude when I suggested that television advertising typically produced changes in behavior prior to changes in attitude, and that in-store purchasing triggered an accumulated potential for a shift in the salience of perceived attributes of an advertised object (Krugman, 1965). By contrast, it was typically in response to the print medium that one could expect to find in operation the more familiar model of AIETA (awareness-interest-evaluation-trial-adoption) or other hierarchy models—i.e., the classic “think before you act” rational approach to decision making revered in the schoolroom.

Low-involvement theory seemed to challenge the rule of reason and to confirm the idiocy of the so-called “boob tube” and perhaps even of advertising. Such fears were unreasonable, but the unknown is threatening. How can people learn without reasoning? When do insights occur apart from what we call thought or thinking? How much of behavior therapy, the encounter movement, Zen, ESP, and the new religions does make significant sense? What does this apparent downgrading of reason mean?

To me a psychologist is first a biologist. I have always looked to the physiological side of attention



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and learning for clues as to what was really happening. For many years I maintained contact with Dr. Norman Mackworth of the Stanford Medical Institute, used his optiscan device, and developed some views about the moving or actively scanning eye, the "working eye" (or brain) characteristic of reading, and the relatively motionless, focused, or passive eye characteristic of TV viewing (Krugman, 1968, 1971). Now recently, Dr. Roger Sperry of the California Institute of Technology has begun to startle the world with his findings concerning the independence and separately specialized function of the right and left hemispheres of the brain (Sperry, 1973). Dr. Sperry arrived at this conclusion after examining 56 cases in which the *corpus callosum* connecting the two hemispheres had been surgically severed, most typically in an attempt to reduce the frequency and severity of seizures of epileptic patients. Sperry found that there was no readily apparent abnormality in behavior of these 56 individuals with separated hemispheres. How could that be, except if the hemispheres were largely independent in the first place?

With further research it became clear that reading and speaking are left-brain functions, while the perception of images is a right-brain function. Therefore, the medium of print is a left-brain function, and TV largely or relatively a right-brain function. I would add that high involvement is more a left-brain activity, and low involvement a right-brain activity; that gross eye movements activate left-brain activity, and that a motionless, focused eye tends to bring in right-brain activity. It is with these physiological views that I go on to matters of individual psychology and, specifically, to some questions about television and children.

It is no news that TV is a good and early baby sitter. It more likely replaces parenting behavior in large families than in small, in low-income families than in high. I refer here, for example, to the work of Clarke (1965) and Zajonc (1976). Television teaches the young child to "learn to learn" in a very special manner, to some extent before he can talk and, in many low socioeconomic status (SES) families or semiliterate societies, before he has ever looked at a book. So the child learns to learn by quick looks. Later, if the child is in a society where reading is required, he confronts the new "learn to learn" medium with the habit he has picked up earlier from TV. He tries to comprehend print via quick looks. It doesn't work. Learning to read is difficult, hard—and this comes as a surprise, an intolerable one in many cases. Years later, remedial reading may make up some of the lost ground. Meanwhile, there is a possibility that along with the lessened stimulation of reading behavior may go lessened stimulation of the left brain's capacities for abstract thought. In the smaller

upper SES families where the book and reading are valued, the child may more likely be introduced to the book coincidentally with television and the latter may be rationed or even censored.

I suspect that the classes are moving apart psychologically and culturally. Even if incomes were mandated to be equal, the left-brain people and the right-brain people have different communication patterns. We may, therefore, split into two cultures, two increasingly separate societies. The Media Imperatives Study by the Simmons Company suggests that this is already happening. Going beyond the simple generalization that "everybody watches TV," they classified survey respondents into those whose print exposure was relatively high versus television, and those whose TV exposure was relatively high versus print. The SES differences were enormous. The advertising media implication is that to efficiently reach the high SES purchasers you should use print. Of course, once you reach them, you may still have a problem of what to do with them, and many advertisers are experimenting with new print formats, trying somehow to capture the kind of impact usually associated with television.

In considering communication behavior these days, it's all right to talk about differences in SES or in media habits, while it's not all right to talk about differences in intelligence. Aptitude tests are out of fashion and the concept of the IQ is under political attack. Nevertheless, the inventors of the IQ or of the standard intelligence tests, the Binet for children and the Wechsler for adults, took pains to include among the subtests that comprised their procedure the so-called verbal and performance tests. In the Wechsler, the overall IQ is an average of the verbal and performance subscores, giving them equal weight. There is in our society, however, a bias in favor of the verbal, in favor of the left brain, in favor of "thinking before you leap," even in favor of the idea that, except in the case of true (and mysterious) "genius," great scientific insights come as a conclusion to step-by-step research or reasoning. Our model of AIETA and other hierarchy-of-attitude models is this left-brain, verbal, "look before you leap," reasonable, or "rational" model. With a biological base, and acknowledging individual differences, it is not reasonable to ask if this model is valid. It is reasonable to ask for whom it is valid or perhaps when. Meanwhile, the newer behavior-before-attitude models redress an imbalance, an old bias, and are perhaps more appropriate for individuals of the newer generations, including the preliterate societies of the developing countries where TV will surely arrive long before the emergence of a mass print medium.

There is, then, no question of attitude-before-

behavior theories versus behavior-before-attitude theories, just as there is no question of verbal versus performance skills on the Wechsler, or a left versus a right brain. There are two of everything, and an individual may avail himself of each. The challenge remains, however, that we "left-brain types" don't understand the right brain too well—the nonverbal skills, art, creativity (or at least the right-brain aspects of it). The future of low-involvement theory is in this nonverbal area.

The theory of low involvement asserts that repetition of exposure has an effect which is not readily apparent until a behavioral trigger comes along. Even then, the immediate effect is only a subtle restructuring of what was there all along—i.e., a shift in salience. Now let us go back to the "not readily apparent effect" produced at the time of exposure. Just what is this effect? Is it what some people call "sheer exposure," and if so, what is that? What seems to happen is that we store a picture memory, an image memory, without words. There is no recall because recall is the word form of the picture. There is no recall because we have had only right-brain involvement. There is no left-brain involvement because no connections, associations, or thoughts occurred at the time of exposure. There is only a capacity—or an increased capacity, if repetition occurred—for recognition memory. An example of this process is the study by Roger Shepard, who had his subjects view 612 different pictures at their own pace, averaging six seconds per picture. Shortly thereafter they were shown 68 pairs of pictures, each pair consisting of one from the original series and one new picture. The pictures from the original series were identified with 98.5-per-cent accuracy. In another test with a one-week delay, accuracy was 90 per cent (Shepard, 1967).

Advertising researchers have argued about the relative merits of using recognition or recall as measures of advertising effect. Because the criterion of recognition is much more easily achieved than that of recall, it has been criticized as being less sensitive. Underlying this "technical" controversy, however, is the fact that the use of recognition justifies modest advertising expenditures, while the use of recall justifies far larger expenditures. I would reposition the recognition versus recall problem with this proposed addition to the theory of involvement—i.e., the nature of effective impact of communication or advertising on low-involvement topics, objects, or products consists of the building or strengthening of picture-image memory potential. Such potential is properly measured by recognition, not by recall. The use of recall obscures or hides already existing impact. The use of recall may be justified by advertisers who don't mind paying for a strategy that may include some "overkill." However,

the use of recall obscures noncommercial cultural effects of the medium, especially television.

In contrast to the above, the proper measure of high-involvement impact is indeed recall along with clear verbalizing and correct perception of the stimulus. In this connection it is interesting that our tradition of research in public opinion has been heavily invested in reporting public reaction to the news, initially newspaper news. The news is very factual stuff, left-brain stuff. The continuous and very prominent reporting of public reaction to news probably overrepresents the extent of that reaction, while the cultural impact of "right-brain" television, though presumed to be enormous, is difficult to demonstrate.

After World War I social scientists, led particularly by Harold Lasswell, had to work very hard to debunk the idea that propaganda via the mass media could enslave the public mind (Lasswell, Smith, and Casey, 1946). In a somewhat similar vein, the residual effects of Paul Lazarsfeld's work on personal influence (Katz and Lazarsfeld, 1955) and Joe Klapper's review of the effects of mass media (Klapper, 1960), reassured us that the power of mass media had been overrated. But Klapper's review cited a bibliography of 272 studies, half of which had been published in 1950 or earlier, when television ownership in the United States was nil. The first TV-raised generation of Americans didn't face their TV sets until the end of the fifties. Ought we to have been so reassured? Have we not missed the massive cultural impact of television for simply having lacked the intellectual and methodological tools?

To develop those tools, to further our study of learning without involvement or of behavioral change without prior attitude change, we may have to study memory without recall. This is the right-brain form of learning. This is the area of the overlooked cultural impact of the mass media. This is the place where public-opinion research techniques will have to be supplemented by a new generation of research methodology.

Exposure or Perception?

In an issue of this *Journal* I proposed a theory of advertising effectiveness oriented to the finding, from a variety of studies, that about three exposures were optimal (Krugman, 1972). I characterized the first exposure as dominated by a cognitive "what is it?" type of response, the second exposure dominated by a more personally evaluative "what of it?" type of response, and the third exposure as both a reminder and also the beginning of disengagement.

Since that time, the application of the theory to media scheduling has run into the question of what is

an exposure and, sometimes, what I meant as an exposure. Jack Hill of Ogilvy & Mather, in a February 1975 address to an ANA Television Workshop, decided that I meant that the respondent must at least perceive the commercial to have been considered "exposed." He then raised the question of what frequency of advertising is required to produce the desired frequency of perceptions. In January 1976 Walter Staab of SFM Media Service Corporation in an article in *Advertising Age* raised the same question, decided that I meant only sheer exposure when I said exposure, and cautioned that actual perception of the ad would be the more appropriate objective of scheduling and that this would require higher frequency of scheduled advertising.

Although Jack Hill decided that I meant perception and Walter Staab decided that I really meant exposure—or what the British call "opportunities to see"—the research on which the three-exposure theory was built does not favor one or the other. I had cited eye-movement data from my own research, and this involved forced exposure and, if you will, forced perception. In addition I cited CONPAAD data from Bob Grass of du Pont, also involving forced exposures. However, the most comprehensive body of data came from Colin MacDonald of the British Market Research Bureau. His were field survey data, using a panel design and based on opportunities to see, and no forced anything. The MacDonald research could suggest that sheer exposure (i.e., without proven perception) is just as adequate an object of the three-exposure theory as is actual perception. Nevertheless, Hill and Staab and others assume "reasonably" that some perception is required, and they periodically ask how much frequency of sheer exposure is required to create perception.

To really get at this problem we need a better understanding of the terms *exposure* and *perception*. It might be helpful to first look at two related concepts to *look* and to *see*. These two variables permit a fourfold classification—i.e., one can look *and* see, look but *not* see, neither look *nor* see, and, perhaps surprisingly, see *without* looking. The key is in the definition of *looking*, which sensory psychologists like Norman Mackworth call "direction of gaze." To the layman the equivalent concept is that *looking* means "looking at," that the head and open eyes are aimed at the object in question. But "looking at" does not guarantee seeing because the mind may be elsewhere—i.e., one may not pay attention to what one is looking at. But what about seeing without looking? This involves the two phenomena of (a) peripheral vision and (b) conscious vision.

In the service, I used to think of peripheral vision as something that involved only the extreme right and

left sensitivities of the eye. I was aware of the special training in night vision given to lookouts and sentries, based on the differential dark adaptation patterns of the extreme left and right sectors of the retina. It came as a shock to realize later that "looking at" an object or "fixating" on a particular stimulus can only be accomplished within a three-degree arc. Everything else is peripheral. Most of your vision is peripheral. As you walk down a street or drive down a road your direction of gaze and your focus of attention may be on a few items of special interest, but your total orientation to the scene is accomplished primarily by peripheral vision. This peripheral vision permits you to see without paying particular attention to what is seen. You're not especially conscious of that which is peripherally seen. You don't know that you have seen. Later you may even deny having seen. Much of what people call subliminal perception is merely peripheral seeing—i.e., seeing without "looking at" and without being aware that seeing has occurred. It's just part of the selective process—i.e., of all that there is available to see you decide what you should look at and what merits your attention. This kind of seeing can occur very quickly, under one tenth of a second, whereas to see, and to know that you have seen (a two-step operation), is usually a much slower phenomenon, occurring not faster than one tenth of a second.

At this point, recall for a moment that the national averages for all full-page four-color Starched ads studied each year and year after year tell us that 50 per cent of such ads are noticed, but only 10 per cent are read. Many tend to assume "reasonably" that the 50 per cent not noticed are not seen. That's a very leaky assumption. At the same time it's exceedingly difficult to say what per cent of ads are seen since some of the seeing occurs quickly and without awareness. Consequently, conclusions about amount of exposure based on perception will always underestimate exposure.

The fact that Colin MacDonald's data on opportunities to see produce similar findings to the laboratory work of Bob Grass and to my own work seems to mean two things:

- (1) first, generally, that most advertising is familiar and somewhat in the expected pattern or style for commercial products and brands. Here, the inference is that it only takes a very quick look, in most cases, to effectively get the message.
- (2) second, and more specifically, that recall and attitude effects are not necessary for advertising to do its job of aiding in-store purchasing. I had proposed a theory of low involvement with advertising which suggested that faint impressions could build up into an in-store-triggered purchase—with very little trace of the advertising effect prior to that purchase. And this may include very little

evidence of advertising perception prior to the purchase.

I conclude that quick and/or faint perceptions of product advertising, even unremembered, do their job in most cases and that the "actual" exposures are closer to the media-scheduled exposures than we give the media credit for. What does this say about the nature of advertising? Again, let's take the Starch ad norms as an example. Year after year Starch reports that the average noting for ads surveyed that year is about 50 per cent, but that the average read most is about 10 per cent. Remember that noting is simply a verified "yes, I looked at that ad." Now where do you want to position advertising? Do you want to say half of all ads are looked at, or do you want to say that 9 out of 10 are not read? What do you think the advertising process is all about? I suggest that ads are meant to be looked at, to communicate as quick as a wink, that 50-per-cent "noting" probably translates into something over 75-per-cent actual exposure. If an ad has to be "read most," or read slowly, then it's not really what we're talking about. The real ad is what's to look at. The example of television is even more striking. You don't even have to know how to read these, and commercials can get shorter and shorter and still do a job for the advertisers. As a practical matter and for immediate purposes, one need not perhaps be too concerned about whether or not exposure can be proven to have taken place. More and more, as an advertiser, I'm willing to assume it.

As a researcher, however, I do have a long-range interest in better measurement of exposure and have to take a different tack. I have to amplify still further my earlier statement that amount of advertising exposure based on perception will always underestimate exposure, to say more specifically that conclusions about amount of exposure based on recall data will greatly underestimate exposure, that conclusions about amount of exposure based on recognition data will somewhat underestimate exposure, and that sensitive tests of exposure are currently not in much use. A true test to pick up brief but valuable and often the most frequent type of exposure would force the recognition process to the extreme. Such tests may be laborious or difficult to administer, but the principle behind the suggestion is that advertising tests must "test the limits" or the "full range of effects." The easy-to-collect evidence of blatant exposure to advertising must be paralleled by the hard-to-collect evidence of brief exposure, otherwise the advertiser is not getting the full picture and is being shortchanged—especially if the bulk of his advertising does most of its effective work on the basis of brief exposures. So the practical assumption for the advertiser may be to assume exposure until that day when research can

describe for him the full range of exposure.

I recently received a long-awaited copy of a paper by the eminent Donald Broadbent of the Department of Experimental Psychology at Oxford University (Broadbent, 1977). In his paper Broadbent cites research to support the view that the perceptual system operates in a hierarchical fashion—i.e., the eye (or mind) in selecting from the environment what it will attend to must reject a great deal in order to select what it will accept. This process of rejection is an active rather than a passive process, says Broadbent. Thus, to some small but measurable degree, one must note, perceive, or identify what one will not attend to in order to reject it. I suggest that this "pre-attentive process" leaves some trace of the rejected material, certainly not enough to be recalled, but perhaps enough, with repetition of the process and repeated rejections, to be recognized later on.

I'd like to amplify my previous comment about research to "describe the full range of exposure" with these conclusions. The main unresolved tasks for advertising research in this area are threefold:

- (1) to explore more fully the unknown territory between what we now call perception and nonperception. The "make-believe" hard line between these two is contrary to nature. Perception is not an all-or-none matter.
- (2) to explore the unknown territory between what we now call attention and nonattention. The selective process of attention involves more levels of attention than we like to admit.
- (3) to get smarter about what lies between what we now call exposed and nonexposed. We may have to learn how to think more in terms of giving credit for partial exposure, for a half-exposure, for a quarter-exposure, and so on. These values also build up with repetition, just as do full exposures.

In general, let's not shortchange the remarkably sensitive capacities of the human eye and brain, and let's not shortchange the advertiser.

Overview

In my first paper it was the unexplored domain of the right-brain picture or image-sensitive function that compelled a focus on recognition measures as a test of nonverbal, nonrecallable memories. In my second paper it was the peripheral processes of selective attention, including Broadbent's active "pre-attentive processes," that compelled a focus on recognition types of measures. It is tempting to conclude that it is the right brain's picture-taking ability that permits the rapid screening of the environment—to select what it is that the left brain should focus attention on.

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