

## **On Measuring the Power of Communications**

**JAR 1674r3**

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**January 2004**

## On Measuring the Power of Communications

Measuring the effectiveness of advertising in the laboratory-- “copy testing”-- has been a highly contentious area of advertising research for at least a quarter-century. It is an issue that jeopardizes the relationship between agencies and their advertiser clients (Cook and Dunn, 1996,) because typically the client wants to test, and the agency doesn't. It is also arguably one of the most pernicious impacts that marketing's left-brain bias has had on the intuitive and creative side of advertising. Yet the testing methods in use today have changed little, if at all, in the past quarter-century.

Over the past three decades copy testing has not benefited from significant innovation, apart from new data-collection methods. Issues that emerged over half a century ago continue to divide the industry. For example, the debate over recall vs. persuasion has killed a lot of trees, but appears no closer to solution than it was in 1960. Further, on those occasions when critics have identified weaknesses in research methods (Lodish, 1991; Haley and Baldinger, 1991), it has not had much impact on research practice, because there were no clear superior alternatives. Any number is apparently better than no number at all.

There are two main issues in copy testing. One is whether the ad works, and the other is how it works. The most contentious controversies have revolved around the former issue, rather than the latter. In the context of *how* advertising works, there has been more agreement. When testing finds out how an advertising idea works, it can be useful; copy testing should serve as another “wavelength” through which to observe the creative product (Broadbent, 2001). The most intellectually satisfying methodologies are those that allow for a wide variety of advertising strategies, as well as category and media dynamics that are flexible rather than fixed. These methodologies tend to lend themselves well to ‘how’ rather than ‘whether’.

This focus on *whether* rather than *how* has, in turn, made it difficult to develop a consensus on how advertising works. Much of the literature is by authors who have a system to sell, and have tended to back into theoretical models of how advertising works that correspond to their own proprietary measurement systems. Thus, advocates of persuasion testing have argued for the importance of short-term sales effects in advertising, cognitive-response modelers have focused on implicit memory effects in advertising, and so forth.

In this paper we attempt to lay the framework for a new approach to copy testing. That framework is based on a theoretical model of advertising that brings affective measures to the forefront, where modern psychology and neuroscience tell us they belong. It points the way to a complete rethinking of some new and old tools for measuring the effects of advertising, and makes specific suggestions for how copy testing should change.

## Perception, Experience, Memory

There are a number of quantitative copy testing and pre-testing systems currently in use. We do not propose to review these systems, which are reviewed elsewhere in this issue of the journal, as well as in an ARF-sponsored survey authored by Cook and Dunn (1996.) The critical point to make about the key measures identified by Cook and Dunn in most current copy testing systems is that they focus primarily on the “left brain” variables, and neglect the most important, emotional, drivers of behavior.

To understand the importance of emotion in driving behavior, we briefly review the P-E-M model. As described previously in this *Journal* (Hall 2002), this is a theory based on how advertising affects the consumer’s Perception, Experience, and Memory. We believe it is the best comprehensive, fully developed theory of advertising that is consistent with the modern psychology and neuroscience consensus: people respond to emotion first, and reason last—feel, do, think, not think-feel-do.

This model breaks the consumer’s response to advertising into three functional phases: framing perception, enhancing experience, and organizing memory. The most important characteristic of this model is that emotions, feelings, affect, and experience are more important than cognition in each phase of the process. Perception is a dependent variable, influenced by advertising and experience as well as by the consumer’s priors. Multiple feedback loops then connect advertising and perception at every stage of the process. Table 1 shows the three phases of the model.

In the Pre-Experience phase the critical function of advertising is to ‘*frame perception*’. Exposing a consumer to an ad has the following effects:

- Creates an *expectation* for the brand. This tells the consumer what the brand is, and how it fits into her portfolio of needs—is it a place to keep your savings, or an after-school snack?
- Creates a sense of *anticipation* for what the brand can do for her. Will it make her feel financially secure, fulfilled as a mother, satisfy a craving? Note that this is not a reason for buying, or a unique selling proposition. It is the emotional force driving the consumer toward the brand. It is why great food ads make you hungry, great car ads give us the feeling of driving, and great travel ads make us feel like we’re on vacation.
- Provides a rational *interpretation* for the anticipation it generates-- either explicit, with product specifications or features described in objective terms, or implicit, an implied benefit that translates as an objective reason to buy. This is not necessarily a rational reason for buying, although it can be. It is really the consumer’s logical explanation to himself (and anybody

else who bothers to ask) for the decision he has already made on an emotional basis.

The next phase in the sequence is '*enhancing experience*', when the consumer is actually using the product or service:

- There is strong experimental foundation that demonstrates advertising's ability to enhance the consumer's actual sensory experience with brands. We also hypothesize that advertising enhances social experience, which is at the core of most service exchanges (Hall 2002.)

Finally there is the Post-Experience exposure phase. For most advertised brands, most of the time, this is more common than Pre-Experience exposure, because established brands advertise much more than new brands. In this phase, advertising's key function is '*organizing memory*':

- *Cueing* is analogous to expectation in the pre-experience phase. The ad provides verbal, visual, and aural cues that help the audience recall the brand. Cueing can be effective even if the consumer has no explicit memory of the brand. Implicit memory, or non-conscious recall, can provide effective cues, particularly if based on visual images, sounds, or music.
- *Remembering* is the analog of anticipation. It carries more emotional impact than cueing. Remembering is the process by which ads reshape consumers' long-term memory of the brands, and helps the consumer remember the brand in ways the advertiser, not the consumer chooses. (See Hall 2002 for supporting research.)
- Finally, the ad stimulates a cognitive *interpretation* of the brand's relevance and significance. The ad not only influences the consumer to feel that the sensory or social experience was a good one, but it also provides reasons to believe that it was. And if the ad fails to provide or imply a reason-to-believe, the consumer's 'interpreter' will supply one (Gazzaniga 1998).

The vast majority of advertising is for well-established brands with high awareness, not for new brands that have low awareness. Therefore the most important functions of advertising are its ability to enhance experience, and organize memory (Hall 2002.) Recent marketing-mix modeling results with single-source data offer robust statistical support for this observation. A recent study by Hess and Ambach (2002) found that the long-term sales effects of advertising are consistently 3 to 4 times higher than the short-term sales effects, because the majority of the sales effects operate through increased purchasing frequency of the advertised brands by the same individuals, rather than through increased trial by new users. This is consistent with the P-E-M model. It spotlights the limitations of most copy-testing measures, which focus on the least-important part of advertising—short-term sales effects.

We propose two types of measures that would do a much better job of capturing the non-cognitive dimensions of advertising. They are not currently widely used, but they should be given serious consideration. One of these we will call “Product Testing”, after the proposed experimental design outlined in Hall (2002). The second, Physiological testing, actually encompasses a variety of approaches, all of which are devoted to testing communications by measuring physiological response. It includes electro-dermal response, brain imaging, and facial response recognition:

*pd*= Product testing

*ps*= Physiological testing

<b>Table 1</b>					
<b>Classification of Alternative Copy-Testing Measures in P-E-M Model</b>					
<b>Pre-Experience Exposure</b>			<b>Post-Experience Exposure</b>		
<i>Framing Perception</i>		<i>Enhancing Experience</i>		<i>Organizing Memory</i>	
Expectation	<i>pd, ps</i>	Sensory/ Social Enhancement	<i>pd,</i> <i>ps</i>	Cueing	<i>pd, ps</i>
Anticipation	<i>pd, ps</i>			Branding	<i>pd, ps</i>
Interpretation				Interpretation	

As Table 1 shows, these approaches, in the P-E-M model, are designed to capture the non-cognitive effects of advertising, rather than the cognitive interpretations the consumer gives us. Further, both product testing and physiological testing offer the opportunity to measure advertising’s effects on the consumer’s experience with a product or service, because they do not rely on cognitive measurement.

*“Product Testing”*

“Product Testing”, in particular, is a potential mechanism for capturing the non-cognitive effects of advertising. This approach is modeled on experiments conducted by memory researcher Katherine Braun (Braun 2001), who found that she was able to manipulate remembered taste perceptions of orange juice by exposing subjects to an ad for orange juice. The application to copy testing was originally proposed in this *Journal* by this author, but was actually in use by the Standard Oil Company as long as thirty years ago, where it was reported to be very effective compared to other techniques (Kamen 1987),.

Intriguingly, all of the initial response to this author’s suggestion to explore this technique has come from outside the U.S., which one might expect to be the fountainhead of new techniques and innovation. In fact, the reverse seems to be true. Based on responses received by this author, practitioners and academics in Sweden, the U.K., Italy, Mexico, and Australia appear to be exploring innovative methods more aggressively than their American counterparts.

### *Physiology Reflects Emotions*

Physiological testing offers the possibility of measuring the non-cognitive effects of advertising, as well. "Physiological testing circumvents consumers' rational and cognitive processes and measures an involuntary physiological response, which is emotionally and/or unconsciously driven, i.e., potentially closer to what is motivating as compared to verbal self-reports." (LaBarbera and Tucciarone, 1995, p.2.)

Although there has been a resurgence of interest lately, this approach has not been dominant in the industry. Given the voluminous and rapidly expanding literature in psychophysiology, it is somewhat surprising that it has been so slow to take off. The explanations probably lie in the fact that although the field has antecedents from a century ago, it was really only in the decade of the 1980's that "[T]he intellectual, methodological, and empirical dimensions of the field have been integrated." (Bagozzi, p.126.) Additionally, psychophysiology requires a level of life-science sophistication and training, and funding, that social science researchers typically do not have at their disposal.

The only type of physiological testing that has been extensively validated as an advertising research tool is galvanic skin response, or GSR. Although it showed considerable promise in copy testing, it has not been widely adopted in the U.S., for a variety of reasons, including technical problems and difficulty in measuring the quality of the viewer's attention (see LaBarbera and Tucciarone, 1995). Interestingly, early work with GSR found that peaks in interest, as measured physiologically, were often uncorrelated with verbal self-report (LaBarbera and Tucciarone, 1995, p.3).

Within the past few years, however, advances in psychophysiology have stimulated a number of innovative applications of physiological testing (Wells 2003.) This approach, which is being led by brain-image measurement, is likely to be the next wave of innovation in this category of testing, and may well obsolete many of the current survey-based methods. Unlike the people answering questionnaires or participating in focus groups, the body doesn't lie. Clearly if we can measure preferences and responses directly in the brain, we have completely eliminated any possibility of cognitive bias, because the researcher has not engaged the respondent cognitively.

For example, a neuroscientist at Baylor College of Medicine in Houston, has demonstrated that subjects' brains register a preference for Coke or Pepsi that correlates with the product they choose in blind taste tests. Another neuroscientist, Justin Meaux, a neuroscientist at the privately held BrightHouse Institute for Thought Sciences in Atlanta, observes that: "Preference has measurable correlates in the brain; you can see it." (Wells 2003.)

More evidence comes from Richard Silberstein, a neuroscientist with the Brain Sciences Institute at the Swinburne University of Technology in Melbourne, Australia. His company, Pre-Diction, has used physiological measurements of the brain to show that successful ads tend to generate high levels of emotional engagement and long-term memory encoding. "People who are more likely to purchase a product show significantly higher memory encoding than those who are less likely." (Wells 2003).

### *The Body as an Electrical System*

Not only the brain, but the body, generates electrical impulses in response to external stimuli. Recent experimental work by this author investigated whether a combination of the electrical signals generated by the cardio-vascular system and the skin can be a better predictor of effective advertising than measures of cognitive response (Hall 2003, Hall and Cruickshank, 2001). It builds on earlier work that found skin conductance alone to be a better predictor of sales results than conventional copy testing (LaBarbera and Tucciarone, 1995.)

Our study used statistical algorithms that translate heart rhythms into a linear scale measuring pleasure and displeasure, combined with changes in skin conductance, to create a normalized measure of emotional response to advertising. We then mapped emotional response against a measure of mental workload (cognitive processing), which is derived from vascular response. We collected data on five ads, viewed in a 15-minute clutter reel. The respondents, a sample of 36 adult male and female respondents, were not told the purpose of the test. They were simply hooked up to sensors, told to watch the television program, and monitored remotely to insure they were continuing to attend to it.

Figure 1 shows the results, for two types of ads. The ads for Lubriderm, AT&T, and MasterCard are spots that are known to have been highly effective. All three won Effies, the industry award for highly effective campaigns. The other two ads, 'Building Materials' and 'Airline', represent campaigns that were briefly on the air, and were at the lower range of effectiveness.

Clearly the level and quality of emotional response is a critical differentiator between the best and the worst ads in this sample. Cognitive processing is not nearly as clear. The Airline ad generated a high level of cognitive processing, but was not well-liked by consumers. AT&T and MasterCard generated very different levels of cognitive processing, but were similar in terms of emotional response.

### *Other Physiological Approaches*

Other approaches that have been explored include pupil dilation, eye tracking, and facial change recognition. Facial-change recognition has been around for

several decades, in various forms. It is based on the fact that mechanical responses of the face can be used to read emotions. Recent work by Ekman (1997) has focused on the measurement of spontaneous facial expressions and the relationship between what people show on their faces and what they say they feel. Codifying over 3,000 individual muscular movements in the face enabled them to correlate specific facial reactions to emotional states.

Monitoring facial expressions, either by attaching electrodes to the face, or coding from videotapes, has been commercial applied by a few companies, such as Sensory Logic, a Minneapolis consultancy, in the past few years. Its exponents claim success for the technique, but it may have limited application. Applying electrodes is cumbersome and intrusive, and coding from video is time-consuming, labor-intensive, and expensive. Some focus group moderators also use this technique qualitatively, while reviewing videotaped sessions. (Unfortunately, asking respondents to raise their hands for “more cheese on their pizza” is far more common.)

#### *Assessment of Physiological Methods*

Brain imaging seems promising experimentally, but its ultimate utility in copy testing, versus basic research, is difficult to assess. Some of the early questions about the validity of measures obtained from initial efforts to use brain imaging in communications testing (Crites and Aikman-Eckenrode, 2001) will almost certainly be resolved, if they haven't already. But the technology is developing, and commercial services are even now emerging that claim success with the application of the technology.

However, it has not yet become user-friendly, and is still cumbersome and expensive compared to traditional methods. Applying electrodes to consumers' heads will remain a barrier to widespread, cost-effective application, and putting them into an MRI machine will undoubtedly be an even bigger one. Even with better technology, it is not clear that we are close enough to mastering the brain's “map” to allow us to definitively measure the effects of advertising, on a reliable commercial basis.

Some of the other methods discussed above, such as facial-response coding, also seem too indirect and cumbersome to become mainstream alternatives to current methods.

We believe that reading the electrical symbols of the body, rather than the brain, as we have done with AnswerStream, may offer the simplest and most robust alternative to current copy testing methods. It can accomplish much if not all that brain imaging can accomplish in copy testing applications, is less intrusive for the respondent, and less expensive for the client. The power of this approach derives from the fact that the electrical signals of the heart are up to 90 times more powerful than those of the brain, and so are far easier to read.

## Implications

Copy testing and pre-testing remain among the most controversial areas of advertising and marketing research. In spite of many attempts to explore alternative methodologies, and increasingly solid evidence that traditional techniques are not measuring the right things, there has been little progress in the practice of this discipline.

It has also become very clear, that until we can accurately measure the non-cognitive and emotional dimensions of advertising response, we are measuring very little of relevance. We can no longer continue asking consumers to psychoanalyze themselves and acting as though that were real data.

What is needed is a methodology that captures emotional responses, attention, and involvement with the ad without introducing cognitive bias. The great strides made in neuroscience and cognitive psychology over the past decade and a half can no longer be swept under the rug—we must move beyond traditional paper-and-pencil surveys and begin measuring real consumer response, because that is what drives real consumer behavior.

We believe that progress in this field should take two paths. One is to use conventional, low-cost survey methods, but design studies that eliminate cognitive bias. Testing the product, not the ad, is one such approach that offers promise.

The second path is to monitor physiological indicators of mental states. This can include a variety of indicators, ranging from the electrical conductivity of the skin, which has already shown good predictive power, to electrical activity in the brain, pulse, heart rate, and facial expression. All these techniques require a degree of sophistication and knowledge of psychophysiology that has been lacking in this field. We are confident that gap can, and will, be filled in the near future.

Finally, we should add one major caveat. Any attempt to build a true science around advertising, with comparisons to norms and databases, is inherently doomed. That is because creative directors are continuously engaged in an aggressive attempt to blow up the models, which makes the norms irrelevant. Any test must be defined within some particular model of advertising. If the model becomes irrelevant, the test will, too. Our real goal should be to bring more scientific understanding to the art, not eliminate the art.

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**Figure 1**

