EFFECTIVE FREQUENCY:

THE RELATIONSHIP BETWEEN FREQUENCY AND ADVERTISING EFFECTIVENESS

ASSOCIATION OF NATIONAL ADVERTISERS, INC.

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Foreword

Effective Frequency: The Relationship between Frequency and Advertising Effectiveness reviews, appraises and summarizes published studies and key case histories concerned with frequency and its effects. Some of the studies, though perhaps not new, are being published for the first time.

The need for a current review of what is known about frequency springs in part from an escalation of media costs in recent years, especially in television, and the increased concern among advertisers not to spend more than is necessary and/or sufficient. Although precise levels of sufficiency require individual research on individual brands and markets, general guidelines and examples do emerge from the information presented in this book.

A different need for a review of what is known about frequency is based on a continuing effort to acquaint members and staff of the Federal Trade Commission with the nature of advertising and its effects. This effort began in October, 1971, with a formal presentation to the Commission by a Joint Committee of the Association of National Advertisers and the American Association of Advertising Agencies. The current effort, necessitated by continual turnover in FTC staff, is represented in a series of small, group seminars conducted for FTC personnel by an A.N.A.-4A team.

The review of research on frequency permits the FTC staff or other interested groups of laymen to see that advertising has *particular levels of effectiveness* rather than unlimited or infinite levels available to indiscriminate or willful spending. At the same time, they may see that an effective level of advertising is an essential part of the overall *marketing process,* with *specifiable goals and limitations.*

The A.N.A. Media Policy Committee, under the chairmanship of M.D. Gray of Scott Paper Company, surveyed advertisers and ascertained that the top-priority media subject was effective frequency. The Committee then assembled all available research

on the subject – including many unpublished studies which were submitted on an anonymous basis. This information was made available as potential source material for this publication.

To prepare the review, we turned to one of our fellow Committee members, Michael J. Naples, Director of Marketing Research at Lever Brothers Company in New York. Lever Brothers, with the aid of its research department, has for many years been in the forefront of research on effective frequency.

The general conclusions or guidelines emerging from Mr. Naples' review were also presented as a separate paper at the A.N.A.'s March, 1979, Media Workshop under the title, "The Relationship between Frequency and Advertising Effectiveness." The present volume sets forth the complete story.

I am also indebted to a fellow Committee member, Jon Zoler of Philip Morris Incorporated, who helped me to "preview" drafts of this book.

We are all indebted to Mr. Naples for providing us with a current, state-of-the-art review of this difficult and challenging subject of advertising frequency.

Herbert E. Krugman
General Electric Company
Chairman, A.N.A. Research
Policy Committee

September, 1979

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Prepared under the auspices

of the

A.N.A. Research Policy Committee

and the

A.N.A. Media Policy Committee

I. THE IMPORTANCE OF EFFECTIVE FREQUENCY

It is no accident that the subject chosen for this latest Association of National Advertisers' publication concerns frequency of advertising exposure and its relation to advertising effectiveness. Consider the following: between June and August of 1977, a mail survey was conducted by the newly-formed Media Communications Council of the Advertising Research Foundation among 58 of the largest advertisers and 28 of the largest advertising agencies in the country. All together, 92 individual suggestions for media research were received and were categorized into eleven major research areas. The category of highest interest of those responding was in knowing more about the effects of one or more messages in terms of realized sales potential.

Another recent expression of the high priority of this subject was given in a paper [1] prepared by Harvard University Professor Stephen A. Greyser. The paper listed advertising industry priority areas identified by the Marketing Science Institute after consultations with their member companies. Of the areas so identified, two specifically related to the subject of effective frequency:

> 1) *Cumulative Advertising Effects: Implications for Optimizing Media Scheduling Patterns, and*
>
> *2) The Relationship between Number/Frequency of Advertising Exposures and Individual Consumer Sales Response.*

Thus, the review represented by this book is a response to industry interest in a compelling subject, and one which strongly reflects growing advertiser concern for more productive use of advertising investments.

[1] "Academic Research Marketing Managers Can Use," *Journal of Advertising Research*, April, 1978, p. 9.

The Influence of Media Cost Escalation

Behind this heightened interest is the rapid escalation in media costs in the late 1970's especially in television. This has been of particular concern to those brands which have smaller market shares and are now less able to maintain advertising momentum.

The advertising industry has been quick to note the emerging situation. For example, as Stephen R. Fajen, Senior Vice President and Director of Media Services at Needham, Harper & Steers, commented in a published [2] article:

> "It is fairly well established that, to advertise effectively, one must advertise frequently. If budgets remain about the same and prices continue to increase inordinately, advertising frequency will decrease. There will come a time when so few commercial opportunities are affordable that campaigns will become ineffective. Unless we find ways to cope with the pressures of media cost inflation, a depression of advertising effectiveness lies around the corner."

The price escalation to which Fajen alludes is clearly seen in the statistics released in the September 25, 1978 issue of *Advertising Age.* [3]

As a result of such cost pressures for greater advertising efficiency, the Association of National Advertisers initiated a joint committee effort to better understand effective frequency levels. Involved in this undertaking are the A.N.A. Media and Research Policy Committees which, as a first step, have collected the available research on the subject. As a result, a good deal of the material in this review represents submissions by national advertisers of studies which have not previously been made public.

The A.N.A's interest in effective frequency is also a natural outgrowth of its continuing efforts to summarize what is known about advertising research. For example, in 1976, the Association published Charles Ramond's *Advertising Research: The State of the Art;* prior to that, A.N.A. had published Malcolm McNiven's *How Much to Spend for Advertising? - Methods for Determining Advertising Expenditure Levels.* Such publications have represented a strong commitment by the A.N.A. to provide advertisers with the best, up-to-date information and knowledge in areas of high interest.

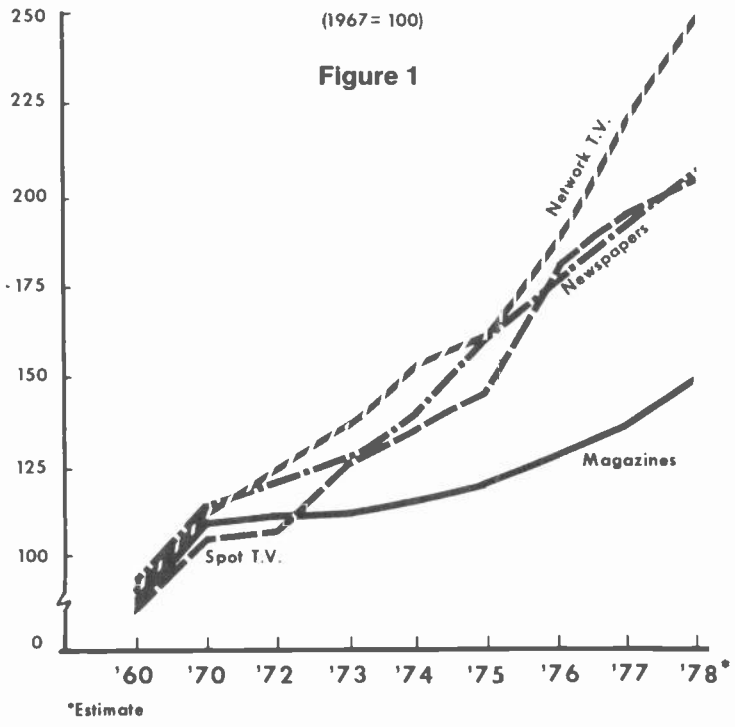
[2] "More for Your Money from the Media, " *Harvard Business Review,* Sept.-Oct., 1978, p. 121.

[3] Charts on facing page based on tabular data taken from p. 126 of *Advertising Age.*

MEDIA UNIT PRICE TRENDS

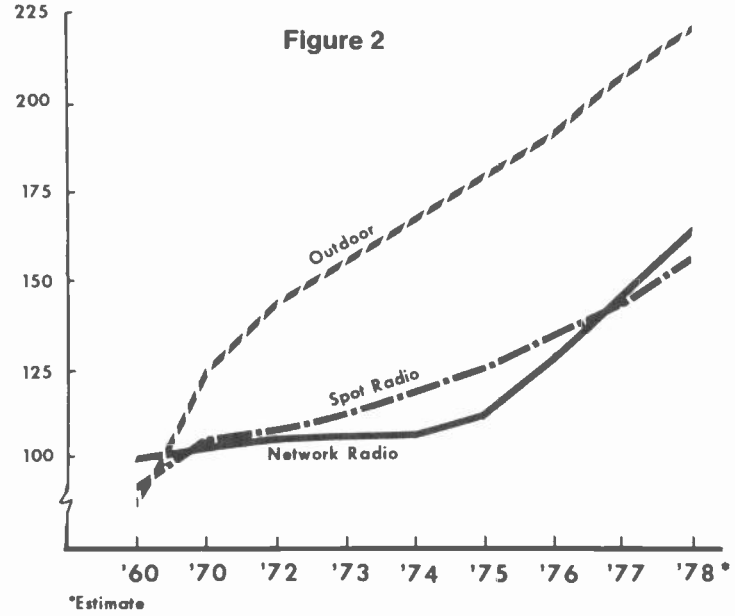
(1967 = 100)

Figure 1



*Estimate

Figure 2



*Estimate

Fundamental Questions about Frequency

It is appropriate at the very outset to consider Professor Ramond's positioning of what is known about effective advertising frequency from published studies. Ramond characterizes the subject as follows: [4]

> "Having decided what to say to whom, and how to say it, the advertiser must choose how often he would like each member of the target audience to receive his message. Given a limited budget, there is a necessary trade-off here: He may choose to reach more audience once, or a smaller audience more times. And given his sale or profit objectives, ideally he would like to know the cheapest combination of reach and frequency to achieve those dollar goals. Because purchases are induced by communication, in practice the question reduces to four other questions generally asked in this order:
>
> 1. How many times must an individual be exposed to my advertising message for it to have any effect on his subsequent behavior?
> 2. In what time interval must these exposures occur?
> 3. What number or portion of target audience must I reach with the essential minimum frequency?
> 4. On what other conditions do the answers to these questions depend?"

In commenting on the importance of finding answers to these questions, Ramond goes on to say:

> "Clearly, the answers to the first two questions determine the answers to the third. Unless an individual is exposed often enough within a short enough interval, there is little point in reaching him at all. As Zielske's groundbreaking article (1959) has shown, advertising begins to be forgotten immediately after its exposure. Unless the recipient acts upon it almost at once, the ad will have no effect until he is exposed to it again or is otherwise reminded of the message."

Other fundamental aspects concern the inherent characteristics of the medium or media, and the pattern of usage.

Television

In the early days of television it was possible to use gross numbers and gross schedules while accepting wastage as a matter of course, since costs were lower,

[4] *Advertising Research: The State of the Art*, Association of National Advertisers, New York, 1976, pp. 53-54.

competition was less severe, and the message was delivered in a relatively uncluttered environment. Consumers were apparently convinced as much by the novelty and impact of the television medium as by the advertiser's message.

Based on such early studies of television as the Hofstra Study conducted by Dr. Thomas Coffin for NBC in 1950, national advertisers came to believe in the impact of the television medium per se. This was one of the first studies which measured the effect of television on actual purchase of brands advertised. In the study, it was found that 11% more of the television owners than non-owners bought the advertised brand regularly, and 12% bought it recently. During the 1950's research on television was sparse, but what there was concentrated on the general effect of the medium, and did not get down to such specifics as frequency, day part, or other effects beyond the broad sales implications. The fact is, most advertising research conducted during the 1950's was related to magazines.

Advertising support for the television medium was slow in coming, but in the early 1950's what had been invested in radio advertising was largely shifted to television – particularly by the large package goods companies.

One of the early forms of advertiser investment in television was sponsorship of shows. In those days advertisers often controlled the biggest shows and the advertising in them, simply by buying time from the networks. Frequency at that time could be achieved by clustering all of a brand's advertising on one show which was owned. This practice involved the carry-over of the sixty-second commercial from radio as the predominant commercial length. However, as the medium became more expensive; as show sponsorship and development became more expensive; as the sixty-second commercial became less efficient; changes came rapidly. Today sponsorship of entire programs by individual companies is rare.

As previously noted, costs per thousand in television rose steadily during the early 1970's, until the 1974-75 season produced cost increases which once would have been considered intolerable. By this time, however, the advertising impact of television was so compelling, and competitive activity so high, that advertisers had little choice but to pay. Nevertheless, the situation produced a new awareness of the need for efficient media scheduling, especially for smaller brands which can afford fewer and fewer messages. Television now consumes almost sixty percent of all national advertising dollars and despite many problems, its dominance is likely to continue. Some of the problems are clear. For example, while costs for prime time spots have more than doubled in recent years, the number of people reached by the average

commercial since 1970 has gone up only thirty percent. Fajen's [5] characterization of the situation makes the point clear:

> "Obviously, the number of people reached has been outpaced by rising costs. In television, the basic yardstick for negotiation is cost per thousand (the amount it costs to reach 1,000 homes). Even this unit, which measures both costs and presumed value (homes reached), has increased 61% since 1970. Therefore, unless the viewer's ability to remember commercials has increased at that rate, today's dollar buys less in T.V. than yesterday's did."

Increasing clutter also casts a shadow over television today. Almost ninety percent of the commercials now on television are thirty seconds rather than sixty, and even shorter ones may be on the way. One advertising agency is openly campaigning for the ten-second commercial. More non-program announcements have also been added by the networks, along with an additional minute of commercial time to movies and specials, and ten seconds to the recent newsbreak formats. And television viewing habits may be in for some profound changes if videotape recorders (VTRs) achieve significant penetration in the years ahead. They are now in about a million homes.

Radio

Radio's image is that of a more selective medium, something to be used on a local basis to round out advertising coverage — in many cases as a supplement to television's national reach. Radio has been the biggest loser to television, going from about a one-third share of advertiser expenditures before World War II to less than ten percent today. Even though there are over three times as many radios as there are television sets in the U.S. today, it is unlikely that radio will achieve an importance equal to television in the foreseeable future. It does, however, represent a lower-cost means of achieving frequency against the consumer, which is precisely how many advertisers use the radio medium.

Magazines

Magazines have not declined as precipitously in advertising revenue as radio; however, the components in this medium have changed considerably. General interest publications have all but disappeared, while more specialized magazines have begun to dominate the industry. This movement toward smaller, more manageable audiences, combined with more specialized editorial slants, has enabled magazines to

[5] Op. cit., p. 117.

survive despite increases in postal rates and paper costs. Magazines may have an advantage in achieving frequency against small, special audiences but, as with radio, it is unlikely that they can achieve the broad-reach network approach provided by national television.

Magazines also have another problem to face, which Erwin Ephron discussed at a recent *Media Decisions* Magazine Seminar. [6] He comments on their dilemma in the face of the explosive television cost increases:

> "Certainly advertiser use of magazines has increased. The top 100 advertisers raised their magazine budgets by 23%. The top 10 advertisers raised theirs by 54%. But the switch to magazines has happened without enthusiasm. Most advertisers (and their agencies) do not believe magazines can substitute for television. This attitude is based upon years of television advertising experience . . . Magazines are equal or superior to television in every media function except in the real, but elusive, area of 'impact', however defined. Advertisers consider television more 'intrusive', 'richer in message content', more 'immediate' and, therefore, more 'effective'.
>
> "U.S. advertisers think of magazines as more 'efficient', more 'personal', perhaps more 'authoritative', but 'slow-acting' and less 'effective'."

Ephron goes on to point out why he feels magazines have been so slighted and how he feels they might be better used to compete with television:

> "I suggest magazines do not perform as well as television in the real world because advertisers almost never schedule magazines the way they schedule television. They have no minimum weekly GRP requirements for magazine scheduling and in fact never really examine the audience delivery dynamics of magazines the way they do television. As a result they seldom schedule enough magazine weight within the purchase cycle of a product to produce an immediate effect in the marketplace. . .
>
> "Magazine reach and frequency analysis is usually based upon 'the magazine list', a 'calendar quarter', or the 'total schedule'. This produces comfortable levels of reach and frequency, but it is misleading because there is no 'time frame' for audience delivery. Reach and frequency goals must be related to the product purchase cycle, usually a much shorter period. Television reach and frequency analysis is almost invariably done on a four-week basis. On a similar four-week basis, most magazine schedule weight would be considered inadequate if it were television."

[6] "The U.S. Advertiser: no longer a silent media partner," Aug., 1978, p. 147.

Gross Rating Points (GRPs), Reach and Frequency

The mainstay of the media planner for the last twenty years has been the standard of measurement known as gross rating points (GRPs), with its individual elements of *reach* and *average frequency*. Before the rise of television the GRP concept had seemed unnecessary; indeed, it did not evolve until the advent of the visual medium. But, as television emerged with such impact, it became obvious there was a need to quantify the sizable reach and frequency components delivered by the medium. Not only do reach and frequency build quickly, but television also delivers heavy viewers and thus makes frequency possible with a relatively modest schedule (unfortunately, more so in the past than now).

As shown by a typical frequency distribution of net reach for prime time television schedules, a substantial frequency is possible over a four-week period.

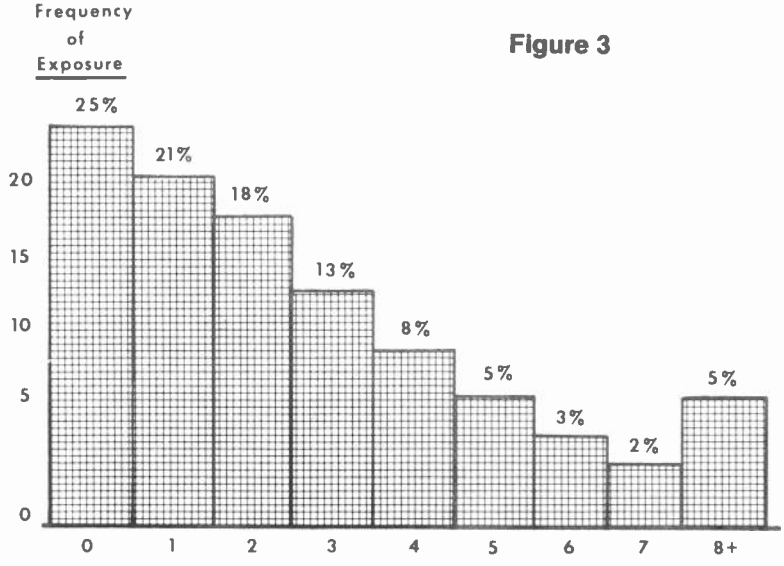


Figure 3

To cope with such numbers the concept of GRPs (Gross Rating Points) was introduced into media planning, a concept which said simply that the product of reach times frequency would equal something called Gross Rating Points.

Alvin Achenbaum, in his talk [7] at the 1977 A.N.A. Annual Meeting, explained the GRP concept quite clearly:

> "As you all probably know, GRPs is a measure of total exposures a given media budget will obtain. The more GRPs a media planner can obtain for his money, the better.
>
> "The number of gross rating points a given television schedule will obtain is equal to the product of reach – i.e., the percent of the population who had one or more exposure opportunities – and frequency, i.e., the average number of exposure opportunities the schedule actually delivered.

Figure 4

THE CONCEPT OF TOTAL EXPOSURE OR GROSS RATING POINTS (GRP's)

GROSS RATING POINTS	=	REACH	x	FREQUENCY
TOTAL EXPOSURE	=	% of population exposed to commercial at least once in a defined period of time	x	Average number of times the population is exposed to a commercial during that period of time

EXAMPLE

240 GRPs = 77% REACH X 3.1 FREQUENCY

> "For example, an advertiser who buys 240 GRPs during a four-week period – the standard time by which most of these measurements are viewed – is reaching approximately 77% of the adult population 18 and over about 3.1 times. It should be clear – although to many, it is not – that this does not mean that every person is exposed to the commercial a little over 3 times.
>
> "The reason for this is quite simple. Total exposure is comprised of a frequency distribution which is made up of some people who are exposed a little, some who are

[7] "Facing the New Media Reality," Hot Springs, Virginia, October 25, 1977 (part of a joint presentation).

exposed an average amount, and some who are exposed a lot. A typical frequency distribution for a prime time television schedule obtaining 240 GRPs looks like this:

Figure 5

FREQUENCY DISTRIBUTION EQUAL TO 240 GRP's FOR A PRIME TIME NETWORK SCHEDULE OVER A FOUR WEEK PERIOD

(ADULTS 18+)

NUMBER OF EXPOSURES		PERCENT OF VIEWERS		RATING POINTS
0	X	23.3%	=	0
1	X	22.2	=	22.2
2	X	17.3	=	34.6
3	X	12.5	=	37.5
4	X	8.6	=	34.4
5	X	5.8	=	29.0
6	X	3.8	=	22.8
7	X	2.5	=	17.5
8	X	1.7	=	13.6
9	X	1.2	=	10.8
10	X	0.8	=	8.0
11	X	0.5	=	5.5
12	X	0.4	=	4.8
		76.7%		240.0

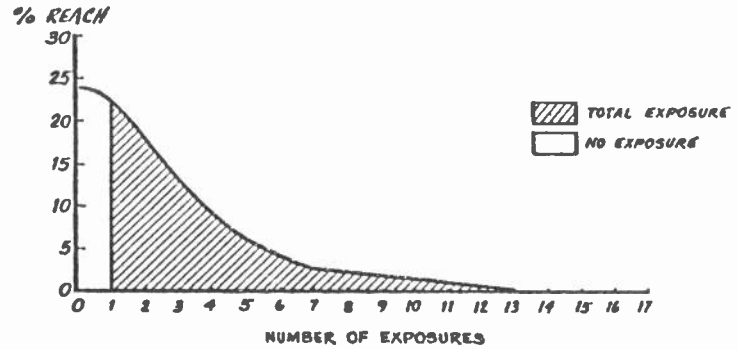
240 GRP's ÷ 76.7% REACH = 3.1 AVERAGE FREQUENCY

"As you can see, in this particular distribution, 23.3% of all the adults were not exposed at all; 22.2% were exposed once; 17.3% were exposed twice; and so on until we see that only .4% were exposed 12 times. This perhaps can be seen more graphically in the following chart, where the shaded area under the curve shows the amount of actual exposure involved."

Figure 6

*TOTAL EXPOSURE OF A PRIME TIME NETWORK SCHEDULE GENERATING 240 GRP's OVER A FOUR WEEK PERIOD **

(ADULTS 18+)



* BASED ON A $6 MILLION ANNUAL BUDGET

Traditionally, therefore, most media plans were evaluated on the basis of Reach, Frequency, Gross Rating Points and Costs Per Thousand (CPMs). But these measures did not consider some fundamental questions relating to how advertising works: What is the value of repeated exposure to an advertising message? Does the second or third in a series of exposures have the same effect as the first? How about exposures beyond three?

By making no explicit judgments on such questions, the media planner implicitly gives each exposure of the advertising message equal value. Thus, the measurement tools of CPM, Reach, Frequency and GRPs, as they have been used in the industry, leave unresolved these critical media allocation problems:

- Is the current media budget being utilized to provide maximum response with a minimum of waste?
- Is the media budget adequate to achieve required results?
- Are funds properly distributed among the media in the mix?

Looking Beyond Simple Estimates of Reach and Frequency

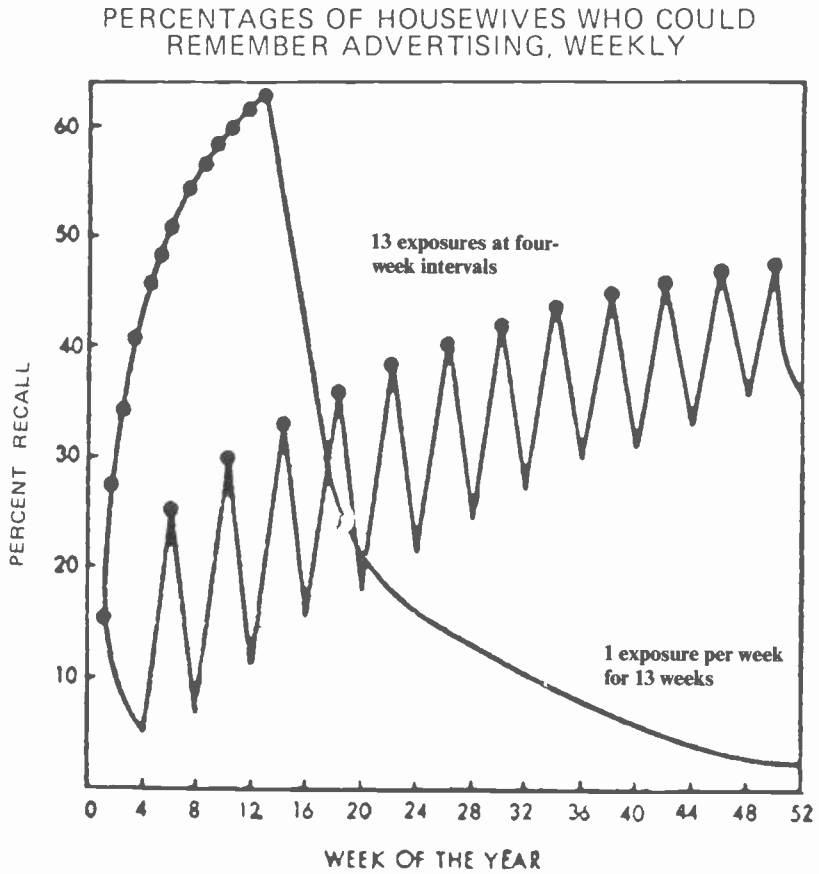
The search for answers to these questions ultimately led to a probing of the GRP concept, but it really began in simplistic terms some twenty years ago. In 1959, Hubert Zielske published his now-classic year-long study of the effect on brand awareness of repeated exposures to advertising. Though conducted using print advertising, the study held fundamental clues for interpreting data from other research on advertising effectiveness, particularly those studies aimed at measuring the impact of the single television commercial. Zielske's work was described in a 1966 article [8] by Albert C. Rohloff as follows:

> "Briefly, the plan of the Zielske study was to expose one group of women to 13 different ads from the same newspaper advertising campaign at four-week intervals. Every four weeks for a year an advertisement was mailed to women in this group. A second group of women received a total of 13 ads, mailed one week apart. Recall of advertising, aided only by mention of the product class, was obtained by telephone interviews throughout the study, with no single individual being interviewed more than once."

[8] "Quantitative Analyses of the Effectiveness of TV Commercials," *Journal of Marketing Research*, August, 1966, 239-245.

As shown in Figure 7, the build-up and decay of advertising recall was distinctly different for the two groups.

Figure 7



Of the two "media plans" in the Zielske study, one produced a steady but continuous build-up while the other built to a very much higher level, but then decayed precipitously. In either case, the Zielske study showed that a frequency of one simply is inadequate, even though it is ususally the largest element of most frequency distributions.

Methodologically, the difference between what Zielske was measuring and the estimated frequency of distribution from a media plan at that time was that Zielske was tracing confirmed exposures with respondents (he delivered the ads to their homes), whereas the frequency distribution was merely an estimate of what exposure might be.

The Zielske study, and the studies that followed thereafter, had certain elements in common. For example, it was necessary to attempt to pinpoint exposure of respondents rather than to rely on estimates obtained through "homes tuned in" program ratings. Some researchers used telephone callbacks to pinpoint exposure, while others used actual viewing diaries kept by respondents. Figure 8 represents one such diary, which shows how respondents recorded television viewing activity by quarter hours of the day for sixteen hours. In this way, researchers are able to determine consumers' "opportunities to see" [9] advertisements by comparing the detailed viewing record in the diary with the known broadcast schedule of commercial messages for a brand.

The primary information for research thus relates to advertising exposures on an "opportunities-to-see" basis. Which means, of course, that ratings do not represent these "opportunities to see" because, even though the television set is on, there may not be a viewer in front of it. Studies have shown there can be a substantial difference between a "homes-tuned-in" rating measure and consumers' "opportunities to see." According to Jack Hill of Ogilvy & Mather: [10]

> "The term 'exposure' in media parlance, is an exaggeration. The measurements of broadcast audience provided by syndicated services, and on which counts of 'exposure' are based, all report the size of the audience to the program, *not* the commercial. . .
>
> "What is the difference in magnitude then. . . ? Over ten years ago. . . Frank Gromer and Blair Vedder presented the results of such research conducted by their respective agencies in a talk entitled 'Another Look Beyond the TV Ratings.'
>
> "A study was first conducted in Queens, N.Y., and later repeated in St. Louis and Chicago; they all agreed that 'customary measures of media performance greatly overstate the actual delivery of the advertising.' "

[9] The "opportunity-to-see" terminology was first coined by Colin McDonald of the British Market Research Bureau Limited, London, although others had employed a similar methodology without the benefit of such a specific name.

[10] "How to Measure Television Commercial Effectiveness" (or "Why Three Exposures May *Not* Be Enough), talk at A.N.A. Television Workshop, Feb. 25, 1975.

Figure 8

TV VIEWING RECORD – SUNDAY, NOVEMBER 8

LOCATION: City _____ State _____

TIME	Write In Program Name	Write In Channel Number	Check If Not Viewing
9:00–9:15 AM			☐
9:15–9:30 AM			☐
9:30–9:45 AM			☐
9:45–10:00 AM			☐
10:00–10:15 AM			☐
10:15–10:30 AM			☐
10:30–10:45 AM			☐
10:45–11:00 AM			☐
11:00–11:15 AM			☐
11:15–11:30 AM			☐
11:30–11:45 AM			☐
11:45–12 Noon			☐
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11:00–11:15 PM			☐
11:15–11:30 PM			☐
11:30–11:45 PM			☐
11:45–12 Midnite			☐
12:00–12:15 AM			☐
12:15–12:30 AM			☐
12:30–12:45 AM			☐
12:45–1:00 AM			☐

To give some idea of the extent of overstatement, consider a few overall findings for St. Louis for both daytime and nighttime television. Notice that while a rating, or an "as sent" measurement, would be indexed at 100, only about six out of ten housewives would be classified on an "opportunities-to-see" basis:

		Daytime	Evening
Program "as sent"	Homes Tuned	100	100
Audience "opportunities to see"	Housewife Viewed	59	63

To be sure, this is only one study, and there is little industry agreement today as to the difference between homes tuned or issues read, and actual exposure to an advertisement, but it is clear that a one-to-one relationship does not exist. Several years ago, Burke Marketing Research reanalyzed their 24-hour recall data on a program audience to commercial audience basis and also found that commercial audience could be lower (by as much as 30%) than program audience.

Thanks to such pinpointing of exposure, researchers have begun to answer some of the questions which have been raised about effective frequency over the four-week period prevalent in media planning. We suspect it will not be possible to look back, say, from 1990, and repeat what Erwin Ephron [11] recently stated about the last ten years:

> "U.S. advertisers seemed to be saying: Since my agency can't tell me how many exposures my message needs to have an effect, I'll make certain I get as many as possible for each dollar I spend. . .
>
> "In the past ten years there has been surprisingly little attention given to basic media questions, such as 'impact' or 'frequency.' For the past ten years media research has focused almost entirely on computer-generated reach and frequency analysis. Endless recomputations of very limited information."

The message of this book is that mush is already known and that the climate is right to make significant further progress.

[11] Op. cit., p. 146.

II. FOUNDATIONS FROM PSYCHOLOGICAL LEARNING THEORY AND RESEARCH

Much of what is known about the effects of frequency can be traced to psychologically-trained researchers who explored the subject in a laboratory environment. These researchers quite naturally viewed exposure to advertising as a learning experience for the consumer, and took the view set forth by Stanford University Professor Michael L. Ray, [1] as follows:

> "The promise of learning theory is simply this. If learning theory indicates how responses are linked to particular stimuli, it can help explain how consumers developed their understanding of the environment and apply it to a variety of consumption acts."

William T. Moran attributes the origins of marketing research to psychology in a paper [2] he presented to the European Society for Opinion and Marketing Research. He stated:

> "Experimentalism and behaviorism are the schools of psychology which I believe had the greatest impact on the field of marketing. Most marketing researchers are acquainted with the connection between the experimentalist, Ebbinghaus, and learning and forgetting curves. Interest in recall measures of advertisements stems importantly from his work, and media scheduling models are based, in part, on similar time related functions. John Watson, the founder of behaviorism, inaugurated the psychological research function as an accredited activity in advertising agencies."

[1] "Psychological Theories and Interpretations of Learning," Marketing Science Institute. August, 1973, p. 4.

[2] "Methods of Psychology in Marketing," ESOMAR, June, 1973, p. 2.

Moran [3] goes on to say:

> "The growing use of experimental design in recent years, however, can be credited largely to the influence of psychology. The bulk of marketing research practice has arisen from our early fascination with probability, sampling theory and statistics."

Ebbinghaus

According to Ray, the beginning of the psychological study of human learning and perception is given as 1875, the year in which psychological laboratories were founded in Germany and at Harvard University. In 1885, Ebbinghaus completed his research on the learning of nonsense syllables, which formed the basis of the psychological study of verbal learning. Ebbinghaus's research involved just one subject, himself. He made up random lists of nonsense syllables and set out to learn them, keeping records of his progress. He used nonsense syllables to be sure that his items of learning would have no prior association attached to them. He would read them aloud over and over, testing himself after each reading by trying to recite the entire list from memory. In this way he explored such problems as the connection between lengths of lists and the number of repetitions required to learn them, as well as the rate at which he forgot them.

In reviewing Ebbinghaus's work, and relating it to modern marketing research, Ray [4] states the following:

> "Two of Ebbinghaus's major and most durable findings are illustrated in the following chart:

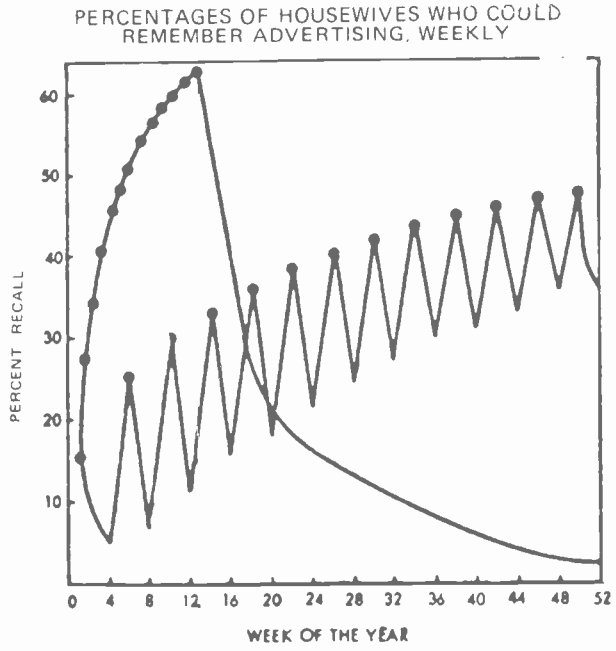


Figure 1

[3] Ibid p. 4.
[4] Op. cit., p. 4.

"Rather than show Ebbinghaus's own data, this table is taken from an advertising research study that showed almost perfect replications of his findings. The table is from Zielske (1959), who sent advertisements for a grocery product to housewives under two scheduling conditions, once a week, and once a month. The fitted curves in the table constitute a replication of Ebbinghaus's findings of exponential acquisition and extinction curves for a verbal learning. Despite the fact that the materials and the situation are quite different in Zielske's study from those of Ebbinghaus, the results hold quite well. Furthermore, the effect of the two scheduling treatments in the study is supported by verbal learning research on mass vs. distributed practices."

Moran also gives a concrete example of Ebbinghaus's work on psychology and learning functions. He states: [5]

"Ebbinghaus demonstrated that the forgetting rate is made slower by repeated learning of the same lesson. This function is surely freighted with implications for optimum media scheduling."

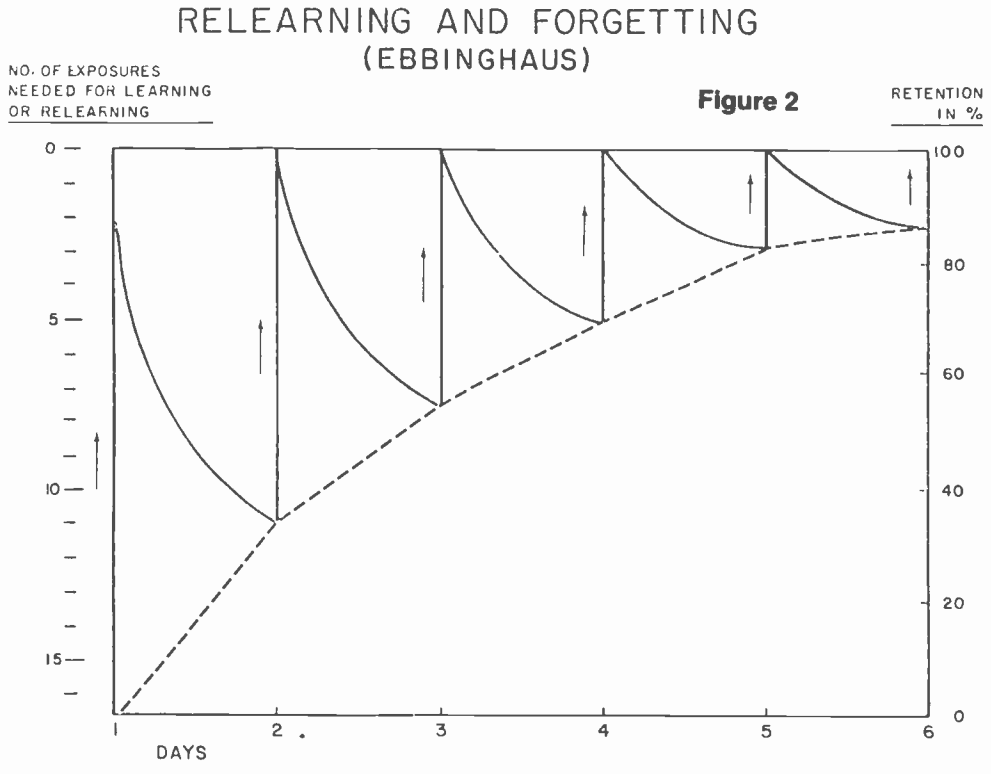


Figure 2

[5] Op. cit., p. 3.

Other scholars have contributed much to the study of learning and forgetting, but none more than Ebbinghaus. The transition from self-research in the laboratory to generalizations about media came about through the efforts of marketing researchers, who used real messages and advertising exposures as stimuli. Such attempts first began in the researchers' laboratories, but eventually expanded into field studies using broad-scale experimental designs.

The period of the 1960s, following hard on Zielske's beginning, produced a great deal of introspection and experimentation. Although much work took place privately in an advertising agency setting, the most widely discussed and influential studies emerged from: 1) Appel, 2) Jakobovits, 3) Grass, and 4) Krugman.

Jakobovits and Appel

Nothing in the Zielske study suggested that a point of diminishing returns would be reached with greater frequency. It was not until 1965 that Jakobovits and Appel first suggested the concept of diminishing returns from greater advertising frequency. In separate articles both men found that if a person is exposed to verbal or visual stimuli, his or her response or learning increases until it reaches a point defined as satiation, and then declines. Jakobovits depicted this repetition result in the form of an inverted U, with the process being manifested as a life-cycle pattern of learning, as follows: Generation – knowledge increases with the repetition; Satiation – knowledge passes through a maximum and then declines.

Generalized Generation · Satiation Curve

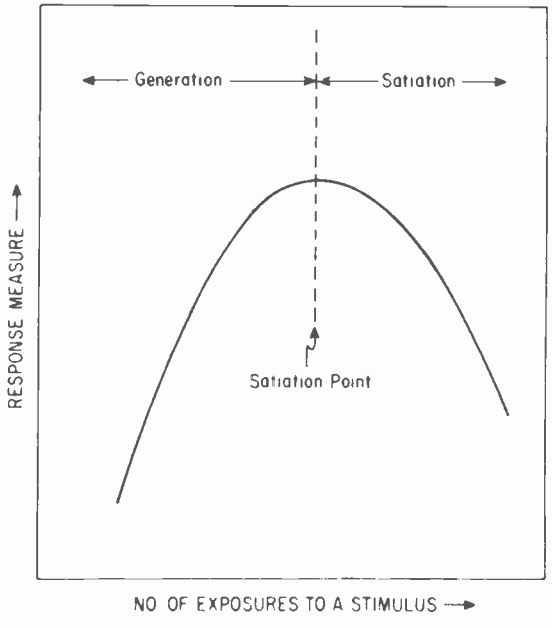


Figure 3

The work of Jakobovits and Appel appeared to show that as a person is exposed to a simple stimulus (e.g., the meaning attached to a word repeated many times), his or her response to it increases, passes through a maximum and then declines. The general pattern is shown in Figure 3, which is derived from the following study conducted by Robert C. Grass.

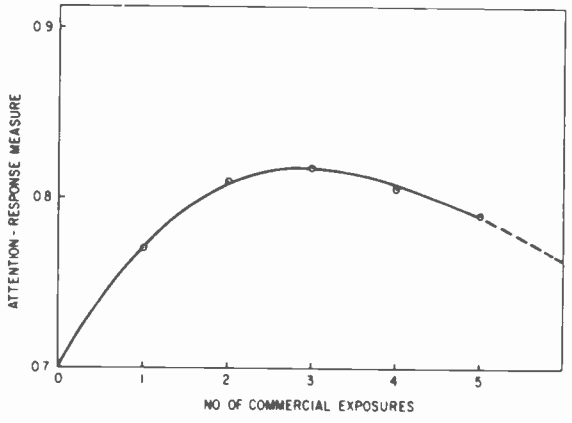
Grass

Using the same terminology, Robert C. Grass of DuPont undertook some laboratory experiments in 1968, to help better understand the generation/satiation response pattern as it might relate to advertising. Grass described this work in a paper presented at an ARF Conference, [6] as follows:

> "The work . . . was conducted by the DuPont Company and Associates for Research Behavior, and it was conducted exclusively with TV commercials. Two criteria of commercial effectiveness were employed. The first of these was a measure of the 'attention' or 'interest' generated in a subject when he was exposed to a commercial. This measurement was obtained by means of CONPAAD equipment which requires that the subject perform physical work in order to see or hear the commercial. When subjects were exposed to the same commercial again and again on this equipment, a generation-satiation pattern (Fig. 4) similar to that observed in the work involving simple stimuli was obtained.

Figure 4

Attention Paid to TV Commercials vs Exposure Frequency



[6] "Satiation Effects of Advertising," Advertising Research Foundation, Proceedings of 14th Annual Conference, New York, Oct. 15, 1968, pp. 20-21.

"Attention or interest was maximized at 2 to 4 exposures of the commercial, depending upon the particular conditions being employed, and was followed by a decline up to the total number of exposures used in this study. These findings led us to investigate a second criterion of advertising effectiveness—the ability of an ad to communicate with its audience."

The central question Grass was investigating was how many times to run an advertisement. He did not propose that the generation–satiation studies provided concrete answers to such inquiries, but did make the point that the DuPont Company was searching hard to understand effects of frequency in order to better schedule its advertising. Grass commented: [7]

"If this relationship is a true one, then we should expect the point of satiation in attention to coincide with or precede maximization of learned information. Fortunately, we can examine this relationship in the case of the Product A and Product B commercials since these commercials were studies not only from the standpoint of attention (on the CONPAAD equipment) but also from the standpoint of learning in the recall work.

"The curves of both the attention and learning response are superimposed in Figure 5 for the Product A commercial. The two sets of data show that, in accord with the hypothesis we have just outlined, *attention increases and maximizes at two exposures, while the amount of learned information increases and maximizes at two or three exposures.*

"A similar situation is suggested by the results from the Product B commercial (Figure 6) except that the maximization of information level at exactly the fourth exposure must be hypothetical because of the absence of a data point.

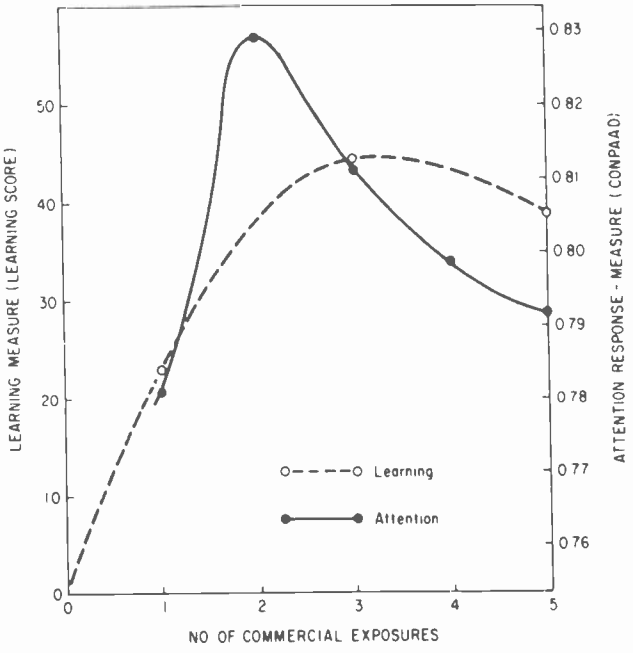
"So far, we have confined our attention to communication of facts as a measure of advertising effectiveness, but ads are frequently called on to generate attitudes as well.

"Evidence from another research project involving on-the-air exposure under natural viewing conditions and interviews carried out 24 hours later suggests that generated attitudes are much more resistant to satiation effects than the recall of learned information. Thus, viewers who saw from zero to eight corporate image commercials over a period of four weeks exhibited attitudes approaching a maximum favorability level for DuPont at three exposures per month, but showed no significant decline in favorability up to eight exposures during that period (Figure

[7] Ibid, p. 24.

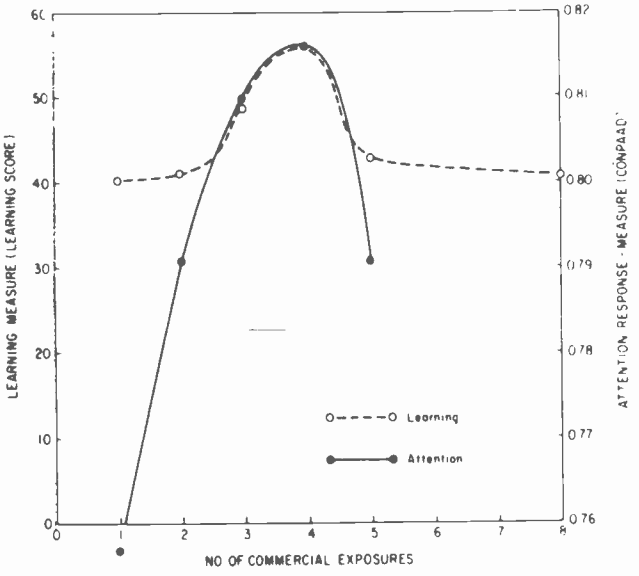
Comparison of Learning and Attention Responses as Number of Exposures is Varied . . . Product "A" Commercial

Figure 5



Comparison of Learning and Attention Responses as Number of Exposures is Varied . . . Product "B" Commercial

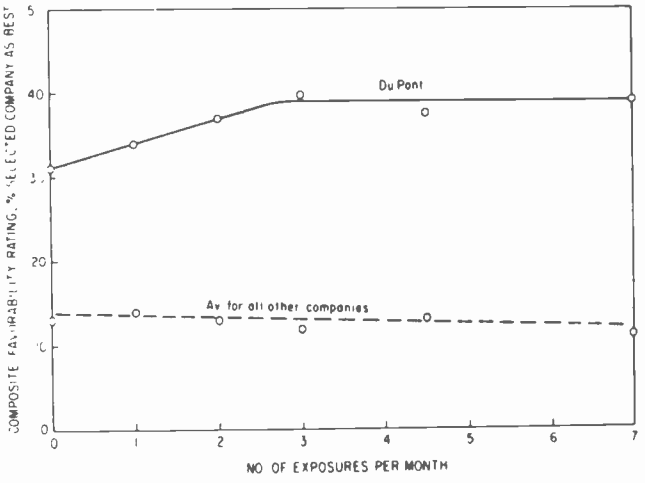
Figure 6



7). This differs from the pattern we have come to expect from 'learning' in this situation, where we normally see Learning Scores increase to maximum and then decline with increasing number of exposures.

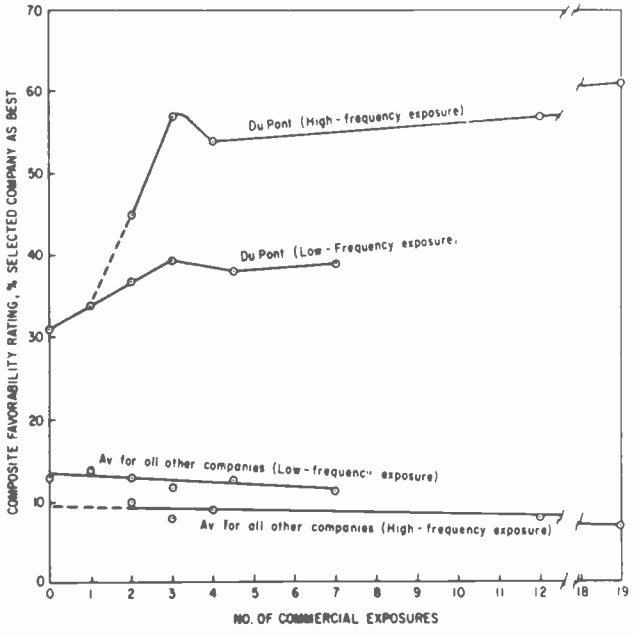
Attitudes vs. Advertising Exposures

Figure 7



Attitudes vs. Advertising Exposures

Figure 8



> "Two of the commercials used in this attitude study were the same two corporate image commercials, 'C' and 'D', used in the satiation study we described earlier, and Figure 8 shows the results of these two independent studies plotted on the same graph. The similarity of the data is obvious. Although the low-frequency study involved eight exposures to the two commercials scattered over a month and the high-frequency study as many as 19 exposures within five days, the maximum level in both cases was reached at the third exposure . . . "

The work of Jakobovits, Appel and Grass marked the beginning of attempts to understand the nature of multiple exposure and its place in the frequency distribution, i.e., in terms of effectiveness. Out of their work – and also out of coincidental field research conducted in England by Colin McDonald, involving a purchase diary panel and viewing diaries – the concept of effective frequency at two or more exposures began to emerge. (The McDonald study will be discussed more thoroughly in Chapter III.)

Krugman

Following this early work, the most cogent conceptualization of multiple-exposure effectiveness was that propounded by Dr. Herbert E. Krugman of the General Electric Company, who suggested in a presentation [8] at an A.N.A. Television Workshop that three exposures to a TV commercial might be the basic minimum number needed. Krugman's own words best describe his concept:

> "We spend a lot of money on repetition of advertising. Some explain this by noting that recall of the advertising will drop unless continually reinforced, while others note that members of the audience are not always in the market for the advertised product, but that when they are—the advertising must *be there,* so that there's no choice but to advertise frequently. So we can have advertising campaigns of equal magnitude, but based on quite different assumptions about the nature of the effect.
>
> "Of course, these two views are apparently quite opposite. One says that the ad must be learned in the same way that habits are learned—by practice. The other says that at the right moment (when one is 'in the market') it just takes minimal exposure to achieve appropriate effects. . .
>
> "I'd like to offer a view that argues against single-exposure potency, and also against any large number of repeated exposures. I think it is important to understand how communication works and how people learn, and to do that, some attention has to

[8] "How Potent Is Television Advertising? Some Guidelines from Theory," New York, Oct. 11, 1972.

be given to the difference between 1, 2 and 3 – i.e., the difference between the first, second, and third exposures. One to make ready, two for the show, three for the money and four to go, or just what? All more complex campaign effects based on twenty, or thirty exposures, I believe, are only multiples or combinations of what happens in the first few exposures.

"First, I'd like to note that the special importance of just two or three exposures, as compared to a much larger number, is attested to by a variety of converging research findings based on different research methods. In an April 1968 issue of the *American Psychologist,* for example, I reported ('Procedures underlying response to advertising') that an optimal number of exposures seemed to be about two to three. This was based on eye movement data conducted in a laboratory situation, and in response to print advertising. In September, 1969, my colleague Robert Grass published a similar finding (three to four exposures) in the *Journal of Advertising Research* ('Satiation effects of T.V. commercials'), and based on CONPAAD responses to television commercials.

"My own and Bob's work were both primarily laboratory. However, in September of 1970, Colin McDonald of the British Market Research Bureau gave an award-winning paper at the annual conference in Barcelona of the European Society of Market Research—ESOMAR, as it is known—a paper ('What is the short-term effect of advertising?') which reported purchase diary data interrelated with media data, such that McDonald identified two exposures as optimal. There are others as well, but the point I am making should be clear: that a wide variety of research procedures agree on the special significance of just a few exposures as optimal.

"Now let me try to explain the special qualities of one, two and three exposures. I stop at three because as you shall see there is no such thing as a fourth exposure psychologically, i.e., all 4's, 5's, etc. are repeats of the third-exposure effect.

"Well, first we have exposure number one. It is by definition unique. Like the first exposure of anything, the reaction is dominated by a 'What is it?' type of cognate response, i.e., the first response is to understand the nature of the stimulus. Anything new or novel, however uninteresting on second exposure, has to elicit some response the first time if only for the mental classification required to discard the object as of no further interest. Thus, the new stimulus, good or bad, has an initial attention-getting requirement, even if it is quickly blocked out thereafter.

"The second exposure to a stimulus has several implicit qualities. One is that the cognitive 'What *is* it?' response can be replaced by a more evaluative and personal 'What *of* it?' response. That is, having now fully appreciated just what is the nature of the new information, the viewer can now shift to a question of whether or not it has personal relevance. Some of this might occur during first exposure if the

respondent is absorbing the commercial with great interest, but more likely, especially on television where you can't re-wind or reverse the film, there's enough missed first time around so that elements of the cognate reaction are still present on second exposure.

"Another element of second exposure, and unique to second exposure, is the startled recognition response: 'Ah ha, I've seen this before!' The virtue of such recognition is that it permits the viewer to pick up where he left off—without the necessity of doing the cognate thing ('What is it?') all over again. So the second exposure is the one where personal responses and evaluations—the 'sale' so to speak occurs. This 'What of it' response completes the basic reaction to the commercial.

"By the third exposure the viewer knows he's been through his 'What *is* its?' and 'What *of* its?,' and the third becomes then the true reminder, that is, *if* there is some consequence of the earlier evaluations yet to be fulfilled. But it is *also* the beginning of disengagement, of withdrawal of attention from a completed task.

"I suggest that this pattern holds true for all larger numbers of exposures. That is, most people filter or screen out TV commercials at any one time by stopping at the 'What is it?' response, without further personal involvement. The same person, months later and suddenly in the market for the product in question, might see and experience the twenty-third exposure to the commercial as *if it were the second.* That is, now the viewer is able to go further in the nature of his or her reaction to the commercial—and then the twenty-fourth and probably the twenty-fifth—might finish off that sequence with no further reaction to subsequent exposures . . .

"I am not critical of large TV budgets with numerous exposures. I am critical, and the industry will be criticized, if the power of those large budgets is misunderstood or misstated. The large budget is powerful because, like a product sitting on a shelf, you never know when the customer is going to be looking for you, so you must rent the shelf space all the time. But the nature of the customer's reaction is independent, rapid, decisive. He or she makes up his or her mind, perhaps more than once during a campaign, but makes up his or her mind most frequently at some point in the second, or shall we say, psychologically second, exposure to the commercial.

"Within this perspective, television advertising plays a modest but important, and thoroughly reasonable, role in the marketing of goods and services."

Krugman's work on the theory of advertising exposure provides the most convincing psychological underpinning for the study of effective frequency and for the evaluation of subsequent field studies.

III. COLIN McDONALD: AN EFFECTIVE FREQUENCY PILOT STUDY

Prior to 1965, little research with actual consumers had been carried out on the issue of effective frequency. The frequency distribution head count "as sent" (based on homes tuned or sets in use) was the standard of comparison for media plans, and the most innovative debate had to do with audience duplication and frequency estimates a la Metheringham and Engleman.[1] Although much theorizing was being done by psychologically-trained researchers, very little in the way of laboratory research was actually carried out. Media models were all the rage, and the 1959 Zielske study helped modelers estimate decay response functions. Beyond this, however, the cupboard was bare. The Krugman and Grass studies had yet to be conducted, and the first large-scale field experiment (by Ogilvy & Mather) was just in the planning stages.

Then, at the end of 1966, Colin McDonald of the British Market Research Bureau Limited, in London, carried out a single-source diary study in which purchasing and exposure to advertising were captured in one set of data. In McDonald's words,[2] this study was based on:

> " . . . data from a diary kept over 13 weeks among housewives in the London ITV area at the end of 1966. Completed diaries were obtained from 255 housewives. Once each day, the housewives recorded their purchases in 50 different product fields; the issues they had seen out of 32 newspapers and magazines; and the television segments they had seen, with each program segment and break separately identified. The purpose of the experiment was to seek a deeper insight into housewives' patterns of purchasing in relation to their opportunities to see advertisements."

[1] References listed in Appendix C of this book.

[2] "What Is the Short-Term Effect of Advertising?" Marketing Science Institute, Special Report No. 71-142, Feb., 1971. (Reproduced in its entirety as Appendix A of this book.)

McDonald's paper on this experiment became a prize-winning entry with ESOMAR (the European Society for Opinion and Marketing Research), and later was published in the United States by the Marketing Science Institute. In his foreword to the MSI publication, Robert D. Buzzell, then Executive Director for the Institute, pointed out that McDonald's study was worthy of considerable further investigation; MSI, he said, was exploring the possibility of working with McDonald in the conduct of a large-scale study utilizing the analytical methods developed by the author. Buzzell [3] went on to quote McDonald's summarization of his work, as follows:

> "Advertising practice increasingly depends upon the use of assumptions about how advertising stimuli 'work' in the short-term—that is, about how members of an audience respond to specific messages. Yet it remains generally true that few, if any, of these assumptions have been supported by reliable evidence. A major difficulty in studies of advertising effectiveness has always been to avoid contaminating one's results by spurious relationships which have nothing to do with the variables one is trying to study. This is a familiar difficulty for any research into causes and effects in fields where controlled experimentation is difficult to achieve.
>
> "This paper describes a study carried out for J. Walter Thompson (London) which related purchasing patterns and OTS (opportunities-to-see advertising.) For 13 weeks, 255 housewives kept diaries of purchases in nine product fields.
>
> "A relationship was found between the tendency to buy a particular brand and the number of OTS for that brand seen before the purchase. It is claimed that the method by which this relationship was isolated is one which excludes any possibilities of intervention by outside variables, and the relationship is therefore not spurious. Having described the relationship in general, the paper goes on to show one or two variations under particular conditions (for example, that the effect is greater for recent OTS, and that more than two OTS do not appear to be more effective than two).
>
> "This paper must be regarded as only a pilot study. The results raise a great many questions which could be answered by a similar study on a larger scale. In particular, there are a number of possible comparisons (between brands, between media, etc.), which it would be desirable to make on a larger scale."

McDonald placed the short-term influences of advertising exposure under a microscope. He demonstrated that scheduling for reach alone was inadequate because the one-exposure portion of the frequency distribution left a brand vulnerable to competitive activity. This was dramatically revealed in a negative relationship between

[3] Ibid, p. iii.

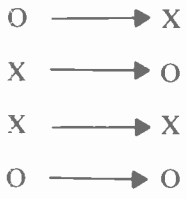
one exposure and purchasing.

In the sense that the McDonald study did not take into account all marketplace variables, such as price or share of advertising, it has never been taken as more than a pilot study. But, over time, his basic findings have been supported by other and longer studies which were conducted in the marketplace. His analytical method was also a forerunner of other productive frequency effectiveness investigations.

To put it briefly, and in his own words, McDonald concluded that:

> *"The most significant finding of the study was that where a switch in brand occurred on consecutive purchasing occasions, the shopper was more likely to have been exposed to two advertisements than one for the brand switched to."*

Specifically, his objective was to uncover the relationship of advertising exposure frequency to brand purchasing. To do this, he obtained the records of purchasing sequences for all brands in nine product categories and fitted these together with the same consumers' opportunities to see the advertising (i.e., probable exposures) for the brands involved. The categories included washing powders, cereals, tea, tinned soup, margarine, wrapped bread, shampoo, toothpaste and hot milk drinks. The analytical approach taken was to classify diary panel purchase records into purchasing intervals, with respect to any brand, into four groups:



(O means any other brand except X which is defined as the brand being studied.)

McDonald describes his approach as follows (note that OTS means opportunities to see):

> "The groups of special interest are the first two, the switches, since they show the difference between the first and second purchase which is always the basis of our measurement.
>
> "We proceed by first counting the OTS in each interval for each brand X in turn within each of the four interval categories. Sole buyers of X, non-buyers of X, and those who saw no advertising were all excluded since they, by definition, provide us with no information about the relationship between OTS for X and switching to or from X.

"Table 1 shows how this count is done for a respondent cereal purchase record:

TABLE 1

ONE RESPONDENT'S CEREAL RECORD

Purchases:	J	Q	G	H	L	F	A
OTS	2J	1J	1J				
in intervals	1G	2G	1G				3G
	1F	1F	3F	4F			
	1C	3C	1C	4C		1C	1C
			2R	4R			2R
						1T	1T

Counting **G** we find:

	OTS IN INTERVAL				
	0	1	2	3	4+
O ⟶ G			1		
G ⟶ O		1			
G ⟶ G					
O ⟶ O	2	1		1	

"In this example, the housewife had two OTS for brand G before she changed to G, one before she changed away from G and, in her other intervals, when she did not buy G at all, had respectively three OTS once, one once and none twice.

"This counting is done for each brand in turn and the resulting tables are added to produce a composite brand 'X'. It will be noticed that each 'switch' interval will be counted twice: an interval A ⟶ B will be taken both as O ⟶ B and as A ⟶ O. Double or treble purchases on the same occasion are counted separately for each brand.

"It can be shown that the number of switches into and out of a brand must be equal within any person's record $\pm$ 1 and therefore approximately equal in the whole population, assuming the market is reasonably static. This regularity helps our comparison, as will be seen.

"Our really tight and valid measure of short-term effect is therefore given by the proportion of switches *to* (O ⟶ X) out of all switches (O ⟶ X + X ⟶ O), and this is given in the following table:

TABLE 2

% 0 → X OUT OF ALL SWITCHES (i.e. 0 → X + X → 0)

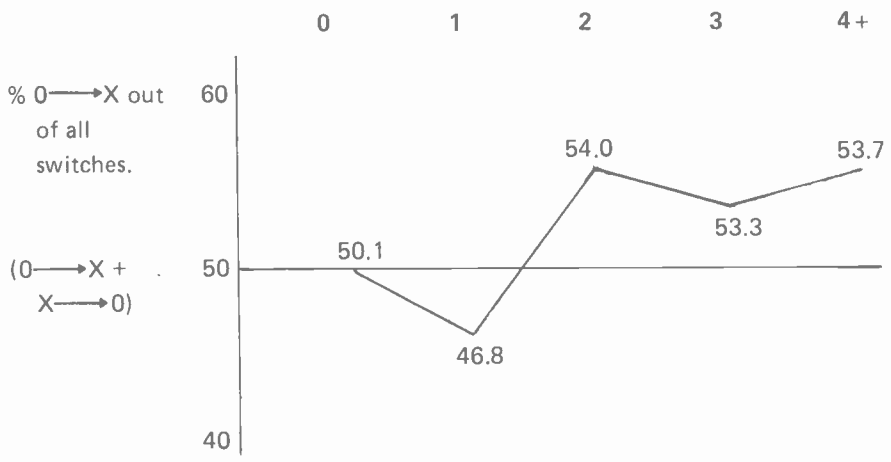
No. OTS in interval	0 or 1	2 or more
	%	%
Washing powders	49.6	52.4
Cereals	49.8	51.3
Tea	48.1	62.8
Soup	49.4	52.2
Margarine	49.9	51.0
Wrapped bread	50.2	56.3
Toothpaste	47.4	54.7
Shampoo	47.6	50.0
Milk drinks	53.7	55.9
Average	49.5	54.1

> "The difference now amounts to 5 percentage points on average. When people are making a switch into or out of X, they are more likely, by 5 percentage points, to switch *to* X (or less likely to switch from it) when, in the meantime, they have seen two or more ads for X."

Thus, McDonald was able to show the power of attraction of two or more opportunities to see advertising between purchases, a relationship which was characteristic of all nine product fields he studied. Moreover, in the five categories in which he had sufficient exposure data, he was able to delineate between 0, 1, 2, 3, and 4+ frequencies, and found that there was a threshold effect between one and two exposures – but that three or more exposures did not have a stronger effect than two, as shown in the following table:

TABLE 3

OTS IN INTERVAL



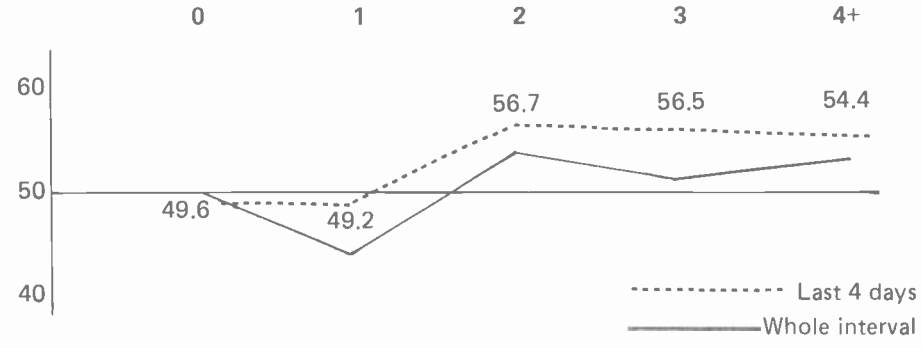
Regarding this finding, McDonald hypothesized:

> " . . . after two exposures, the recipient is 'saturated' with the message as regards its effect on her next purchase. Conversely, one exposure only has a below-average effect because it is not strong enough to overcome the competitive weight of other brands on the housewife's list for which she sees two or more exposures at the same time."

Continuing to expand his analysis, he was able to show that the effect is stronger for advertising seen within four days from the second purchase, as shown below:

TABLE 4

OTS IN INTERVAL



Because of the uniqueness of the study, the clarity of the analysis, and my feeling that the work has not received the wide dissemination in the U.S. which it deserves, the entire MSI publication is reproduced as Appendix A of this review. There is a great deal to be gained from a careful reading of the text insofar as the analysis of exposure frequency and its complexities are concerned, but it should suffice for now to make the point that the study's basic analytical approach was successful in clearly focusing on the relationship between purchasing and exposure to different levels of advertising.

Status of the Frequency Issue

Moreover, there is little question that completion of the McDonald pilot study tended to activate serious consideration of the frequency aspect of media scheduling, as contrasted with the reach concept which had been the norm in the early 1960s. But the new interest in this subject did not bring about public or industry-wide media research addressed to it because such programs were rationalized as being extremely expensive to conduct. As a result, subsequent progress on the effects of frequency in media planning was made by a relatively few companies that have conducted large-scale experimental field studies of a proprietary nature over the last ten years.

The overall situation was aptly described by Jules Fine of Ogilvy & Mather as part of a talk titled "How Do Media Vehicles Differ?" which he presented at an A.N.A. Workshop.[4] Mr. Fine summarized the state of media research as follows:

> "The most common approach to answering the question of how media vehicles differ is through desk-top research, or perhaps through computer analysis. Target audience delivery data are compiled. Reach, frequency and frequency distribution are calculated. Factors, or judgments, about the qualities of each media vehicle are then superimposed on the statistics. And, all of this is examined in the context of compatibility with creative requirements.
>
> "The end product is a very helpful guide for media selection. But it is only a guide – not an answer. Its main value is to provide a benchmark for *estimating* the *probable* effectiveness of media alternatives in the marketplace.
>
> "Obviously, a more *direct* measure of media vehicle effectiveness can be obtained through in-market testing. But, because of expense, lethargy or technical complexities, this approach is less common. Even when it *is* done, many of the results slip into the private files of a company or brand so that the ability to learn from the diverse experiences of many different tests is lost. This is unfortunate – it stunts our professional growth, helps to perpetuate media myths, and limits our ability to confirm valid theories."

[4] A.N.A. Advertising Research Workshop, New York, Feb. 28, 1974.

The fact that no general industry-wide effort was mounted on the frequency issue in the 1960s meant that the proprietary studies carried out by individual agencies and companies used somewhat different methodologies, but despite that there is a remarkable similarity in the basic approaches taken. And, at the same time, the generalizations that can be drawn from these studies with regard to frequency effects are, to a large extent, similar and confirmatory. In this way progress has been made, and the advertising industry has thereby been able to advance its knowledge about frequency effects since completion of the McDonald study.

Intermedia Comparisons

The primary analytical thrust in McDonald's effort involved developing a response to various levels of frequency *within* the television medium. As a rule, advertisers have been much more comfortable in searching for media values within one medium, such as television, than they have in tackling the thornier issue of intermedia comparisons. This tendency has carried over into their attempts at frequency research so that, today, much less is known (or felt to be known by media planners) about the frequency values of exposures in two different media. Media planners therefore approach the question of tradeoffs between television dayparts or between two different magazines with some confidence, but they are much less certain when it comes to a choice between television or magazine exposures, or between exposures in any two media alternatives.

The prevailing situation on intermedia comparisons of any kind – whether involving frequency-of-exposure values or otherwise – was clearly characterized in the remarks of David K. Braun of General Foods Corporation at an ARF Conference: [5]

> "What we know can be conveniently separated into two parts. We know quite a bit about intermedia comparisons within the same basic type. (1) The 'Queens' study conducted by Foote, Cone & Belding in the early 1960s provided benchmarks relating program audience to commercial audience and commercial audience to effective ad exposure, which held up reasonably well for many years. However, because of changes in programming and the emergence of 30s as the standard commercial unit, these data provide only directional guidance for today's environment. (2) Simmons attentiveness measures and recall test results give us additional benchmarks for relating the major dayparts within television. (3) General Foods has supplemented these sources with various tests using the AdTel split cable facility. No doubt others have done so as well. (4) In the magazine field, the *APX* technique helps us zero in on the real audience for our advertising message,

[5] "Intermedia Comparisons: Where Do We Stand?" 23rd Annual Conference, 1977, p. 27.

while the Politz study conducted for *McCall's* in 1962 told us that editorial environment can have a significant impact on ad effectiveness, at least for messages directed to women. (5) In newspapers, we have some evidence that larger space units may produce higher recall.

"I could go on in this vein, but I suspect that by now I've made my point. Although there is certainly much that we don't know, we have enough data to make decisions with some confidence where tradeoffs within media types are concerned.

"We know far less about the relative values of broad media types such as television, magazines, newspapers, radio, outdoor, and the like. (1) General Foods conducted a landmark study in 1969 involving three general-audience magazines—*Life, Look,* and the *Reader's Digest*—in conjunction with television. The budget for each brand in this test was identical for both the test and control plans. Basically, this test showed that magazines, either in combination with television or in lieu of it, produced comparable results on various measures of advertising effectiveness, including actual sales. In view of the later developments on two of these magazines, I shudder to think what might have happened if our results had been less favorable toward print. (2) In 1970, we conducted a test of similar design, but more limited scope, which proved the effectiveness of outdoor when used as a supplement to television. (3) Although several attempts have been made over the years to research the relative effectiveness of TV and radio and TV and newspapers, none of them produced what we would consider to be valid measures of such relationships.

"To summarize what I've said so far, we know a fair amount about relating the subgroups within the major media types, and we have some solid evidence that media mixes work effectively. Supplementary resources such as the Purchase Influence Study provide analytical support for the value of media mixes. But these insights have tended to complicate our life rather than simplify it. For, while we can now feel better about utilizing media mixes, our knowledge stops far short of telling us how to optimize the mix.

"Here are just a few of the questions media planners and advertisers must currently answer basically on judgment: (1) How much of my secondary medium is enough? How much is too much? How much is just right? (2) Do the available measures of reach, average frequency, frequency distribution, and effective reach provide a benchmark for assessing the effectiveness of media mixes? Or, should relative media values be factored into the reach and frequency measures? And, if so, how? (3) Is a prospect who is exposed to three magazine ads and one TV commercial as effectively reached as the prospect for whom the exposure pattern is reversed? (4) Does the optimal scheduling of two different media types differ when they are used together, versus separately?"

Except for McDonald, then, no attempt has been made at intermedia comparisons, i.e., in terms of the values of different exposure frequencies. [6] And there are gaps in knowledge even within the television-only area of investigation, because of the individual study approach, and because the few companies involved did not open their files or submit their studies for critical review. Even so, many major issues have been addressed in one way or another and, although not all of the questions pertaining to frequency of exposure have been answered, a good start has been made in many areas. These will become apparent as we proceed to examine the major studies in subsequent chapters.

[6] McDonald determined "opportunities to see" information for magazines and newspapers as well as for television and stated that "although the sample breakdowns are rather too small to be conclusive, the same effect appears to operate both for press and TV advertising." Primarily, he felt that, with suitable data, his analytical methods could provide the means for studying intermedia frequency questions.

IV. OGILVY & MATHER: "AN EXPERIMENTAL STUDY OF THREE TELEVISION DAYPARTS"

In 1965, Ogilvy & Mather conducted a carefully controlled study in behalf of four different advertisers, covering eleven brands over eight weeks. As this early effort possessed many of the attributes to be found in later analyses concerned with the frequency issue, I think an understanding of its methodology will help put into perspective the major features of the other studies to be discussed in this book.

The Ogilvy & Mather undertaking was before its time and stood alone – but was private and, as such, did not stimulate the industry toward a crystallization on the subject of frequency as did the McDonald study. Its full title was "An Experimental Study of the Relative Effectiveness of Three Television Dayparts;" its objective was to provide better media planning for the efficient use of television through the evaluation of alternative strategies and schedules. The sponsors of the study felt that such questions had previously been answered on an intuitive, judgmental basis, there being no reservoir or backlog of information on these subjects available to media planners. The survey sought to answer three questions:

1. What is the relative effectiveness of advertising in daytime compared with nighttime television?
2. What is the relative effectiveness of advertising in network compared to spot television?
3. How does commercial effectiveness vary with frequency of exposure to the advertising message?

It was felt that since these questions were interrelated, they could all be investigated simultaneously. In the words of its designers, the study was launched:

"... To attempt to develop television advertising effectiveness indicators of a type which have not been previously used. It is recognized that such a study must be experimental in nature. As such, it does not purport to be, nor is it presented as, a definitive study supplying eternal truths concerning television advertising effectiveness. Television, being an organic medium, will undoubtedly change over time; and with it, the factors essential to its evaluation and their interrelationships may change. Further, the study demonstrates that there are substantial variations from one brand to another and that generalizations are difficult to make.

"Some consistent patterns which lead to generalizations are apparent, however, from the data. This study, we believe, provides the first of a new set of criteria which can contribute significantly to the objectives of the evaluation and selection of television strategies and alternative schedules under consideration."

Design of the Study

A number of O&M clients contributed to the support of this test, which made possible a tightly controlled study where results could be measured and more could be learned about how media work. Its design was as follows:

1. The study was structured to measure exposure opportunity to different television schedules for eleven brands of consumer products. The schedules were run over an eight-week period and all activity took place during that time span.

2. Brand preferences were measured for each of the test brands with the same housewife for every week of the eight-week period. This was the criterion measure for the study.

3. The brand preference changes were then related to frequency of exposure to commercials for each of the test brands with the three dayparts involved. This overall approach was accomplished in the following way:

   a. A diary panel of housewives was established in the marketing areas where the commercial schedules were run. Each cooperating respondent not only filled out a prequestionnaire, but also kept a diary for each of the eight weeks of the study and, in addition, completed a post-interview.

   b. A key aspect of the diaries was that each respondent recorded her own television viewing for 16 hours a day, seven days a week, by quarter-hour intervals.

   c. Primary criterion measurement of brand and preference change was obtained via consumer responses to a constant sum question. This question was in the form of

a weekly lottery where the respondent would get a chance to win ten packages of whatever brands she would choose in each of the eleven product categories under study.[1] Since the weekly lottery for each participant represented a significant dollar value, the brand preference measure also provided an incentive for cooperation in the study.

d. Three test areas were used in the study. Across these three areas, special schedules for the eleven participating brands were exposed according to a basic latin square design. This permitted each brand to receive either daytime, nighttime or fringe spot exposure in one of the three test cities. The allocation of the daypart by brand was rotated through the areas so that every area had test television for daytime, nighttime and fringe spot. The purpose of this approach was to eliminate the influence of test area and brand on the composite results.

e. The schedule to be evaluated for each brand consisted of eight minutes per week in daytime; one minute per week in nighttime; and four minues per week in fringe spot.

f. To minimize the number of variables involved in interpretation of the results, the same commercial was used for a brand in each of the dayparts throughout the tests, and all commercials were 60-second commercials.

g. Since the broadcast times of each commercial for each brand over the eight-week period were known, it was possible to match the respondent viewing diaries by 15-minute segments to exact "opportunities to see" the commercials. This process, as we have seen, comes as close as possible to actual viewing, and is the method used by all the major advertiser studies to determine exposure.

h. Given schedules of commercials "as sent" by the advertiser, and the record of when respondents were sitting in front of the television set when those exposures occurred, it was possible to determine likely exposure of commercials for each test brand. As in the McDonald study, this means "opportunity to see" and assumes that if the respondent were exposed to the 15-minute segment in which the commercial appeared, she would likely be exposed to the commercial itself.

i. Since a record of commercial "opportunities to see" was thus possible for individual respondents, and since these respondents had given their brand preference change measurements for the eleven brands, the changes for each respondent could then be related to her frequency of exposure to the commercial for each test brand. The analysis made possible by this record of exposures and measurements of consumer preference by brand makes possible daypart comparisons and media planning input not attainable in any other fashion.

[1] This constant sum scale has since been evaluated in numerous studies, including the ARF Arrowhead 9 project, and has been validated as a highly predictive purchase scale.

j. Each respondent was thus classified as to the number of times she had an opportunity to see a brand's commercial during the eight-week test period.

k. The aggregate brand preference for each exposure group was then computed for the period immediately prior to the start of the test and for the average of the eight test weeks. The average of all eight test weeks was used, in order to include in the measurement the total effect of the advertising. A percentage change in the brand preference, with the pre-preference as a base, was then computed for each exposure group.

l. The basis for the analysis, therefore, was a frequency distribution of the respondent audience for a brand advertising over the eight weeks, from which brand preference changes among different exposure groups could be determined. In this way it was possible to examine the effect of frequency of exposure, and the aim of the study was fulfilled because shifts in brand preference could be related directly to TV viewing activity.

A distinct advantage of the Ogilvy & Mather analysis, and of the other studies of a proprietary nature to be discussed here, is that they encompass a number of different brands and schedules, thereby affording the opportunity to draw generalizations from a review of the total experience of all test brands. In the O&M study, for example, all the computations which lead to the results presented here are based on three typical schedules – daytime, nighttime and fringe spot – which can be purchased with equal expenditures of funds.

Results of the Study

A number of individual brand findings will not be discussed here as they are outside the focus of this book. But on the subject of frequency effectiveness, the Ogilvy & Mather study led to the following conclusions:

1. *There is a direct relationship between brand preference change and frequency of exposure.* As a result, the frequency of exposure that a television schedule on each of the three dayparts affords to the reach of that schedule is critical in evaluating its effectiveness.

2. The importance of frequency is pointed up by the fact that, at the one-exposure level, all three dayparts have only a nominal effect and all are virtually equal.

3. As frequency of exposure increases, however, substantial differences appear in the relationship between exposure and brand preference changes for the three dayparts.

4. Below the level of four exposures, the effect of nighttime network on brand preference change is less than the effect of either daytime or fringe spot within that same range.

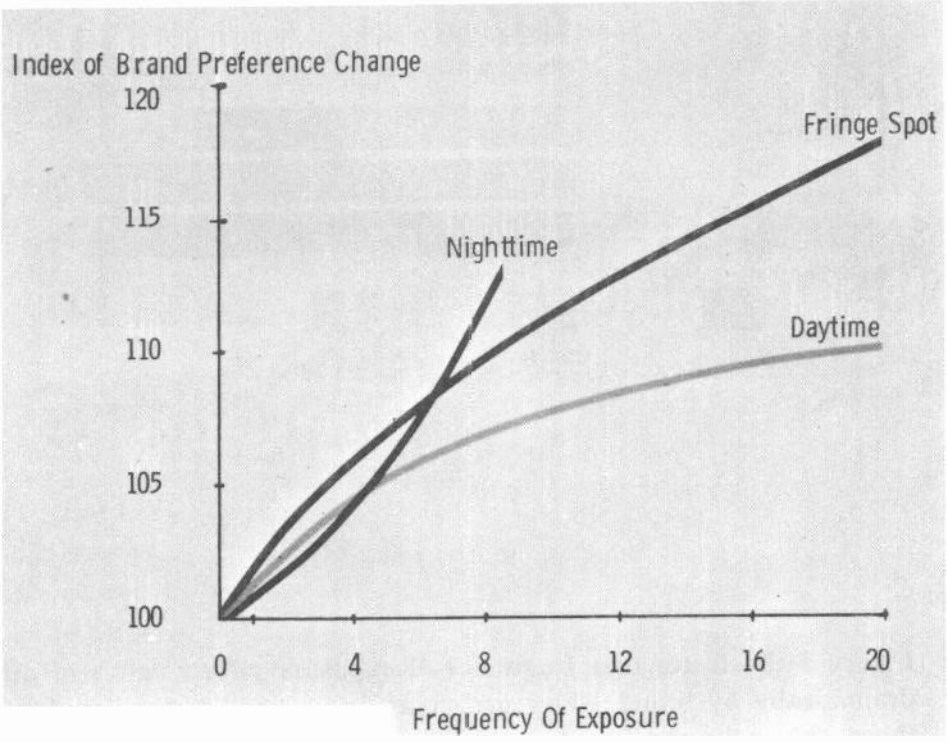
5. When frequency of exposure in nighttime network reaches a level of six or more, viewer reaction to the advertising becomes more positive than it does with groups similarly exposed in fringe spot or daytime.

6. In either case, it is apparent that consideration of the reach — *and particularly the frequency distribution of that reach afforded by a given schedule* — is the key to evaluating a schedule (i.e., in comparison to alternative schedules).

7. As Figure 1 shows, frequency for all dayparts increased more or less constantly (even up to 20 exposures over an eight-week period) without a decline. Frequency clearly produces results, although those results can differ by time of day within the television environment.

Figure 1

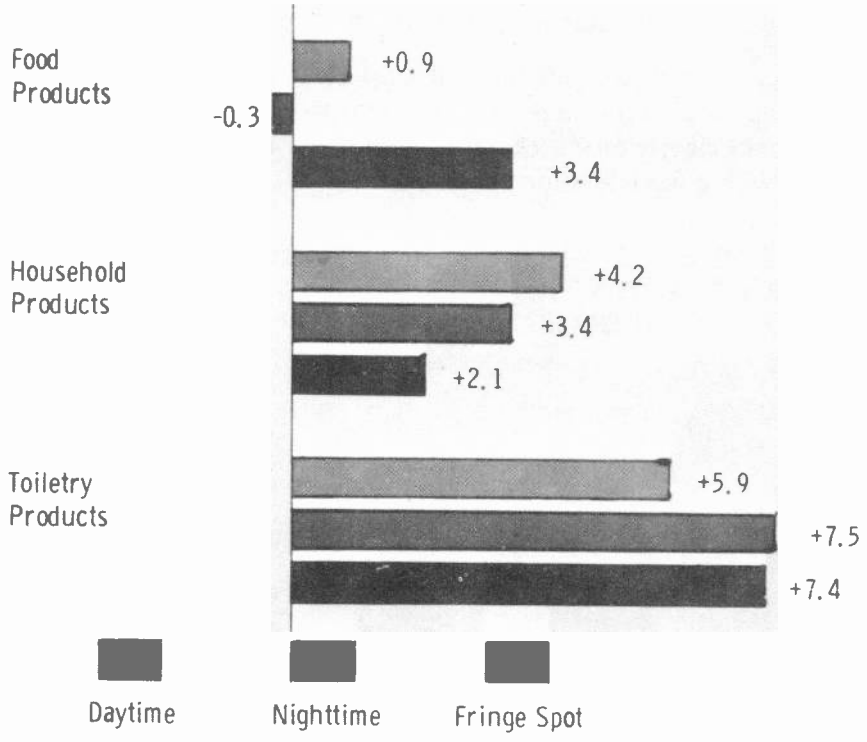
INDEX OF BRAND PREFERENCE CHANGE INDUCED BY FREQUENCY OF EXPOSURE IN THREE TELEVISION DAYPARTS (11 BRAND COMPOSITE)



8. As shown in Figure 2, frequency works, but its effects differ by time of day. Fringe spot worked best for food products; daytime for household products and nighttime for toiletry products.

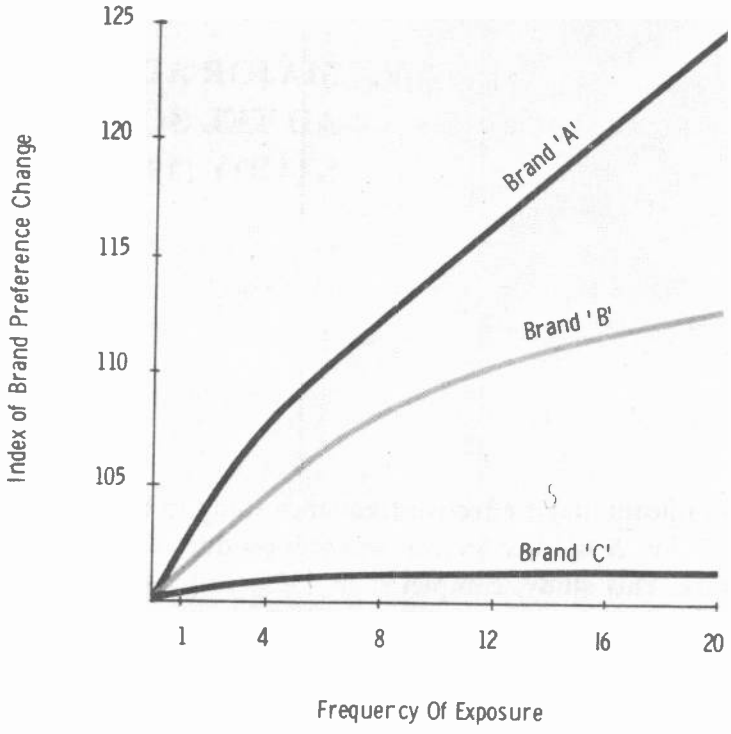
Figure 2

COMPARISON OF BRAND PREFERENCE CHANGE BY PRODUCT CATEGORY
(THREE TELEVISION DAYPARTS)



9. Figure 3 illustrates that frequency-of-exposure effects can also differ dramatically by brand. (This particular finding will be explored more thoroughly in the next Chapter, which investigates a major advertiser's series of AdTel scheduling studies.)

BRAND PREFERENCE CHANGE INDUCED BY
FREQUENCY OF EXPOSURE TO DAYTIME TELEVISION
(FOOD PRODUCTS)



Overall, then, the Ogilvy & Mather study provided strong evidence that frequency of exposure produces positive results, but is subject to wide differences in effectiveness, not only by dayparts, but also by categories of products and brands as well. Its authors concluded that they had made progress towards a workable system for quantifying television schedule evaluations, which, previous to their efforts, had been made on a judgmental and subjective basis. They had shown clearly that the effect of one exposure was no more than nominal for any day part, and that frequency effectiveness inputs were a key factor in choosing among media planning alternatives. Moreover, they had found – as had both Zielske and McDonald – that although effectiveness increases with frequency, it usually does so at a steady, but generally decreasing, rate.

V. MAJOR ADVERTISER AD TEL SCHEDULING STUDY (1974)

The next significant major effective-frequency study to be carried out after the McDonald and Ogilvy & Mather projects was that conducted by one of the hundred largest advertisers. This study, completed in 1975, employed as a measurement criterion diary-recorded purchasing within an AdTel split-cable (CATV) television market. It measured sales response relative to different exposure frequencies within the framework of the usual media scheduling practices of the brands involved.

Background of AdTel Cable Television System

AdTel grew out of a feasibility study conducted by the Advertising Research Foundation, showing which areas best met the demographic, legal and economic requirements for such a system. A market was chosen which had:

- a television set-owning population in excess of 35,000 households and 100,000 people.
- reasonable typicality in terms of demographics, cultural and economic patterns, television viewing habits and retail shopping facilities.
- a *new* CATV system, where both cables could be installed simultaneously.
- one, and only one, affiliate of each of the three television networks carried on the CATV system.

Design of the Study

By 1974 the whole question of effective frequency was fast becoming a burning issue for the advertising industry. Since the AdTel facility was well suited to tightly controlled experimentation, their people perceived the issue as a timely project and sought to construct a definitive study of frequency effects. They worked to make advertising and viewing data for AdTel households available, along with purchase data from AdTel panels, and sought to interest advertisers in participating in their program.

The main participant in the undertaking described here conducted several different brand studies – one in each of a number of different product categories. The design of the approach for each brand and product category is shown below:

Timing of the AdTel Study Brand Analyses

	Pre-Test	Test
Purchasing Behavior	28 weeks	28 weeks
Viewing Behavior		28 weeks

March '74 Sept. '74 April '75

Starting in September, 1974, nine months of family purchase data were obtained for five brands and categories. The brands involved are identified by their budget levels and mean share of advertising in their categories, as follows:

Brand	Approximate National Advertising Rate	Mean Share of Category Advertising
A	$8.2MM	58%
B	2.1MM	72%
C	7.6MM	15%
D	5.1MM	61%
E	4.7MM	42%

In addition to the purchase information, viewing data were obtained for two-week periods in November, February and July, and projected for each family for the entire test period. By placing the media schedule of the advertiser's brands against the projected viewing, it was possible to estimate the probable exposures per household. All competitive advertising in the market was monitored and, when compared to

household viewing, it was also possible to *estimate probable competitive exposures per household.* This was a unique and important capability of the AdTel studies.

All of the data were organized by four-week purchase periods; the overall results reflect an average of the four-week periods throughout the test. A key part of the analysis involved determining exposure and share-of-advertising effects in retaining users and in attracting users. For this purpose, prior use was defined as being within the 12-week period prior to each four-week period during the test; in other words, there was a rolling definition of users rather than a static one.

The advertiser's approach in relating household purchases to exposure to its own and competitive-brand advertising might best be described as one which utilized a series of successive approximations (formulas) to obtain the best fit. At each state, a number of variables and relationships were hypothesized; e.g., that additional exposures increased the probability of buying the brand, but at a diminishing rate. A romputer program (step-wise multiple regression) then allowed one variable at a time into the equation if, and only if, it improved the household-by-household buying predictions.

After the results of each run were examined, new hypotheses were created and the data were re-run. It was felt that the end equation derived through this process supplied the truest estimates for significant variables related to the prediction of household purchases. Graphically, the data – by exposure frequency for the average four-week period by each brand – are shown, starting on page 49, after the following technical description of the approach used in this study (set in contrasting type on the next two pages).

Technical Details of the Approach

Step-wise regression analysis was used to predict household purchase in each of the four-week periods. (The first period was excluded so that purchase in the previous period could be used as a covariate control). The dependent variable was simply whether or not at least one purchase was made in a given four-week period (Period t.)

For all brands, the basic covariate controls were:

1. Use – Non-Use in Period (t-1)
2. Use – Non-Use in Periods (t-1 or t-2 or t-3)
3. Cable*
4. (1) times (3)
5. (2) times (3)

The independent variables were:

(1a) Number of Exposures

(1b) e^{-X} (x = No. of exposures)**

(2) Share of Exposures

(3a) (1a) times (2)

(3b) (1b) times (2)

(4) Whether or not there was at least one exposure (x=0,1)

(5) Each of the covariate controls times each of the independent variables

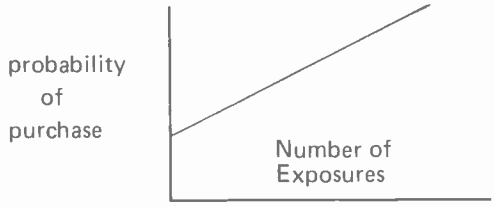
The selection of the covariate control variables and the independent variables was based on an extensive trial-and-error approach.

A general family of models was created and a step-wise regression procedure was allowed to select the particular model appropriate for each of the brands. The basic available model components were as shown in the following figures:

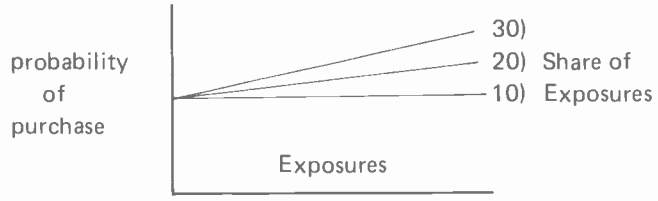
*As a covariate, Cable main effects represent cable differences not due to commercial exposure. Cable differences due to commercial exposure are explicated in the interaction of Cable and exposure. (see list of independent variables.)

**e^{-X} is a negative exponential function which increases at a decreasing rate (see basic model component #4).

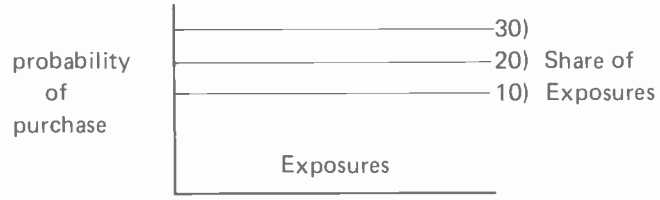
1. A linear function in number of exposures



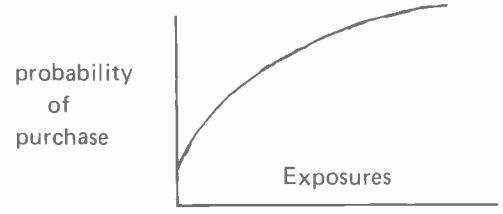
2. An interactive function in number of exposures times share of exposures



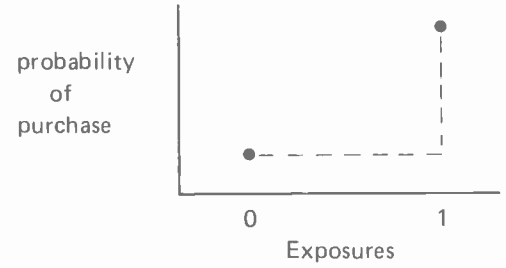
3. A linear function in share



4. A growth function in number of exposures (e^{-x})

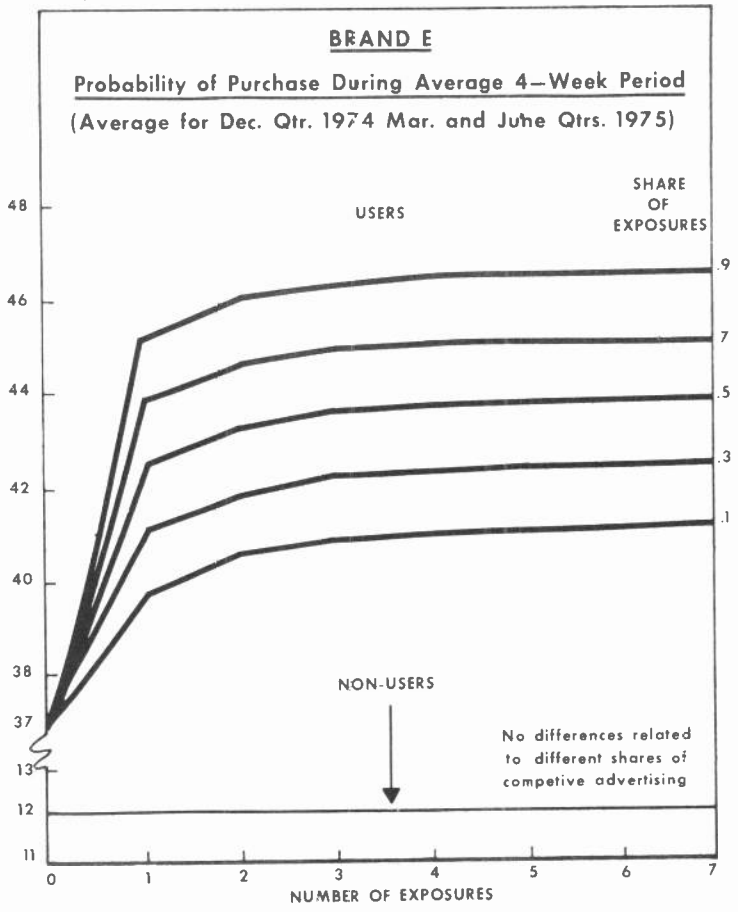


5. A step function not exposed versus exposed (x = o, 1)



Brand E-Findings for this brand were somewhat different than for the others:

1. For user households, there was a sharp initial increase in buying probability, with the effect of additional exposures diminishing very rapidly.
2. For user households, the initial advertising effects were greater with the shares of advertising (i.e., less competition), but the effects of additional exposures were very small at all share-of-advertising levels.
3. For non-users, there were no differences related to different shares of competitive advertising.



The results for Brand E, in terms of regression coefficients, are presented below:

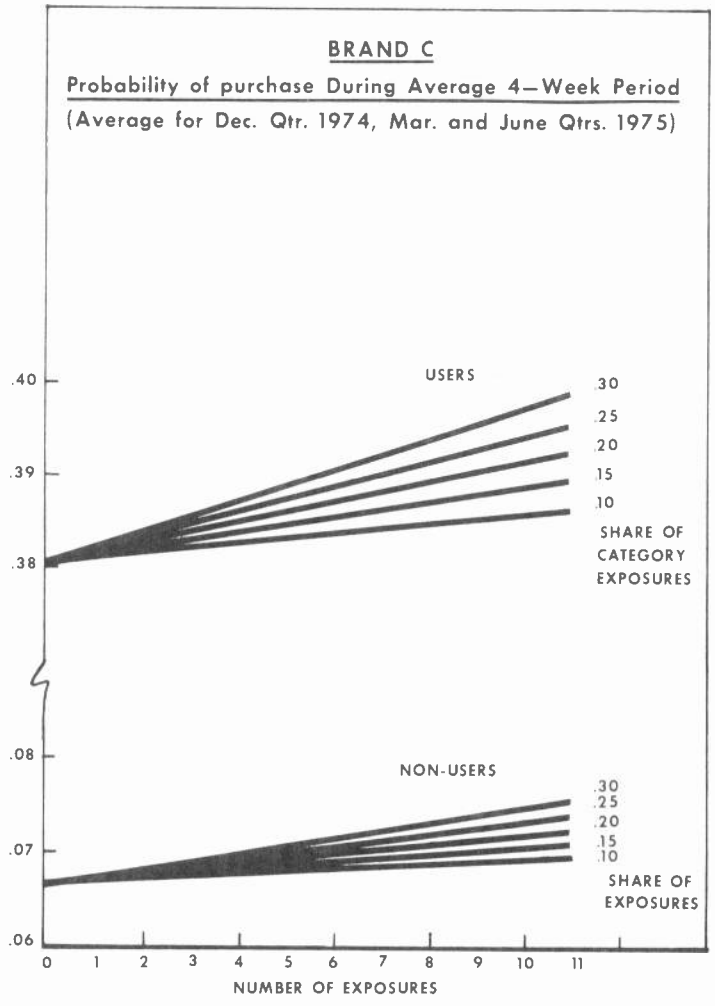
BRAND E	Users
Constant*	.3682
e^{-x}	−.03589
Share	.06833
	Multiple = 0.057**

*The constant term includes all covariate effects.

**All regression models are statistically significant due to large sample sizes. (GT. 0.99)

Brand C

1. Both user and non-user households showed small but steadily increasing probabilities of buying with additional advertising exposures.
2. Both user and non-user households showed stronger exposure effects at higher shares of category advertising.



The results for Brand C, in terms of regression coefficients, are presented below:

BRAND C	Users	Non-Users
Constant*	.38042	.06634
Expo. times Share	.00558	.00281

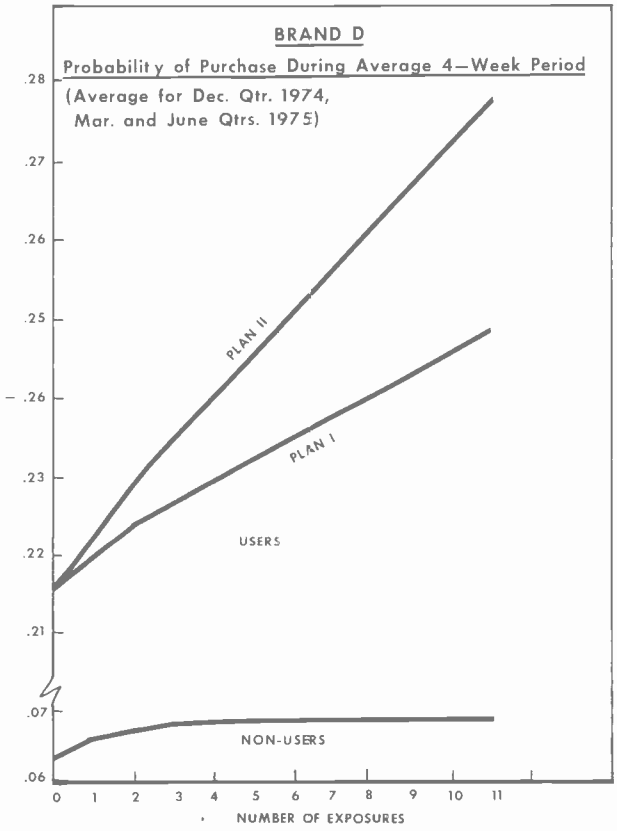
Multiple R^2 = 0.153**

*The constant term includes all covariate effects.

**All regression models are statistically significant due to large sample sizes. (GT. 0.99)

Brand D–Findings for this brand, which tested two different media plans, were as follows:

1. For user households, there were sharply increasing probabilities of buying with additional exposures, in both plans tested.
2. For user households, the probabilities of buying at each level of exposure were higher with Plan II.
3. For users and for non-users, share of advertising did not appear to affect the value of different number of exposures.



The results for Brand D, in terms of regression coefficients, are presented below:

BRAND D	Users		
	Plan I	Plan II	Non-Users
Constant*	.21952	.21952	.06839
e^{-x}	-.00369	-.00369	-.00369
Expo.	.00265	.00530	–

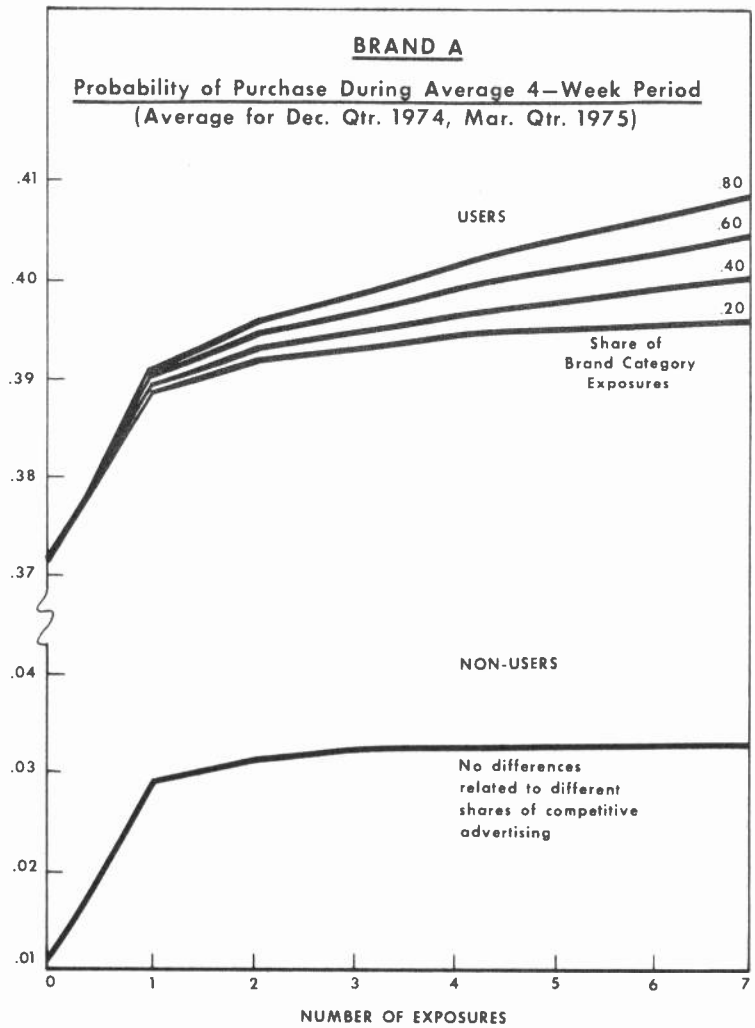
Multiple R^2 = .053**

*The constant term includes all covariate effects.

**All regression models are statistically significant due to large sample sizes. (GT. 0.99)

Brand A

Both user and non-user households showed increases with exposure, but non-users did not increase in buying probability with additional exposures.



The results for Brand A, in term of regression coefficients, are presented below:

Model Components	Users		Non-Users	
	Plan I	Plan II	Plan I	Plan II
BRAND A				
Constant*	.3810	.3810	.02174	.02174
e^{-x}	-.00997	-.00997	-.00997	-.00997
Expo. times share	.00295	.00295	—	—
x = 0.1	.00480	.00240	.00480	.00480

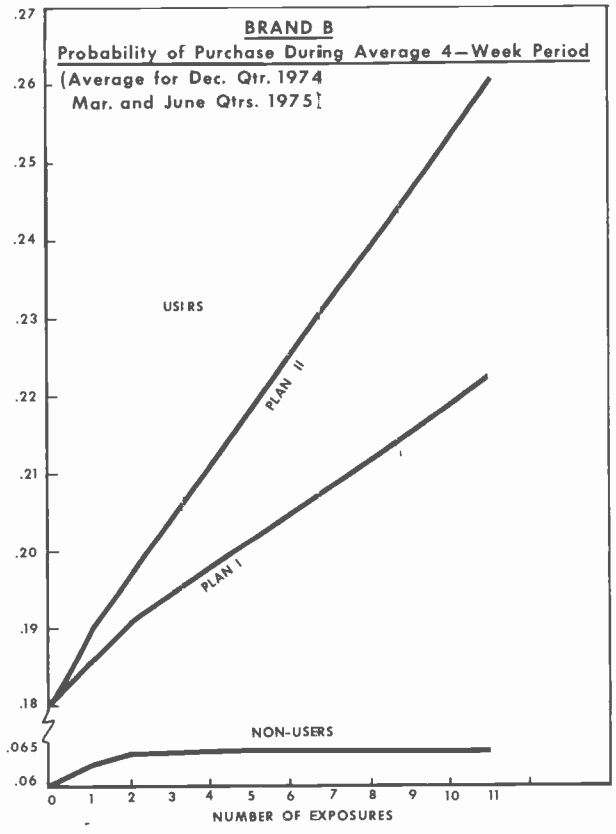
Multiple $R^2 = 0.277$**

*The constant term includes all covariate effects.

**All regression models are statistically significant due to large sample sizes. (GT. 0.99)

Brand B–Results for this brand were very similar to those for Brand D:

1. For user households, there were sharply increasing probabilities of buying with additional exposures, in both plans tested.
2. For user households, the probabilities of buying at each level of exposure were higher with Plan II.
3. For users and for non-users, share of advertising did not appear to affect the value of different numbers of exposures.



The results for Brand B, in terms of regression coefficients, are presented below:

BRAND B	Users		
	Plan I	Plan II	Non-Users
Constant*	.18443	.18443	.06482
e^{-x}	-.00516	-.00516	-.00516
Expo.	.00352	.00704	–

Multiple R^2 = .047**

*The constant term includes all covariate effects.

**All regression models are statistically significant due to large sample sizes. (GT. 0.99)

Conclusions

This advertiser drew the following general conclusions from his five brand analyses:

1. There are different probabilities of buying associated with different household exposure levels.

   - *User households* show a sharp initial growth and a further steady increase in the probability of buying, with additional advertising exposures.
   - *User households* show the best increases in probability of buying when additional exposures and a greater share of category advertising exist together.
   - *Non-user households* show an initial increase but very little growth in probability of buying, with additional advertising exposures.

2. The largest values for additional exposures were noted for Brand B and Brand D users. *These brands had the highest share of advertising in their categories.* They were also different from the other brands on the basis of having a lower probability that a user in the preceding quarter would buy again within an average four-week period without any exposure to advertising. This repeat-purchase probability was estimated at 18% for Brand B and 22% for Brand D, compared to 37% for Brand A, 38% for Brand C and 37% for Brand E.

   Lower repeat-purchase probabilities of this kind (in each of the four-week periods measured) could be due to lower brand loyalty, smaller promotion budgets or longer purchase cycles. Of these possibilities, the longer purchase cycle might best account for the difference between Brands B and D, and Brands A, C and E. If this is true, we might then generalize that brands with longer purchase cycles are likely to benefit most from higher frequencies of exposure.

   The media planning implications for brands such as B and D might include a greater use of daytime advertising, where the same dollars would purchase greater frequency of exposure. It is also possible that daytime advertising for such brands should attempt to have continuity on a limited number of programs during a given time period, instead of being scattered over many programs. Still another possibility might be smaller space/time units, to increase frequency while maintaining reach.

3. Share-of-advertising effects appeared to be greater for Brands E, A and C – in that order – and non-existent for the other two brands. (The mean shares of advertising for the advertiser's brands in the categories as they defined them were: E-42%, C-15%, B-72%, D-61%, and A-58%.)

   Although there is no readily apparent explanation why the above brands would benefit most by increasing their shares of advertising, there are some media implications for brands responding in this way. It would seem that such brands should seek to dominate whatever medium they choose to be in. Which is to say, while not looking for high frequency of exposure within a medium, they might do well to seek out media not being used by competition and spend the funds generated from lowering the frequency in their primary medium.

* * *

The findings in this major advertiser AdTel study are somewhat different from those reported earlier in this book. It can be partly attributed to the difference in sizes of brands involved in the study, as well as to other aspects of the analytical approach. A number of observations ought to be made in this regard:

1. The AdTel study was different by virtue of its separate analysis of users and non-users. Considering the commanding shares of advertising held by these brands in their categories, it is not surprising that separate user/non-user analyses were involved. Most of the brands obviously possessed a large share, and so had the primary objective of retaining and motivating users, as opposed to attracting non-users or potential switchers.

   This is an important distinction, for it is quite likely that these large brands would not lose to a competitor on one "opportunity to see" as might brands of the size used by McDonald in his study. In effect, such large brands did not have the problem of falling below competitive share of voice.

2. Brands A, B, D, and E were obviously the large brands, judging by their shares of advertising in each category. Their responses for one "opportunity to see" in a four-week period differed from that of Brand C, a minor share-of-advertising brand more typical of the average brand in most categories. For a brand such as C, marginal one-exposure responses are observed. Hence it is obvious that the very large brands involved in this study behave differently from the normal brand in perhaps more competitive categories.

3. The Ogilvy & Mather study did not specifically break out users, but the samples for the studies contained users in proportion to the market share of the various

brands. If a similar figure were reported from the AdTel scheduling study – i.e., if a weighted user/non-user number were provided – it would lessen the size of the increase for one OTS, and the effects would show up more in line with those of the other studies.

4. The AdTel scheduling study does generally agree with the others in terms of the growth of response at the two-exposure level and beyond.

5. Also, for as many as ten or eleven exposures in four weeks, the AdTel study showed no evidence of decay for any of the brands (although some did plateau after only a few exposures), which is consistent with the previous studies.

6. Differences in potential sales by different media plans (Plan I and Plan II, in several cases) indicate the leverage of each plan when different frequency patterns are employed against consumers.

VI. HOW ADVERTISING EFFECTIVENESS IS RELATED TO FREQUENCY

The material covered in this book includes relevant learning theory, laboratory experimentation using advertising stimuli, and marketplace field studies directed specifically at the frequency-of-exposure issue. Given the accumulation of such knowledge and evidence over the years, what conclusions may we arrive at? And of these, which ones can we feel most confident about? Even more important, how can we incorporate these findings into better media planning?

So far, it has been relatively easy to construct an outline of all the significant research experience and to determine general guidelines on the use of frequency. But we ought not to underestimate the difficulties that stand in the way of actually applying such guidelines to a media plan, for the complexities inherent in this process are substantial. Charles Benesch of General Foods Corporation captured the point very well in a paper [1] he presented at the Advertising Research Foundation's 21st Annual Conference. He said:

> "The subject of frequency is concerned with how much is enough to accomplish a given advertising objective. Here we are concerned with the minimum and maximum levels necessary to do the job. As you know, what is considered to be minimum and maximum is mainly a matter of judgment today—hence, the need for research. The business issue is simply this: to spend below the minimum level for a period of time has, at the least, some elements of waste, while spending above the maximum level of effective frequency probably will not produce results equal to the cost of the additional effort delivered. How, then, can we determine the appropriate level of frequency?

[1] "The Concept of Frequency in Media – Theory and Applications," New York City, Nov. 10, 1975.

"In our opinion, the necessary level of frequency varies in terms of marketing factors and communications factors. Let's examine each in depth, since they supply the conceptual framework for media planning and research.

"Here are the basic marketing factors which should be considered when we think about frequency. Time does not permit a discussion on each point, but each seems relevant:

- Nature of product (end use, cost, etc.)
- Life-cycle state of product (new, established, transition)
- Brand dominance
- Brand loyalty
- Purchase cycle
- Budget
- Competitive structure and activity
- Target prospects

"However, the marketing factors do not tell the whole story. Communications factors must be considered in conjunction with the marketing factors in order to determine what the appropriate frequency should be to accomplish a specific task. The basic communications factors of concern when you think about frequency are:

- Message unit (30 seconds, 60 seconds, etc.)
- Message complexity
- Message uniqueness
- Scheduling pattern (spacing of exposures)
- New vs. continued campaign
- Nature of sell (image vs. product sell)
- Wearout (campaign, commercial, ad)
- Media used (alone, in combination, number, amount, clutter)

"At this point, it is evident that an effective media plan involves consideration of a number of factors."

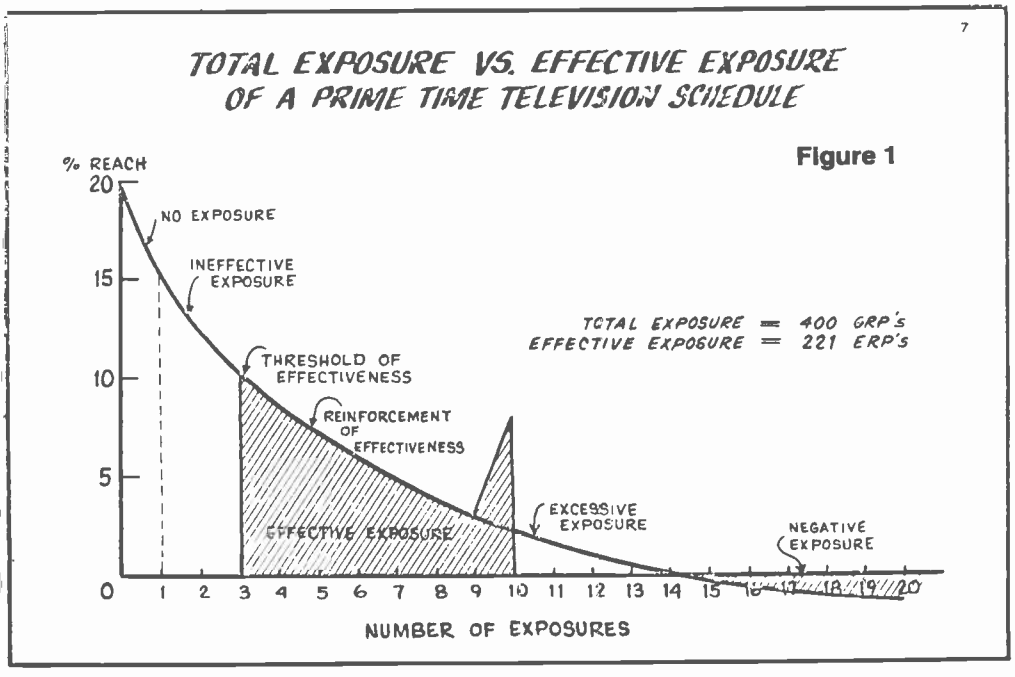
Nevertheless, within the context of these myriad factors involved in media planning, the search for the minimum and maximum levels of frequency necessary has continued to go on, and with some success. One such development is a very strong intuitive but empirically-based concept termed, not surprisingly, "Effective Frequency." It is an approach that goes beyond the simple reach and frequency indices (based on the syndicated service audience measurements) used in media planning for many years. Indeed, the central point of the Effective Frequency concept is that it disassociates media planning and the effectiveness issue from average exposure

estimations, and links them instead to specific advertising goals, based on given frequency levels and "opportunities to see."

The objective in using this new approach is to identify optimal frequency levels of advertising exposure which lead to desired consumer response. Obviously, it represents the kind of information that advertisers and their agencies have been searching for in their efforts on the frequency issue. Simply put, "what number of exposures are necessary with the target audience to produce an optimal response from our advertising?" The investigation in this area has addressed not only the question just posed, but has quite naturally inquired further—e.g., "what happens to response at greater exposure frequencies?"

The whole concept of Effective Frequency has probably been best articulated by Alvin A. Achenbaum in an address [2] he delivered to the 1977 A.N.A. Media Workshop. In this talk, Achenbaum introduced a form of measurement he termed "Effective Rating Points" (ERPs), as contrasted with the more usual "Gross Rating Points" (GRPs) to which we are accustomed. His logic was as follows:

> "... only part of the exposure frequency distribution that results from an advertising campaign is effective, the part between three and ten exposures. Graphically, this is represented in Figure 1 by the shaded area.



[2] "Effective Exposure: A New Way of Evaluating Media,' New York City, Feb. 3, 1977.

"We might say that the reach obtained prior to the third exposure is ineffective exposure; that after ten it is excessive exposure; and that after the fifteenth it is negative exposure. It is important to note that exposure from the eleventh through the fifteenth is not all waste. The first ten for those people have value. It is just after the tenth that it becomes superfluous. Thus, some credit must be given them. It is visualized as the blip on the curve.

" . . . if all exposures were of equal value, then only one would presumably be necessary to make a sale. Why bother with frequency if only reach is necessary?

" . . . there is a certain logic in applying the law of diminishing returns to advertising effectiveness. One is therefore intuitively inclined to believe that, after a number of exposures to an advertisement, very little more can be learned from additional ones so that their ability to persuade diminishes thereafter.

"Finally – and perhaps most important – there is a growing body of evidence, albeit some of it not terribly good, which indicates that all exposures are not of equal value.

"Although other studies may be available, the following six on this subject seemed pertinent to me. They are:

The Harvard Study in 1963
The Ogilvy & Mather Study in 1965
The Jakobovits & Appel Studies in 1966
The DuPont Study in 1968
The Marketing Evaluations Study in 1969
The Krugman Study in 1972

"Each of these studies dealt with the effect that the frequency of exposure had on some measure of advertising effectiveness, be it recall, brand awareness, or persuasion. All of them together seemed to add up to the following conclusions:

That the first few exposures of an ad are of little value, that individuals who see less than three are not significantly affected by the advertising.

That little further benefit is obtained from advertising after ten exposures after a given period of time."

Achenbaum then explains his ERP approach:

"Under the circumstances of effective exposure, the effective rating points – or ERPs – obtained in the example used would be 221, as opposed to the 400 GRPs obtained using the concept of total exposure. In other words, in this example, only a little over half of what was bought was effective – was being seen enough to have

an effect. Interestingly enough, in the example I have used, most of the ineffectual exposure came from underexposure and not from excessive exposure.

"The implications of this are extremely serious, not only on how we value our buys in general, but on media-mix and budget size. But more on this later. For now, let us consider what our media objective should be once we accept the concept of effective exposure.

"Obviously, if we are to maximize ERPs, the way to achieve it is to increase the part of the frequency distribution curve that is located in the shaded area. In essence, what we want to do is to choose media schedules and budget levels that form a bell-shaped curve with very little tail on either side, as shown in Figure 2.

8.

TOTAL EXPOSURE VS. EFFECTIVE EXPOSURE OF A HYPOTHETICALLY OPTIMAL TELEVISION SCHEDULE

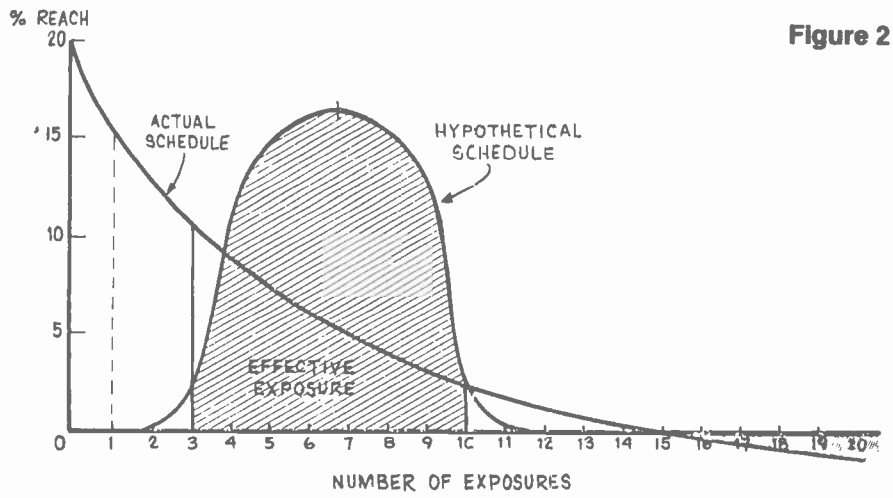


Figure 2

"In such a curve, the average frequency of exposure would be six. In such a frequency distribution, the number of ERPs would reach a maximum and probably approach the number of GRPs that could be obtained. The difference, of course, would be that all the ERPs would be having an effect while only a half of the GRPs would.

"Now even in this example, I have made an assumption that may not be totally correct – that is, that all of the exposures between three and ten are equal value. If I understand Krugman's work correctly, four until ten are all equal reminders of the third and therefore the same. After that they begin to lose even that effect. While we

cannot be sure he is correct, we do know this: by using effective exposure, we have at least minimized the effect of the tails. Needless to say, what we really need is more knowledge on how advertising works in this process."

Achenbaum concludes as follows:

"... the evidence on where effective exposure truly begins and ends is far from definitive. I chose a range that appeared reasonable. But one could readily choose another – say, from four to twelve exposures, or from two to seven. Doing so may change some of the media decisions you would make, but it will not change the underlying logic that I have outlined. The mathematics of the concept suggest that the narrower the range of exposure used, the lower the effective exposure; the broader the range, the larger the effective exposure and the closer to GRPs you come."

VII. CONCLUSIONS

While the answers at this point should not be termed definitive, the ground we have covered shows there is a good deal that we as an industry already know about frequency and its effects. And one of the main purposes of this book is to draw on that knowledge, with the intent of seeking out any valid conclusions and generalizations that can contribute to better media planning. I believe that a number of such guidelines either emerge from the information on their own or can be identified with a little careful analysis.

Conclusion #1

One exposure of an advertisement to a target group consumer within a purchase cycle has little or no effect in all but a minority of circumstances. On this finding there was general agreement among all the studies covered, the only exception being the response among users of a very large brand that is not at advertising saturation levels (see Chapter V). Moreover, as shown under Conclusion #4, the build-up of brand advertising awareness over time is enhanced by two+ exposure frequency, while a frequency of only one was characteristic of brands that had losses in average advertising awareness. The suggestion of a negative impact from one exposure can only be considered a hypothesis at this point, but there is little question that a single exposure provides no more than a nominal advertising effect.

Conclusion #2

Since one exposure is usually ineffective, the central goal of productive media planning should be to place emphasis on enhancing frequency rather than reach. Any ambiguity on this goal can produce quite different frequency distributions and, consequently, less productive media plans.

Conclusion #3

The weight of evidence suggests strongly that an exposure frequency of two within a purchase cycle is an effective level. In fact, based on the various studies, it is often difficult to distinguish between advertising response at the two- and three-exposure levels, suggesting that the lower number may be the more efficient target to aim for. Bear in mind that that is a generalized finding, pertaining to the average brand dealt with in most of the material and case studies covered in this book. As such, it is a strongly-based aspect of consumer response to numbers of advertising messages; still, it would be wrong to believe such a finding would apply, without exception, to every category and every brand situation. Categories and brands within a category differ widely with respect to consumer interest and involvement characteristics.

Further to this, there are differences between new-brand messages and those of established brands. So while two-exposure effectiveness is more the rule than the exception, exceptions are possible and may even be likely in some categories. In the final analysis, of course, research can answer the question for any brand.

The study by Colin McDonald offers by far the strongest evidence in favor of two-exposure effectiveness, since his results *related directly to purchase cycle* (next purchase occasion), with the effect enhanced by frequency of exposure (see Chapter III). He covered a wide range of purchase cycles in nine categories and consistently found the same results. In fact, all studies covered showed a positive response on two exposures, although two was not necessarily the peak of response as with McDonald. To recapitulate his statement: [1]

> "Where a switch in brand occurred on consecutive purchase occasions, the shopper was more likely to have been exposed to two advertisements than one for the brand switched to . . . when people are making a switch into or out of a brand, they are more likely, by 5 percentage points, to switch to the brand (or less likely to switch from it) when, in the meantime, they have seen two or more ads for the brand."

Evidence as to the effectiveness at the two-exposure level is also forthcoming from Gallup & Robinson multiple-exposure data, as presented last year at the 24th Annual ARF Conference. [2] The data were assembled by G&R President Ernest A. Rockey and Senior Vice President W.F. Greene. Using their Total Prime Time (TPT) research system, which measures 24-hour delayed recall based on natural in-home television

[1] See p. 94-95, Appendix A.
[2] "TV Commercial Effectiveness under Multiple-Exposure Conditions," New York, October, 1978.

viewing, they explored what happens when exposure to television commercials is attained by receiving two different "hits" in different programs within the same viewing.

Gallup & Robinson's basic exploration involves 123 case histories (71 with measurements among women, 52 with measurements among men) over a three-year period (1975-1978 telecast seasons). Since individual brand examples were of varying length and recall level, each proven recall result [3] was put on an index (with :30 = 100) to facilitate consolidation of all case histories. The average brand of the 123 case histories had a same-night release of approximately three commercials (2.7) within the three-hour prime time span, 95% of which were :30 units. A total of 54 brands was represented, each being used one or more times. The outcome showed clearly that the build-up in short-term recall from two exposures, as received by viewers in close proximity of time, can be dramatic.

The evidence is shown in Table I and in Figures 1 and 2, which follow. The 123-case-history summary reveals:

- A rather straight-line relationship between exposure length and recall (rather than a sharply diminishing returns relationship).
- A relationship that is almost cost-efficient, i.e., effectiveness gains in relation to incremental dollar costs.

Table I

	Number of exposures in two different programs on the same night	PCR Index*	
		Obtained	Relative
Base 1	(:30)	98	100
Base 2	(:60)	170	173
Base 3	(:90)	242	247
Base 4	(1:20)	314	320

[3] PCR (Proved Commercial Recall) is based on those people who can recall a commercial on the basis of a brand-name-aided recall cue and go on to correctly describe the commercial.

Figure 1

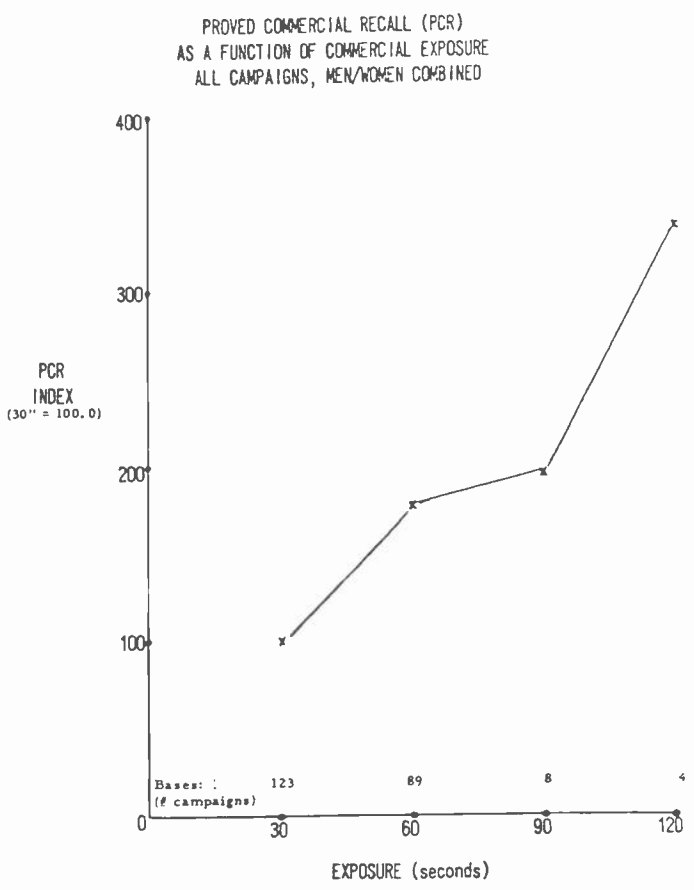
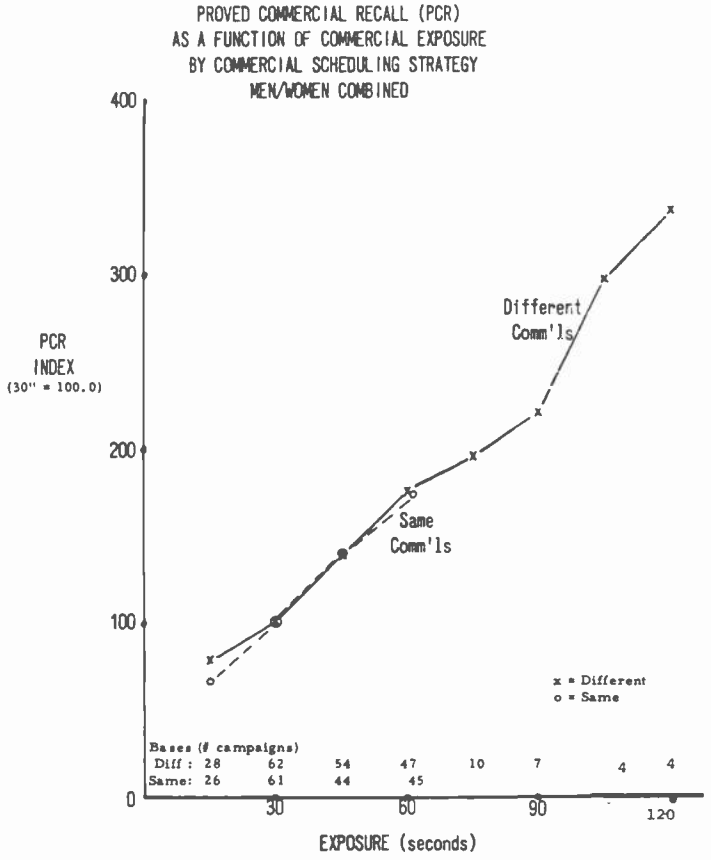


Figure 2



As a result of these findings, Gallup & Robinson has concluded that: [4]

> "Although none of the campaigns involved in the analysis was observed on different days, as is the more usual spacing in sustaining advertising (in which 24-hour recall could not, of course, be an appropriate measure), it is our opinion the *near-cost-efficiency principle would be appropriate* in longer time-frame reference. In any event, the findings are certainly appropriate in those heavy-expenditure instances in which multiple commercials might deliberately be scheduled on the same night. For example:
>
> - during new product introductions
> - under surge advertising conditions
> - in support of consumer promotions of limited time duration
> - for season advertisers.

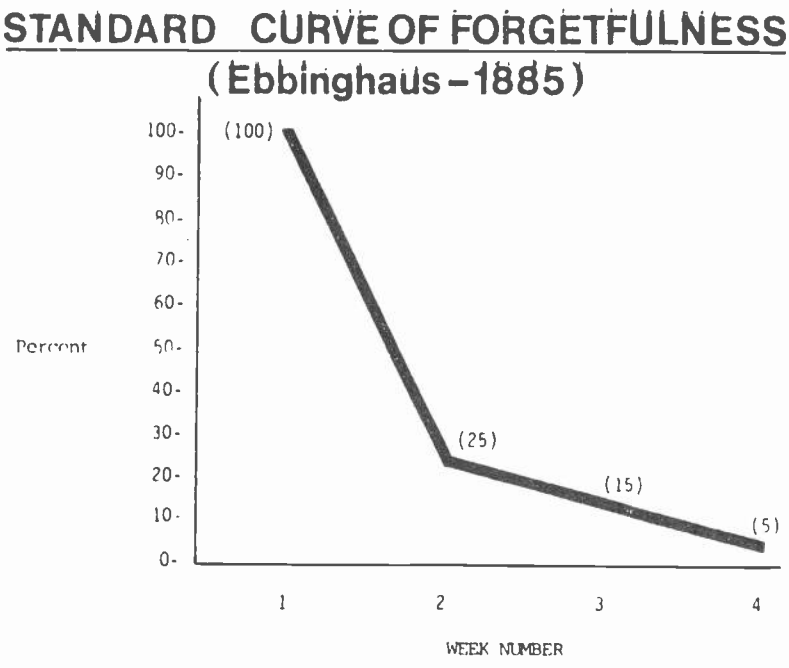
Conclusion #4

By and large, optimal exposure frequency appears to be at least three exposures within a purchase cycle. In other words, three represents the lowest frequency-of-exposure level – within a brand purchase cycle or a four-week period – which can offer peak response. As brought out earlier, dramatic recall or awareness gains can be realized from two exposures in close time proximity, i.e., short-term memory can push up awareness. But over a period of time, as we know from Ebbinghaus and others, there is considerable decay caused by longer-term forgetting. The point was brought out at an A.N.A. Media Workshop [5] by Harold Miller of SSC&B:

> "Ebbinghaus' work suggested there was a serious decline in remembrance over a four-week period of time; 75% of the information that had been learned was forgotten by the second week. By the time the fourth week rolled around, 95% of the information learned in week one had been forgotten." (See Figure 3.)

[4] Op. cit.
[5] "Flighting – It's Still the Same Old Game," New York, March 2, 1978.

Figure 3

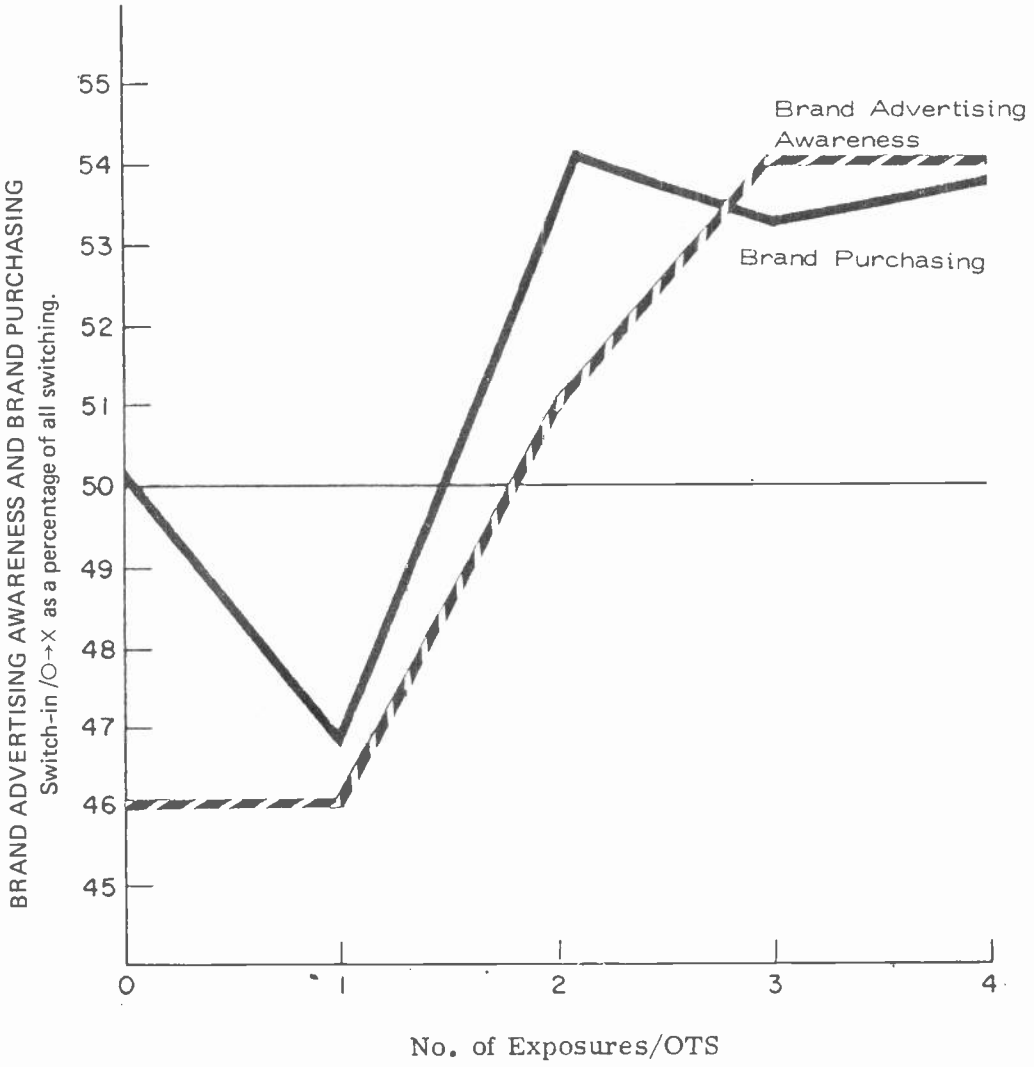


A telling point can be observed by comparing the McDonald study findings with those of a major advertiser* who carried out an analysis involving 38 brands over a four-week period, using change in unaided brand advertising awareness as a measurement criterion. This advertiser, from measurements involving almost 3,000 respondents, found that brand advertising awareness over a four-week period did not attain a sufficiently positive level until three exposures were received. In other words, the net result was to show that the counter-effects of short-term memory and longer-term forgetting are – for most packaged goods over an average purchase cycle – tilted decisively in favor of positive brand response at a minimal level of three exposures. This is shown clearly in Figure 4, where the advertiser's awareness results are represented by the broken line. McDonald's data is represented by the solid line, and shows that two exposures delivered within a purchase cycle have a strong positive effect, as do three exposures.

* Not the advertiser discussed in Chapter V.

McDonald Study Brand "X" Ratio and Major Advertiser Awareness Study Switch-In Ratio Vs. Exposure Frequency

Figure 4



If media planners could guarantee delivery of exposure between short-term purchase cycles, it would seem unnecessary to reach for three exposures. But on balance, and as the curve in Figure 4 demonstrates, for the average brand over a four-week period, awareness can only be maintained after a minimum of three exposures is reached.

The major advertiser we are discussing analyzed awareness-switching data in the same way that McDonald analyzed purchase behavior. Since McDonald showed a positive relationship between frequency of exposure behavior, a first-analysis question posed by the advertiser's study was to ask, is there a positive relationship between frequency of exposure and change in advertising awareness?

To examine this question, awareness-switching data were treated in the same manner as in the McDonald analysis. In other words:

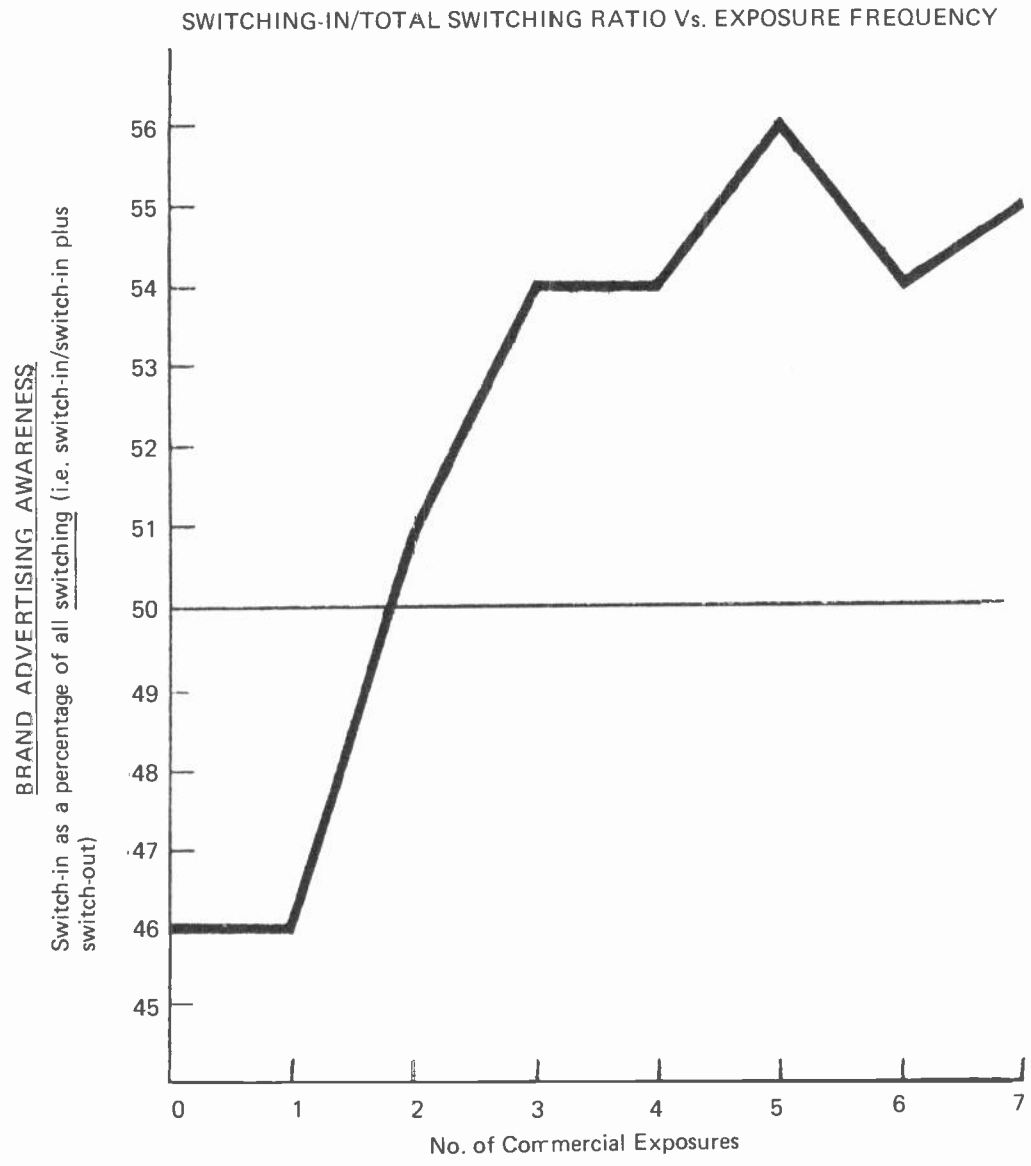
$$\frac{\text{Total Switching In}}{\text{Total Switching In} + \text{Total Switching Out}}$$

is equivalent to:

$$\frac{\text{Total Becoming Aware}}{\text{Total Becoming Aware} + \text{Total Becoming Unaware}}$$

Since the total "Switching In" must equal the total "Switching Out," by definition, we would expect $\frac{SI}{SI + SO}$ to be .50 if advertising exposure had no effect. When the 38 brands were averaged and looked at in this way, the results showed a sharp threshold effect between one exposure and two exposures, but at least three exposures were necessary in a four-week period to give the advertised brands a competitive advantage. This is shown in Figure 5.

Figure 5



The full response function that emerged (up to seven exposures to brand advertising over a four-week period) clearly highlighted the advantage of frequency over single-exposure reach.

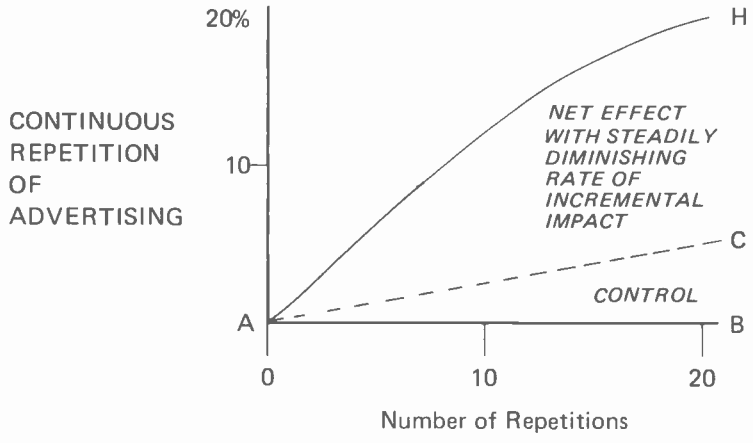
Conclusion #5

Beyond three exposures within a brand purchase cycle, or over a period of four or even eight weeks (as in the Ogilvy & Mather study), increasing frequency continues to build advertising effectiveness at a decreasing rate, but with no evidence of a decline. This was noted in all studies:

- The McDonald study did not show declines up to four exposures between a purchase cycle.
- The AdTel studies did not display any declines up to eleven or more exposures over four weeks.
- The study of brand advertising awareness just referred to showed a similar pattern for up to seven exposures in a four-week period.

The above evidence confirms the response pattern found by Zielske, as well as by a 1963 Harvard Study. The Harvard Study involved newspaper advertising and was conducted in Fort Wayne, Indiana. It was essentially of a test-versus-control design, with the market divided into four zones matched by family characteristics. In the first zone, a 1000-line newspaper test advertisement ran once a week for twenty successive weeks. In the second zone, the advertisement ran once a week for eight weeks, and in the third zone, once a week for four weeks. The fourth zone was the control area in which the advertisement did not appear. In all, over six thousand interviews were conducted with housewives at scattered intervals, to determine changes in information, attitudes, and brand awareness. As shown in Figure 6, the key finding was that brand awareness increases with advertising repetition, but at a diminishing rate.

Figure 6



Conclusion #6

The frequency-of-exposure data from this review strongly suggests that wearout is not a function of too much frequency per se. Frequency appears continually to enhance and/or maintain advertising effectiveness; however, too much frequency can be inefficient, considering that peak response can be achieved with as few as two or three exposures. It looks as though wearout – and this may seem logical to many – is strictly a copy or campaign content problem, and while excessive frequency can advance the decline of an effective campaign, frequency alone does not appear to cause declines.

Conclusion #7

Another important finding from our analysis is that *very large and well-known brands – and/or those with dominant market shares in their categories and dominant shares of category advertising weight – appear to differ markedly in response to frequency of exposure from smaller or more average brands.* In general, the smaller, less well-known brands will virtually always benefit by frequency of exposure, while very large brands may or may not, depending on how close they are to advertising saturation levels.

It appears that a brand at saturation spending can maintain the same advertising response at lower frequency and expense, since the additional frequency it had maintained was having no incremental effect.

The supporting data for this very large or dominant brand/small brand finding is derived from the major advertiser AdTel study covered in Chapter V. As shown in the following charts for the Brand C and Brand E examples, the curves describing the relationship between probability of purchase and number of exposures tend to take on very different shapes. In fact, we are fortunate that the brands covered in this study encompass the extremes in both brand size and category dominance, as well as in advertising effectiveness response, for it helps lead to useful generalizations about all brands in between.

One type of relationship is described by a mildly upward-tilted straight line, where the increase in probability of purchase is not very large for each additional exposure. The rate of increase, however, remains nearly constant over a wide range of exposures. This type of response function, as shown on the following page, tends to be characteristic of a small-share brand such as C.

Figure 7

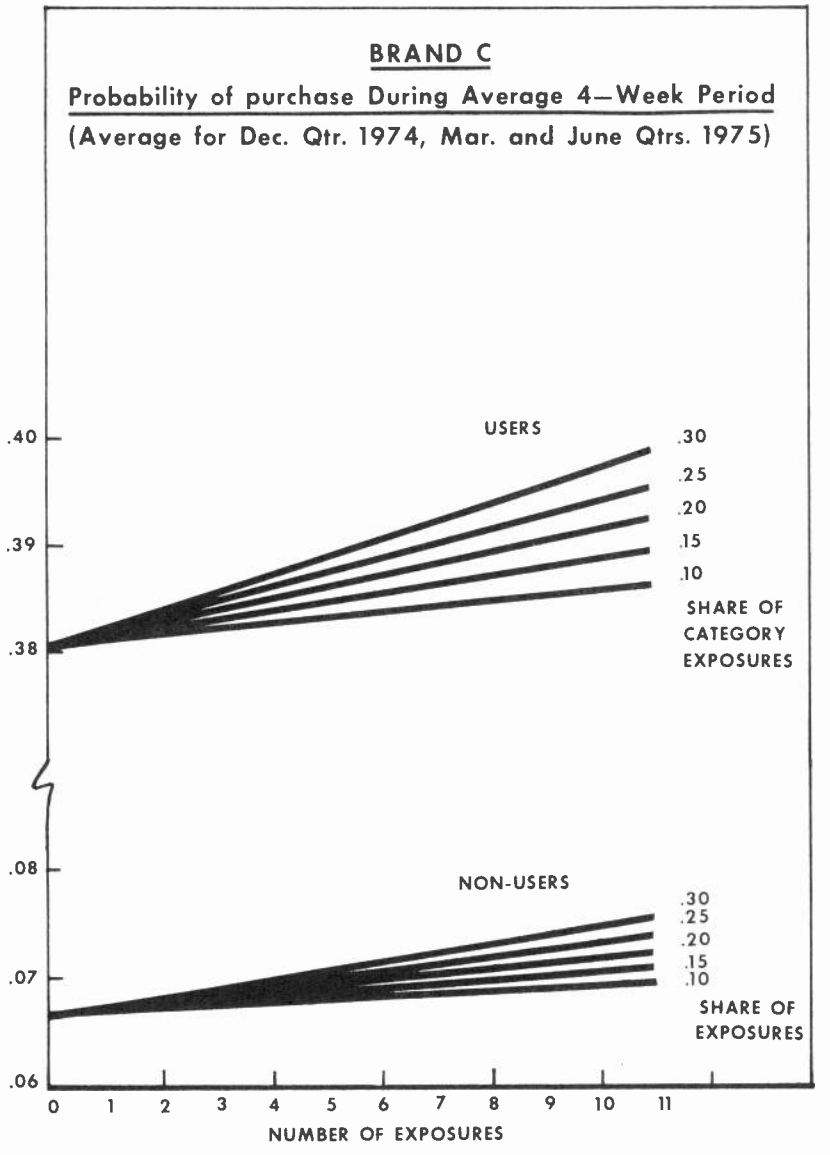
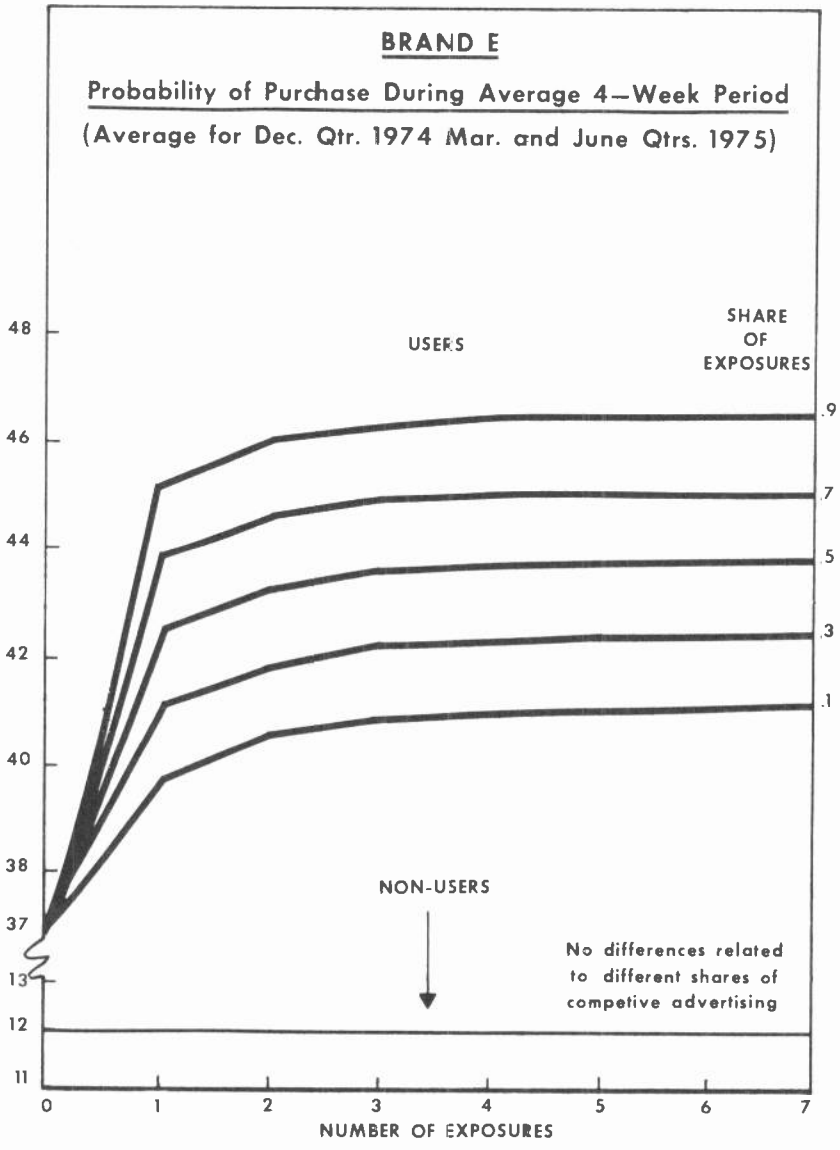
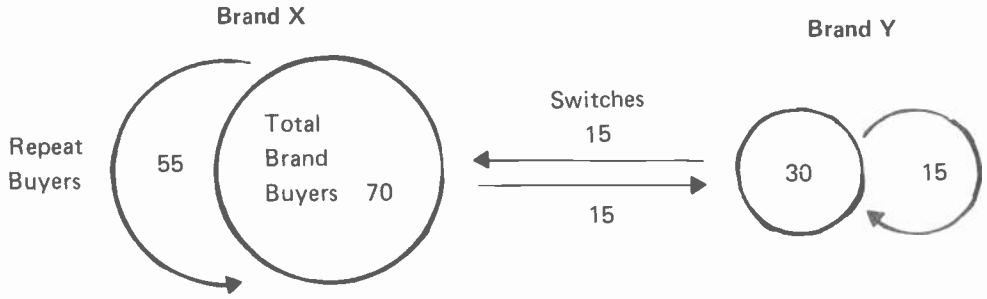

BRAND C
Probability of purchase During Average 4—Week Period
(Average for Dec. Qtr. 1974, Mar. and June Qtrs. 1975)
USERS
.40
.39
.38
.30
.25
.20
.15
.10
SHARE OF CATEGORY EXPOSURES
NON-USERS
.08
.07
.06
.30
.25
.20
.15
.10
SHARE OF EXPOSURES
0 1 2 3 4 5 6 7 8 9 10 11
NUMBER OF EXPOSURES

Figure 8


BRAND E
Probability of Purchase During Average 4—Week Period
(Average for Dec. Qtr. 1974 Mar. and June Qtrs. 1975)
USERS
SHARE OF EXPOSURES
.9
.7
.5
.3
.1
NON-USERS
No differences related to different shares of competive advertising
48
46
44
42
40
38
37
13
12
11
0
1
2
3
4
5
6
7
NUMBER OF EXPOSURES

The other relationship presents a fundamentally different picture. The increases in probability of purchase resulting from each of the first few exposures are larger, but for incremental exposures above that, the increase is nil. So in this case, whatever benefit can be derived from incremental advertising is attained quickly, as seen in the pattern for Brand E (p. 75). It represents a pattern characteristic only of very large-share brands.

This difference in the response functions for large- vs. small-share brands can be explained by analyzing the levels of consumer loyalty toward each type of brand. Note that large-share brands must have higher repeat rates. To illustrate, consider the switching that might occùr in a two-brand market, as diagrammed here:



If the shares of each brand are stable from one purchase occasion to the next, the number of consumers buying brand X, and then switching to brand Y must be precisely equal to those switching in the other direction. As a result, the number of switchers must represent a higher percentage of the total buyers of the smaller-share brand. Consequently, under conditions of stability, larger-share brands must have higher repeat rates. In this case:

Brand	Share	Repeat Rate
X	70%	55/70 = 78.6%
Y	30%	15/30 = 50.0%

Since repeat rate is a measure of the degree of loyalty towards a brand among all consumers who buy it, a large-share brand must have greater loyalty among its consumer franchise (all consumers who buy it on a regular, occasional or infrequent basis) than does a small-share brand. To put it another way, a large-share brand is more

"dominant" among its consumer franchise and enjoys less competition than does a smaller-share brand.

The above relationship is supported by empirical analysis of diary panel data. Such data show that "share of requirements" – defined as a brand's market share among all consumers buying it at least once over any extended time period (e.g., one year) – is almost always highest for the leading brand in a given product class.

The different level of dominance or leverage that each type of brand maintains within its respective franchise is thus a key determinant of differences in the relationship between probability of purchase and number of advertising exposures. For example, occasional buyers of a large-share brand buy it a greater percentage of the time than do occasional buyers of a small-share brand. Which means the large-share brand faces less competitive force against this group of buyers, so that each additional exposure has more relative weight in increasing their probabilities of purchase. In fact, as we have observed, even one exposure in a four-week period can be powerful for a very large brand. Put simply, the probability of a large brand getting one or more exposures than the competition in any given period is much higher.

This line of reasoning is supported by the estimated advertising expenses as a percent of sales for large-share vs. small-share brands. Across many product categories it is observed that strong market leaders (e.g., those brands that have at least twice the market share of the second largest brand) spend literally half as much on advertising as a percent of sales as does the average competitive brand. In terms of shares, it is common to observe a brand maintaining a 40% market share with a 30% share of advertising expenditures. On the other hand, a brand with a 5% market share might require a 10% share of advertising expenditures.

If advertising effectiveness is defined as the ratio of a brand's market share to its share of advertising expenditures, the effectiveness of an exposure for the 40% share brand is almost three times as great as that of the 5% share brand:

$$\text{Relative effectiveness} = \frac{\frac{40\%}{30\%}}{\frac{5\%}{10\%}} = 2.67$$

Assuming that probability of purchase will not increase past a certain point for any brand (i.e., there is a saturation level), a large-share brand will reach this point in fewer exposures because of its greater effectiveness per exposure. The result is, the response function changes shape from a straight line to a concave curve as the total possible increase in probability of purchase is compressed into a small range of exposure

levels – as originally shown in the Brand E and Brand C examples from the major advertiser AdTel study in Chapter V.

Conclusion #8

Perhaps as a result of the differing exposure environments of television dayparts, frequency of exposure (as shown quite clearly by the Ogilvy & Mather study) has a differential effect on advertising response by daypart. The same finding should pertain to print media as well, since it has long been known that recall scores vary by the thickness of the magazine. The same ad in a very thin issue will obviously stand out and be remembered more readily than one in a very thick issue.

Conclusion #9

Quite importantly, in addition to the positive effects which can be gained with frequency, it has been shown that the amount of money a brand spends on advertising as a percent of total category advertising expenditures has a significant positive effect on brand users' purchase probabilities. In general, the greater the share of category exposures, the more positive the effects of frequency. As demonstrated in Chapter V:

- *User households* show a sharp initial growth and a further steady increase in the probability of buying, with additional advertising exposures.
- *User households* show the best increases in probability of buying when additional exposures and a greater share of category advertising exist together.
- *Non-user households* show an initial increase but very little growth in probability of buying, with additional advertising exposures.

Conclusion #10

Nothing we have seen suggests that frequency response principles or generalizations vary by medium. Some have suggested that magazines should be scheduled more with short-term frequency goals in mind, much like television, which would then allow better comparisons to be made.

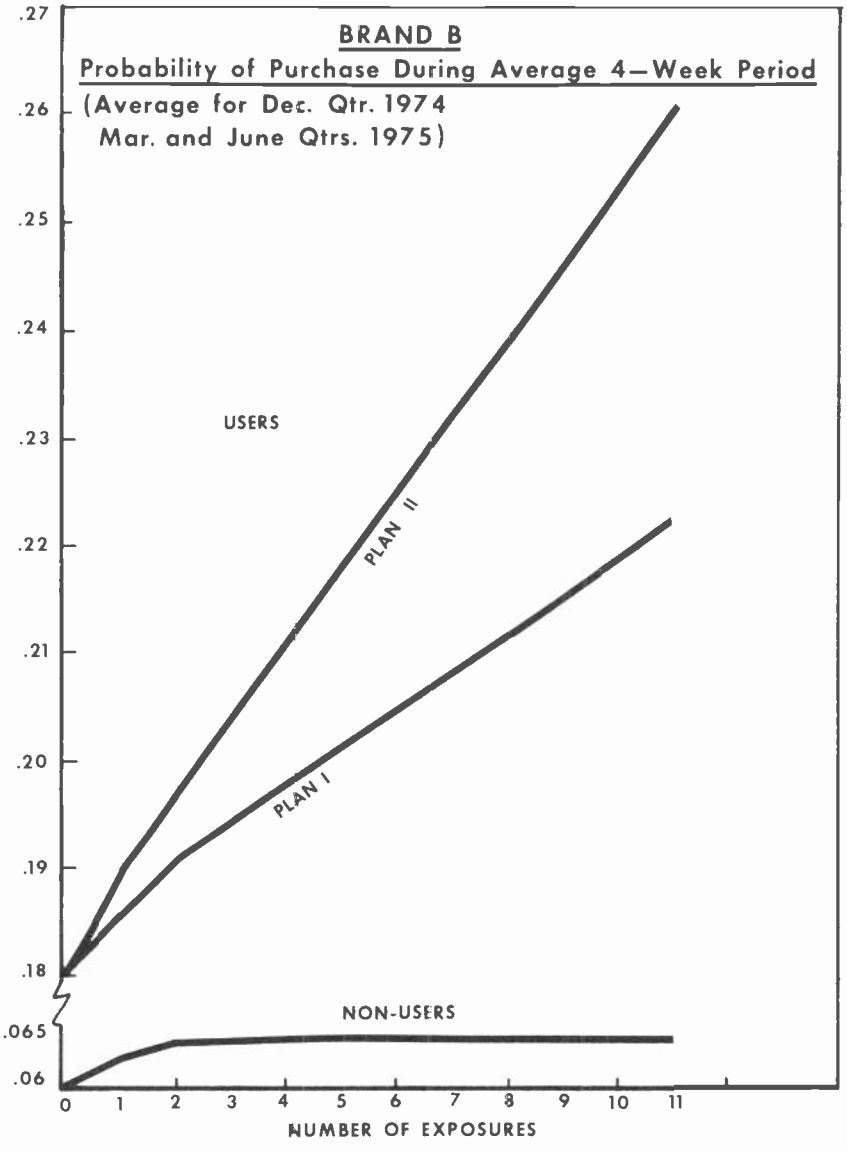
Conclusion #11

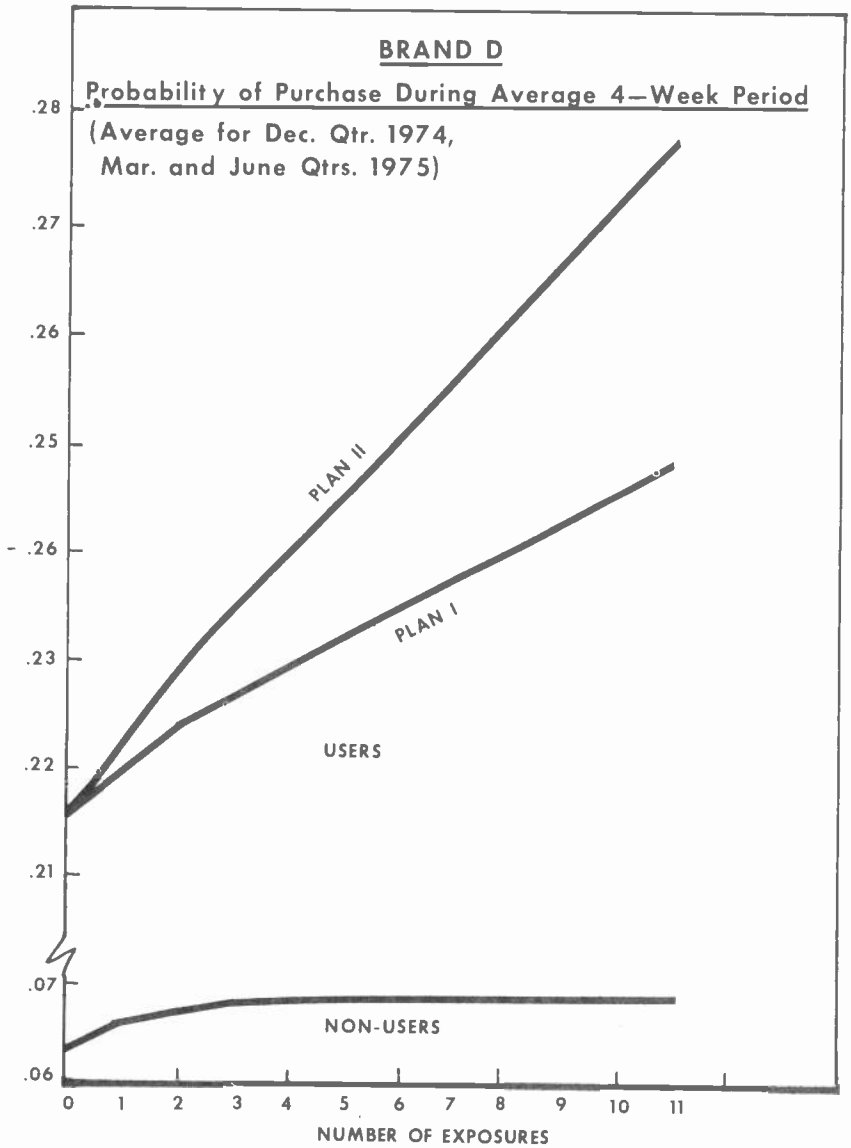
Although there are general principles with respect to frequency of exposure and its relationship to advertising effectiveness, differential effects by brand are equally important. There must be experimentation with each brand to find the right answer for its frequency equation. General principles will be helpful in leading the way, but the fact remains that each brand is unique; therefore, to maximize advertising

effectiveness, each should receive experimentation designed to determine its own frequency-of-exposure response function. In this way it is possible to set up a basis for sound media planning.

Conclusion #12

Not surprisingly, the leverage of different equal-expenditure media plans in terms of frequency response can be substantial, as shown in the Brand B and Brand D examples discussed in Chapter V.





Epilog

As stated in Chapter I, a survey of advertisers and agencies across the country had revealed that the media research questions of highest expressed interest were those concerned with advertising response and the effects of frequency. The chief interest of the respondents was in learning more about the effects of one or more advertising messages for a brand in terms of realized sales potential. It should be clear by now that a good many of the answers to frequency questions are known in a generalizable and

distinct way; that many practitioners have given these answers form and substance, and have offered workable ways to put such knowledge into better media planning practices.

The new element which has been added is the insight gained from major advertiser and agency scheduling studies which, in a very direct way, have reinforced what the research practitioners have been saying. These studies, of course, provided clearer definition and sharper focus, but they also delivered a message highly consistent with other published information on the advertising effects of exposure frequency. Moreover, they dramatically highlighted the fact that the individual brand should be the basis for investigation; that its advertising exposures should be evaluated on an "opportunities-to-see" basis; and that methodologies for determining each brand's frequency equation are not only at hand but have been available for some time.

Recommendations

What we as an industry need are two things:

1. We need a reliable industry standard which provides commercial and advertisement exposure data for media planning purposes (in place of program ratings or print audience measurements).

2. We need to determine the optimum exposure reception schedule for a brand, given its place in the market.

Armed with these two resources, planners can then determine how best to deliver the optimum scheduling pattern in the media vehicles available in the rapidly changing marketplace.

There are those who would refute the possibility of gaining such insight, of course, preferring instead to consider the question unsolvable — much as those who embraced the DAGMAR approach years ago, which preached that advertising's relationship to sales was unobtainable. But since then, we have experienced a technical breakthrough via AdTel's split-cable methodology, and we have also moved forward through the marketing research industry's reassertion of its measurement capabilities in other ways. The issue is no longer whether advertising's relationship to sales can be measured, but rather, are we willing to pay the price to do so?

It is by now clear to me that we should be looking in two directions at once to satisfy our thirst for actionable information and guidance on the subject of effective frequency.

First, media researchers and planners should seek to perfect their applications of effective frequency scheduling approaches; they should also seek to measure their outputs – brand by brand, over time – until we begin to build up our knowledge base.

Second, we should seek new technology – i.e., ways and means to pin down commercial and advertisement exposure, along with buying patterns for the same consumers over time in response to a variety of schedules. Such single-source data is obtainable today, at a cost, via the viewing diary and study approaches described in the preceding chapters. But better ways are also coming and we should be alert to utilize and support them. With the Universal Product Code scanner, for example, it is possible to have a full record of individual consumers' purchases over a period of time without having to rely on memory or cumbersome (or possibly inaccurate) consumer recording diaries. Using such information together with an accurate record of advertising exposures to the same consumers over time, it would be highly probable that much better individual brand optimal frequency data could be generated, and at an affordable cost.

Moreover, with the current explosive growth of electronic hardware and subsequent applications in the communications industry, it is only a matter of time until marketing research develops the capability of generating effective frequency information in ways we have not yet even contemplated. In any event, I have no doubt that we will get there, and in the not-too-distant future. In Herbert Krugman's words: [6]

> "You've all heard the story about the man who knew that 50% of his advertising was good and 50% was bad, but he didn't know which. I would suggest the bad 50% is a combination of the too little and the too much, and that the effective middle range involves a bandwidth that is determinable by research."

[6] "The Effect of Scheduling on Advertising Productivity," A.N.A. Advertising Research Workshop, New York City, Feb. 28, 1974.

Appendix A

WHAT IS THE SHORT-TERM EFFECT OF ADVERTISING?*

by Colin McDonald
British Market Research
Bureau Limited, London

SUMMARY

In 1966 a diary study was carried out among housewives from which records of their purchasing sequences and opportunities-to-see advertising (OTS) were derived. The aim of the study was to see whether, by fitting these two records together, it was possible to uncover the existence and the nature of any short-term relationships between the two. Could we measure any short-term effect of exposures on purchasing, and if so, could we describe it?

This paper describes the new methods of analysis which were developed to isolate this relationship in such a way that it is not contaminated by spurious variables. Nine of the product fields covered by the diary have been studied: washing powders, cereals, tea, tinned soup, margarine, wrapped bread, shampoo, toothpaste and hot milk drinks. The main findings are as follows:

1. People are 5% more likely to switch to than from a brand when, in the interval between the two purchases, they have seen two or more advertisements for the brand. This holds on average over nine product fields studied.

2. This effect is stronger for advertising seen within four days from the second purchase. Thus, if short-term increases in purchasing are desired, it pays to ensure that the advertising is seen in the same week. There are indications that two or three days before the purchase may be marginally the most effective time for an exposure to be seen, though we do not regard these as conclusive.

3. Three or more exposures do not appear to have a stronger effect than two. This suggests that after two exposures the recipient is 'saturated' with the message as regards its effect on her next purchase. Conversely, one exposure only has a below

* Reproduced with permission of Marketing Science Institute.

average effect because it is not strong enough to overcome the competitive weight of other brands on the housewife's list for which she sees two or more exposures at the same time.

4. Although the sample breakdowns are rather too small to be conclusive, the same effect appears to operate both for press and TV advertising. The method we have developed could provide a means, with suitable data, for studying inter-media differences and interactions and also differences between campaigns.

Introduction

This paper is based on data from a diary kept over 13 weeks among housewives in the London ITV area at the end of 1966. Completed diaries were obtained from 255 housewives. On each day, the housewives recorded their purchases in 50 different product fields; the issues they had seen out of 32 newspapers and magazines; and the ITV segments they had seen with each programme segment and commercial break separately identified.

The purpose of the experiment was to seek a deeper insight into housewives' patterns of purchasing in relation to their opportunities to see advertisements (hereafter called OTS). OTS were derived by collating the detailed reading and viewing information in the diaries with known insertions and transmissions of commercials for different brands. By putting the two records (purchasing and OTS) together it was hoped to clarify what short-term relationships, if any, existed between them.

The main result

We have found a short-term advertising effect which can be briefly expressed as follows: when housewives make a switch between brands, they are on average 5% more likely to switch *into* than *out of* a particular brand if, between the two purchases in question, they saw two or more advertisements for that brand. This was found to apply in nine separate product fields: washing powders, cereals, tea, tinned soup, margarine, wrapped bread, toothpaste, shampoo and hot milk drinks.

THE METHOD

What do we mean by short-term effect?

Before describing the method by which this result was found and its implications, it is important to be clear what we mean by the thing we are trying to measure, 'short-term effect'.

It is generally agreed, and is fully confirmed by our data, that most buyers tend to buy only a few of the brands available in the product field. Apart from those who are totally loyal to one brand, the normal pattern is for the housewife to ring the changes on the two, three or four brands she is prepared to buy, her 'evoked set' of brands (Howard & Sheth, 1969).

Against this background, advertising effect can be seen on two levels. First, it has an *educative* function, building up awareness of and favourable attitudes to the brand, getting it onto the list of brands she is prepared to buy and maintaining her in the habit of buying. In this context, individual advertising stimuli are lost in the cumulative overall effect. But secondly, advertising also has an *immediately stimulating and reinforcing function,* designed to influence a particular decision to buy on the next occasion. Some campaigns more than others are mounted with immediate sales increases in view. In this context, advertising stimuli are more likely to produce an observable response, in the form of an actual purchase.

The long-term, cumulative effect of advertising is outside the scope of a thirteen week experiment. What we mean by short-term effect is an immediate effect on the brand purchased, which can be linked with OTS.

Another way of looking at this is to think of the advertising stimuli a person receives as an iceberg of which only a small tip is visible. This tip consists of those stimuli which are received in such circumstances that we can tell, by measuring it, what proportion of them affected purchasing behaviour. This tiny tip of the iceberg is what we have been studying, and the 5% effect mentioned above relates to it. But under the surface lie the majority of stimuli which we cannot measure in this way, although undoubtedly they produce responses of some kind. Whether we can, for operational purposes, assume that the 5% we have now observed applies also to the hidden mass of responses which do not issue in a purchase change will continue to be debatable.

It is worth at this point reminding ourselves of all the factors which, we know before we start, must obscure any measurable short-term effect of advertising and ensure that it will be marginal at best. First, only very few people are likely to be strongly affected by advertising at all, enough to overcome other influences, especially previous habits. Secondly, even when we suppose that a person *has* been moved to make a purchase by an advertising stimulus, we would not expect this stimulation to recur. There is no reason to suppose that anyone who has been stimulated by a particular advertisement at one time will be stimulated either by the same or by different advertisements at any other time. There are indeed good reasons to believe that she will not, because other stronger factors connected with her trial of the brand will take over.

Thirdly, response to an advertising stimulus involves *choice*, since people do not see advertisements for only one brand. Every advertisement which a person decides to follow implies several other, competing advertisements which she rejects. There is more than a simple cancelling-out.

How we measured the data.
Avoiding spurious relationships

The data which is our raw material consisted of a day-by-day record of purchases and OTS for each person. Table 1 shows an example of one of these records for breakfast cereals, the code letters referring to different brands:

TABLE 1

EXAMPLE: PART OF ONE PERSON'S DATA ON CEREALS

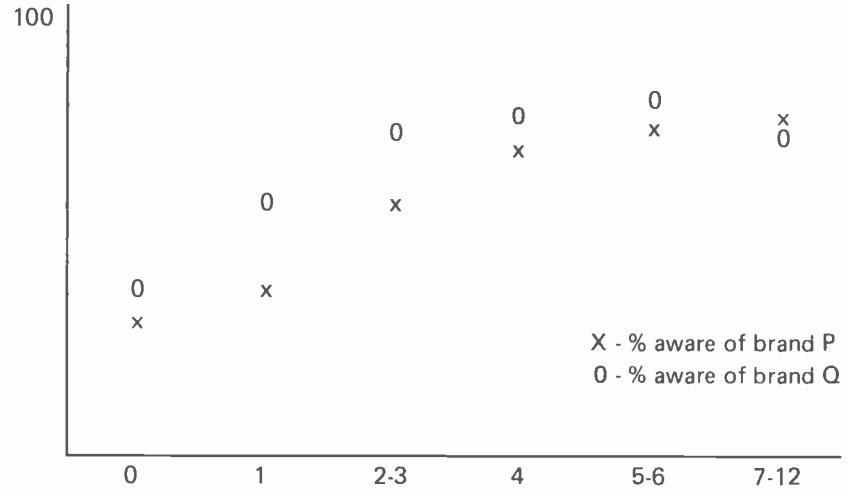
Days:	Sep 20 Tue	21 Wed	22 Thu	23 Fri	24 Sat	25 Sun	26 Mon
Purchases:	J	–	Q	–	–	–	G
OTS:	C		C	C	C		
	F			F			F
	J	J		J			J
	O	O	O				
		G	G			G	G
		Y					
				B	B		

This example gives an idea of the complexity of the raw data. The problem is to find a valid relationship between the two series.

We must first make sure we avoid the spurious relationship between weight of buying the product and weight of viewing, the classic example of which was originally published by Baker and Brown and quoted by Monk (1963) and Broadbent and Segnit (1967). In this case (see Fig. 1) a reasonable looking association curve could be drawn between the percentage aware of brand P and the number of exposures to brand P commercials; but an equally good curve was found between exposures to P and awareness of a different brand, Q. This means that the inference of a straightforward causal relationship between awareness of P and exposure to P commercials is invalid.

The whole relationship *could* be explained by something else (e.g., the most aware people are also those who see a lot of TV because, say, they have children in the household).

FIG 1



Number of impressions of brand P.

The same relationships are found in our data. For example, the following tabulation of cereals and washing powder figures shows clearly that heavier buyers of the product field tend to see more advertising:

TABLE 2

AVERAGE NUMBER OF OTS RECEIVED IN 13 WEEKS BY LIGHT, MEDIUM AND HEAVY BUYERS (EXCLUDING SOLUS BUYERS)

Washing Powders: Brands:	Persil	Fairy Snow	Omo
Heavy	5.2	1.0	2.3
Medium	1.9	0.6	0.8
Light	0.7	0.2	0.3

Cereals: Brands:	Cornflakes	Weetabix	Shredded Wheat
Heavy	16.4	10.7	7.7
Medium	13.9	9.8	5.5
Light	12.0	8.1	4.5

Heavier buyers in these product fields are most likely to be heavily exposed to the advertising media. Those exposed to Persil commercials will also see commercials for Fairy Snow, Daz, Omo, etc. There is nothing in this table to suggest that it is the *Persil* commercials which cause heavy buying of Persil rather than Daz.

The conclusion is that a conventional cross-tabulation which merely sorts *respondents* (as in a normal survey one might analyse by attitudes and break down by demographics) will not do here. Any association between two characteristics made by sorting across respondents will always be open to the objection (except in a controlled test) that the respondents are selecting themselves into groups according to some unknown, irrelevant variable.

Analysis within respondent

The first basic principle of our analysis, therefore, must be that we look for associations between OTS and purchasing, not across but *within* respondents. It is not enough to find that a person who sees a lot of advertisements for A tends to buy A. We must, to show a causal relationship, find that the same person is *more* likely to buy A *at those times* when she has seen advertisements for A, and *less* likely to buy A when she has not.

This basic requirement, of comparison within a respondent, must apply even when we add brands and/or respondents together, as for sampling reasons we must. The spurious relationship which we are trying to avoid must not be reintroduced by the back door when we aggregate.

We are helped by one important fact. We know that the casual relationship, if it exists, must be one way. We can look for association between OTS and purchases which follow them, and obtain our comparison against the same OTS and purchases which precede them. The short-term effect of advertising cannot work backwards.

To illustrate this, let us look at the set of cases where two successive purchases of the same brand were followed by a change, i.e., people had followed the purchasing sequence A ⟶ A ⟶ B. If a short-term effect is operating, we would expect to find that there were relatively more OTS for B, on average, in the *second* interval (when A ⟶ B) than in the first (when A ⟶ A); conversely, there would be fewer OTS for A in the A ⟶ B interval than in the A ⟶ A one. When we aggregate all these cases, we in fact find the following result:

TABLE 3

SEQUENCES WHERE 2 PURCHASES OF THE SAME BRAND ARE FOLLOWED BY A SWITCH (A→A→B)

		First Interval (A→A)	Second Interval (A→B)
Washing powders:	OTS 'B'	110	128
	OTS 'A'	166	157
Cereals:	OTS 'B'	140	150
	OTS 'A'	184	174
Tea:	OTS 'B'	60	76
	OTS 'A'	55	64

A marginal effect of the kind we have hypothesised exists. In all the six rows except the last one, there are more 'B' OTS, and fewer 'A' OTS, in the second interval than the first. 'B' OTS are associated with later switching *to* 'B': 'A' OTS are associated with *not* switching away from 'A'.

The concept of the purchasing interval

The example shown above consists of a special set of cases of purchasing behaviour. In order to apply the same principle using all the data, we took as our unit of measurement the *purchasing interval.* This is defined as the space of time (which of course varies in length according to how frequently purchases are made) between two purchasing occasions. The analysis proceeds essentially by counting the OTS within a purchasing interval and classifying that interval according to the purchases at the beginning and end of it. In this way the forwards-and-backwards, within-respondent, behavioural comparison is made, while at the same time we can tabulate the intervals as single units of measurement in simple 2-way tables according to the type of intervals they are and the OTS they contain.

The purchasing interval has other advantages as a unit of measurement. It ignores differences in frequency of purchase and avoids the difficulty of what to do with intervening purchases in any chronological period. In theory, frequency of purchase may influence the relationship we are looking for, but this can be coped with by 'standardising' the interval, counting OTS only in certain fixed days before the second purchase. This sophistication is introduced later. The purchasing interval enables us to

think in terms of the population of *purchases* rather than of respondents, which is sensible when we are looking for a short-term causal relationship:

We classify purchasing intervals, in respect of any brand X, into four groups:

O → X
X → O
X → X
O → O

(O in this notation means 'any other brand' except X, the one we are counting.) The groups of especial interest are the first two, the switches, since they show the difference between the first and second purchase which is always the basis of our measurement.

Counting the purchasing intervals

We proceed by first counting the OTS in each interval for each brand X in turn within each of the four interval categories. Solus buyers of X, non-buyers of X, and those who saw no advertising were all excluded since they by definition provide us with no information about the relationship between OTS for X and switching to or from X. Table 4 shows how this count is done for the respondent whose cereal record was shown in Table 1:

TABLE 4

ONE RESPONDENT'S CEREAL RECORD

Purchases:		J	Q	G	H	L	F	A
OTS	2J		1J	1J				
in intervals	1G		2G	1G				3G
	1F		1F	3F	4F			
	1C		3C	1C	4C		1C	1C
				2R	4R			2R
							1T	1T

Counting G we find:

	OTS IN INTERVAL				
	0	1	2	3	4+
O → G			1		
G → O		1			
G → G					
O → O	2	1		1	

In this example, the housewife had two OTS for G before she changed to G, one before she changed away from G and in her other intervals, when she did not buy G at all, had respectively three OTS once, one once and none twice.

This counting is done for each brand in turn and the resulting tables are added to produce a composite brand 'X'. It will be noticed that each 'switch' interval will be counted twice: an interval A ⟶ B will be taken both as O ⟶ B and as A ⟶ O. Double or treble purchases on the same occasion are counted separately for each brand.

It can be shown that the number of switches into and out of a brand must be equal within any person's record ± 1 and therefore approximately equal in the whole population assuming the market is reasonably static. This regularity helps our comparison, as will be seen.

In the composite table, with numbers of OTS across the top, by far the greatest number of intervals come in the first column (no OTS seen) and decrease rapidly until the numbers containing three or more OTS are very small. Table 5 shows the proportions involved:

TABLE 5

No 'X' OTS in interval:	Tea %	Cereals %	Washing Powders %	Soup %	Margarine %
0	75	78	61	58	66
1	13	12	22	20	15
2+	12	10	17	22	19

No 'X' OTS in interval:	Milk drinks %	Shampoo %	Tooth-paste %	Bread %
0	44	76	64	87
1	23	13	17	11
2+	33	11	18	2

THE BASIC EFFECT

More X is bought when more X OTS are seen

To start with, we will show the results in the two groupings which show the differences most clearly, 0 or 1 and 2 or more OTS. Later, we shall consider the spread of results over 0, 1, 2, 3, and 4 + OTS.

On average, over the nine product fields, we find the following proportions of different types of interval within these two OTS groups.

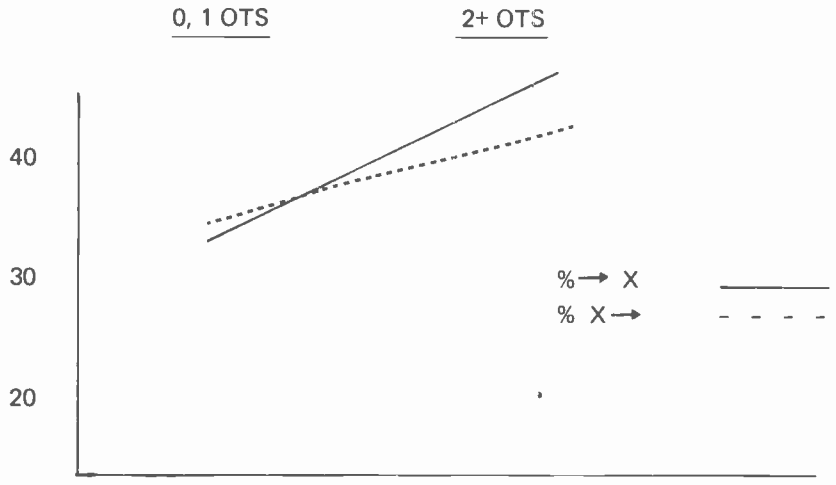
TABLE 6

AVERAGE OVER NINE PRODUCT FIELDS

	0 or 1 OTS in interval %	2 or more OTS in interval %
0 → X	15.1	18.1
X → 0	15.4	15.6
X → X	20.2	24.9
0 → 0	49.3	41.4
Total → X	35.3	43.0
Total X →	35.6	40.5

This distribution is found separately in each of the product fields. Two features are noticeable. First, there are more intervals involving an X purchase *somewhere* in the 2+ OTS column (remember, non-buyers of X were not included in the count); and secondly, there is a higher proportion of O ——→ X intervals, and a correspondingly lower proportion of X ——→ O intervals, among those where 2+ OTS were seen than among those where 0 or one OTS were seen.

FIG. 2



The same figures can be rearranged in a way which is perhaps more meaningful to advertisers. We can show the proportion of all intervals starting with a different brand where X was switched to (O ——▶ X out of all O ——▶) and think of this as the *attractive* effect of advertising; or we can show the proportion of those who start with X who stay with it (X ——▶ X out of all X——▶) as the *retentive* effect of advertising. Table 7 summarises this for all fields:

TABLE 7

	% 0→ X OUT OF ALL 0→ INTERVALS	
OTS in interval	0, 1 %	2+ %
Washing Powder	20.8	29.0
Cereals	17.8	25.6
Tea	16.9	24.2
Soup	26.2	29.3
Margarine	23.3	27.9
Wrapped bread	12.7	20.0
Toothpaste	32.8	41.4
Shampoo	29.4	37.8
Milk drinks	37.1	42.2
Average	24.1	30.8

TABLE 7 (Cont'd)

OTS in interval	% X→X OUT OF ALL X→ INTERVALS 0, 1 %	2+ %
Washing Powder	57.9	67.5
Cereals	32.6	51.3
Teas	61.9	73.2
Soup	66.6	65.9
Margarine	70.8	72.6
Wrapped bread	59.4	66.1
Toothpaste	50.4	60.0
Shampoo	48.1	36.4
Milk drinks	51.6	55.9
Average	55.5	61.0

On average, housewives who had previously bought a different brand were *more* likely (by 7 percentage points) to change to X if they had, in the meantime, seen two or more advertisements for X than if they had only seen one or none. Similarly, housewives who had previously bought X were more likely (by 5 or 6 points) to stay with X if they had seen two or more advertisements.

Is this true advertising effect?

We can be sure, because of the within-respondent comparison, that there is no spurious effect here caused by the fact that heavier buyers of the field are heavier viewers. It is still conceivable, however, that a brand-specific relationship is present which is not explained within the data. This could occur if we suppose that people who buy a *particular brand* relatively often are particularly likely to see advertisements for that brand, perhaps because they have been habituated by previous advertising in the same medium.

It is a difficult thing to believe, since we find these effects in the different brands separately as well as together, and television, where most of the advertising occurs, is not selective, as the Baker-Brown example showed. If a housewife sees a Persil commercial, she will probably see the Daz one on the same evening. However, since the bare possibility is there we probably should remove it, and we can do this by confining our attention to the switches, O ⟶ X and X ⟶ O. As mentioned before,

these are equal within any person ($\pm$ 1 according to the cut-off point in the sequence) and this symmetry is not dependent on the relative frequency of X purchases among different people. Even if there are more switches into Persil among heavy viewers, there will be the same number of switches *out of* Persil among the *same* viewers. Overall, the number of O ⟶ X and X ⟶ O intervals are roughly equal.

Our really tight and valid measure of short-term effect is therefore given by the proportion of switches *to* (O ⟶ X) out of all switches (O ⟶ X + X ⟶ O), and this is given below.

TABLE 8

% 0 → X OUT OF ALL SWITCHES (i.e. 0 → X + X → 0)

No. OTS in interval	0 or 1	2 or more
	%	%
Washing powder	49.6	52.4
Cereals	49.8	51.3
Tea	48.1	62.8
Soup	49.4	52.2
Margarine	49.9	51.0
Wrapped bread	50.2	56.3
Toothpaste	47.4	54.7
Shampoo	47.6	50.0
Milk drinks	53.7	55.9
Average	49.5	54.1

The difference now amounts to 5 percentage points on average. When people are making a switch into or out of X, they are more likely, by 5 percentage points, to switch *to* X (or less likely to switch from it) when, in the meantime, they have seen two or more ads for X.

While taking this as our firmest result, we have also tested the rise in X with more advertising with various analyses to see if it is likely to be genuine. In particular, we grouped the intervals not according to the number of OTS for X but the *proportion* of OTS which were for X as opposed to other brands. This showed evidence that housewives bought X more when X advertisements were seen relatively often compared with other brands (we did this analysis only for washing powders, where nearly all the advertising was on TV). Finally, we tested the grouping of intervals for other brands (not - X) which the same people bought against their X OTS. This produces the following, comparable to the average in Table 8:

No. of OTS for X in interval:	0 or 1	2 or more
Average % 0 → Not X out of all switches (0 → Not X + Not X → 0)	51	49

In other words, when more advertisements for X are seen, there is *less* switching to other brands (note again that the housewives from whom this data is taken are all buyers of X and of other brands). All fields show the same pattern.

VARIATIONS IN THE BASIC EFFECT

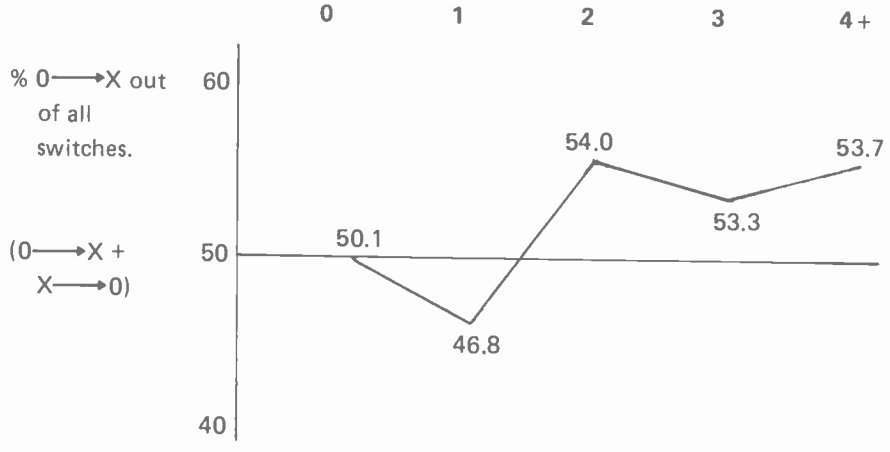
Effect of 0, 1, 2, 3, 4+ OTS

Having documented the basic effect, can we say any more about it? In what ways does it vary?

First, let us break up the two OTS groupings (0 or 1 and 2 or more) and see whether the discrete effect is, in fact, a continuous trend. Four of the product fields (milk drinks, shampoos, toothpaste and bread) are relatively thinly advertised and the first three are less frequently purchased. The result is that they do not have a sufficient number of intervals in the 2+ OTS group to break out into 2, 3, and 4+. We therefore look at the other five fields only.

The average effect over all these five fields between 0, 1, 2, 3 and 4+ OTS is shown in Fig. 3. There are differences in level between the fields, mostly due to small samples in the two right-hand columns, but all five fields have the same characteristic pattern.

FIG. 3



The response curve measured in these terms is S-shaped. Two features stand out. When *one* OTS for X is seen, the proportion of switches *to* X falls below the 50% mark (lower than when no OTS are seen); and three or more OTS do not appear to have a stronger effect than two.

The first of these features, which may seem paradoxical, is not merely a quirk of measurement, but we must be careful how we interpret it. The explanation is as follows. It will be remembered that most intervals (60-70% of them) are in the 0 column. Very large numbers of these, in all fields, were in fact cases where little or no advertising was seen for *any* brand, where the purchasing cycle was proceeding without advertising stimulus. As one would expect, the proportion of these intervals which are to or from X is half and half. But when people do see an advertisement for X, in a much higher proportion of cases they also see advertisements in the same intervals for other brands including the other one in the pair. Quite often, therefore, a brand for which two or more OTS are seen 'wins' over a brand for which, *at the same time,* only one OTS is seen. Since every O ⟶ X interval is also counted, for the other brand, as an X ⟶ O interval, it is natural that one should get this counterpoise effect. The S-shaped curve is an aggregation of the relationship in this imaginary pair of intervals:

	A ⟶ B	B ⟶ A
OTS A	1	2
OTS B	2	1

This dropping of 1 below 2+ OTS is found in all nine fields and in all the individual brands within those fields which we are able to look at separately. It does *not* mean that one advertising exposure has no effect. It does suggest, however, that as far as short-term stimulating effect is concerned, one exposure tends to be beaten by two or more occurring at the same time, and this could have implications for scheduling tactics. If one's objective is to increase sales rapidly, it may well pay to ensure that the target population will see more than one OTS between purchases.

The other feature in Fig. 3 is that 3 or 4+ OTS do not produce a stronger 'effect' than 2. There is, if we take it at face value, a rapid saturation. Again, this feature is found in all product fields, though in varying degrees because of small sample fluctuation.

Part of the reason for this, in some cases, is the dominance of very heavily advertised brands. If a brand is so heavily advertised that TV viewers tend to see it almost continuously, whatever they buy, we find that the volume of OTS for this brand tends to 'swamp' the effect discernible in our measurement. If it is removed from the analysis, the effect for the other brands improves.

Another possible explanation is that we are seeing here an effect of different *lengths of interval* (or frequency of purchase). Obviously, there is more chance of seeing four advertisements for X in a fortnight than in a week, yet spread over a fortnight they are less likely to show a short-term effect. This is dealt with by counting OTS only for a few days before the second purchase, thus standardizing the interval.

Effect of OTS seen within four days before purchase

Table 9 shows the effect, for the eight product fields for which we have done this analysis, of OTS seen in the last four days only.

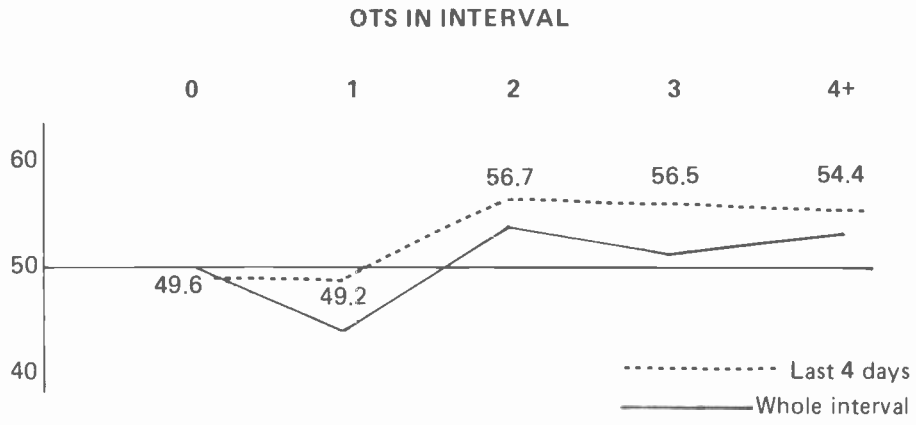
TABLE 9

% 0 → X OUT OF ALL SWITCHES (i.e. 0 → X + X → 0)

OTS in interval	0 or 1	2 or more
	%	%
Washing powders	49.7	56.2
Cereals	49.7	53.7
Soup	48.9	59.0
Margarine	49.5	56.5
Wrapped bread	50.2	56.2
Toothpaste	48.7	55.6
Shampoo	47.9	50.0
Milk drink	54.0	57.1
Average (8 fields)	49.8	55.6

The effect is slightly greater than is shown in Table 8 for the whole interval. Fig. 4 shows how the graph in Fig. 3 for the whole interval compares with the same graph (average over five fields) for the last four days.

FIG. 4



In the last four days the effect is greater for 1, 2, 3, and 4+OTS (and correspondingly less for 0 OTS) than when OTS in the whole interval are counted, but the 'saturation' phenomenon does not appear to be removed.

Two things are suggested by these findings:

(a) The short-term effect of advertising shows up more positively on purchases made within the same week as the advertising was seen;

(b) Two exposures seem to be an optimum number for stimulating a purchase change. One alone runs the risk of being beaten by competition; three or over have no greater stimulating power than two. Why this should be so would be a fruitful field for more research.

Press and television

In six out of nine product fields there was sufficient press advertising to look at this measurement separately for press and television. We found the same effect tending to occur in both cases (it must be remembered of course that the two usually coincide in the same intervals so that there is interaction between the two). The samples in each OTS group, however, are too small within these breakdowns to be conclusive, especially for press.

Our findings suggest that with more data it would be possible to measure the effect of the interaction of various exposures to Press and TV on the lines suggested by Nolan (1969 Thomson Gold Medal winning paper).

Also, although again the subsamples are far too small for certainty, there are indications that different brands, which from external evidence at the time we knew to have been doing relatively well, showed a stronger effect on our measurement and vice versa. With enough data it would be possible to distinguish between campaigns for their short-term effectiveness.

Timing and repetition

Besides establishing the basic short-term effect of advertising, we wanted to see how it varies under different circumstances which are relevant to practical scheduling problems. For example, what is the effect of advertising seen on different days before the purchase? What influence does a lapse of time after the OTS have in decreasing the effect? How does repetition on successive days improve the effect? What does competitive advertising do?

We have not yet found any results which we can regard as very conclusive, but the indications we have found are summarized below.

We are looking here at finer measurements and differences in which the small size of our experimental sample is a problem. We have therefore tried a different method which sharpens the sensitivity of the measurement by taking into account both brands in the switch interval. The assumption is made that, in a switch A ⟶ B, OTS seen for A have a deterrent effect equivalent to the attractive effect of the OTS for B. The method is simply to subtract the OTS for A (brand switched from) from the OTS for B (brand switched to). If there is no advertising effect, and if the number of intervals A ⟶ B roughly equals the number B ⟶ A (which it does), then the average of this difference over all intervals should be about zero; if there is an effect it should be positive, since then OTS for the switched-*to* brand would be exceeding those for the switched-from brand.

The following table shows, for five product fields on each of the *four days* before purchase, the percentage of intervals where there were *more* OTS for the brand switched to than from (marked +) and the proportion where there were fewer (marked –). In each product field we have included, for simplicity, only those switch intervals where (a) at least four days intervened between the purchases and (b) only one brand was bought on either the first or second occasion. The base for each day is the same, so that the balance (the difference from 100%) which has been omitted consists of those intervals, the great majority, where there were the same number of OTS for both the brands, in most cases none.

TABLE 10

PERCENTAGE OF SWITCH INTERVALS WHERE OTS FOR SWITCHED - TO BRAND MORE (+), AND FEWER (–), THAN OTS FOR SWITCHED-FROM BRAND

Days before purchase:		Day 4	Day 3	Day 2	Day 1	Base for %
Washing powders:	+	9.1	10.5	11.1	7.8	306
	–	7.2	6.9	3.9	7.5	
Cereals:	+	14.8	15.8	20.4	20.9	196
	–	24.5	17.3	14.8	20.9	
Soup:	+	7.8	9.4	9.4	9.4	374
	–	6.7	8.6	7.5	9.1	
Margarine:	+	7.0	4.8	7.3	6.2	273
	–	4.8	3.7	3.3	4.4	
Toothpaste	+	2.2	3.9	3.9	3.4	178
	–	3.9	3.4	3.4	3.4	
Average excess % of + over –		1.1	0.9	3.8	0.5	

The other fields were looked at but were felt to be unreliable because the weight of advertising exposure or its ratio to the intervals was too small.

Another way of looking at the data in Table 10, which may be clearer, is in terms of the ratios between the + and - intervals (e.g., 56:44 on Day 4 for washing powders). A little thought will show that this is equivalent to the ratios in Tables 8 and 9 between O $\longrightarrow$ X and X $\longrightarrow$ O intervals. There each interval was counted twice, in terms of OTS for the second brand and for the first brand.

Now, these two counts are collapsed together in a single count, 2nd brand OTS - 1st brand OTS. Because of condition (b) above, we have defined a set of switch intervals which will be perfectly symmetrical (i.e., O $\longrightarrow$ X = X $\longrightarrow$ O exactly). Therefore, the ratio 56:44 between the intervals where there are respectively more and fewer OTS for the second brand than the first is equivalent to the following expansion in the form of Tables 8 and 9:

	Fewer OTS for second brand than first (– intervals)	Both equal (0 intervals)	More OTS for second brand than first (+ intervals)
% 0→ X out of all switches (0 → X + X→ 0)	44	50	56

The defined symmetry means that the zero ratio is always 50-50, and we can therefore describe the whole expression by the single value 56 and the extent to which it is over 50. Translating Table 10 into these terms gives:

TABLE 11

RATIO OF + VALUE (2nd brand OTS > 1st brand OTS) TO - VALUE INTERVALS

Days before purchase:	Day 4	Day 3	Day 2	Day 1
Washing powder	56	60	74	51
Cereals	38	48	58	50
Soup	54	52	56	51
Margarine	59	57	69	59
Toothpaste	36	53	53	50
Average	49	54	62	52

In most cases, the + : – ratio is over half, especially on days 2 and 3.

The above results vary between the fields and we do not regard them as conclusive. But the following points seem to apply generally to the five fields:

(a) Over all four days, there are more intervals where the OTS for the brand switched to exceeded those for the brand switched from, than vice versa. Thus the average is greater than zero. For washing powders, we found this positive value to be statistically significant.

(b) The last three days always show a better (more positive) effect than the fourth day before the purchase;

(c) The last day of all before the purchase *tends* to show a *less* positive effect than the second or third day before the purchase.

We regard these findings as indications only, since the differences between days are small and not significant. But it is of interest that the same tendency recurs in five different fields. More research work is needed to either confirm or refute it. The implication, if it is true, must be that advertising has most short-term effect when it is seen within three days before a purchase and that the second or third day may be marginally better than the first. This last is an unexpected idea; one hypothesis which could explain it is the theory of sleeper effect, according to which a message only affects behaviour when its source has been forgotten and it has been 'absorbed' by the subject. Another possibility is that this phenomenon is caused by repetition on successive days – the 'saturation' effect of seeing more than two advertisements which we noted earlier.

This analysis looks at the four days separately. Another field for study, which is more complex but could be even more useful, could be different combinations of days together. Here we would be interested in the effect of *time delay* (when the last OTS seen are seen respectively on Day 1, Day 2, etc.) and *repetition* (when OTS are seen on only one, on two, three or all four of the days).

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Appendix B

CASE STUDIES: CONTROLLED MARKETPLACE TESTS OF MEDIA STRATEGIES BASED ON EFFECTIVE FREQUENCY

Except for a relatively few experimental approaches – such as those covered in the body of this book – advertisers have generally not gone to the expense of determining response to different frequency-of-exposure levels in their marketplace tests of media strategies. Nevertheless, I believe it can be instructive to examine a few of these controlled marketplace tests, even though the frequency-of-exposure findings may be inferential rather than direct. Appendix B has been added to the book for this purpose and will help provide a more complete picture of what we already know about frequency and its effects.

Some of the information we already have comes from work published earlier on the use of advertising experiments. Roy H. Campbell, in his A.N.A. book on *Measuring the Sales and Profit Results of Advertising,* [1] outlined the methodologies that were feasible for post-advertising marketplace measurement of response to variation in copy, or media, or budget, or size vs. frequency, or timing strategies. The principal approaches he cited were dual-cable CATV studies and custom field advertising experiments. After an extensive audit of advertiser activities with such approaches (conducted under A.N.A. auspices), he concluded that a number of them had, in fact, succeeded in increasing the productivity of their advertising by measuring sales and profit results under real-life conditions.

Rather than duplicate the material already covered by Professor Campbell, I would like to show here how media strategies based on effective-frequency considerations can successfully be implemented and evaluated, using selected case studies of controlled advertising experiments in the marketplace. I think the examples

[1] *Measuring the Sales and Profit Results of Advertising: A Managerial Approach,* Association of National Advertisers, Inc., New York, 1969.

to be shown will, in particular, serve as useful models, i.e., approaches that companies might consider undertaking from time to time, as appropriate.

Let me make one distinction, at the outset. The major studies discussed in previous chapters sought to isolate the response to different exposure-frequency levels through individual respondent analysis. (The Ogilvy & Mather study was a good case in point). The case studies that follow deal with the frequency issue in a different manner. We will instead be observing aggregate consumer behavior and response (usually a sales measure) when subjected to effective-frequency media strategies under controlled marketplace measurement conditions. These kinds of field studies have proved their value in extending our knowledge of frequency effects, as they are the means by which forward-looking advertisers test their effective-frequency hypotheses in the real world.

Types of Controlled Marketplace Experimentation

This research approach is generally carried out using one of the following three methods:

1. *Single-market historical regression modeling that "explains" sales changes; and from which a forecast of future sales, given a change in advertising plans, can be made.* The model takes into account market share, sales volume, pricing, advertising weight, promotion weight, and any other variables thought to affect sales for which data are available. Sales changes resulting from forward test-period advertising plans (e.g., heavy-up advertising expenditures to gain greater frequency against target consumers) are then measured against the forecast to determine incremental effects.

2. *AdTel Split Cable-CATV facilities within the same market, which allows isolation of a single advertising variable (e.g., flighting) for testing purposes.* A dramatic rise in controlled marketplace media experiments followed the development of the first AdTel split-cable market, with subsequent expansion into two other markets.

3. *"Randomized Block" experiments and rotational designs called "Latin Squares."* A "block" is a group of markets which receive the same test treatment. This type of experimental design allows one variable to be observed in a given block of markets that compare closely with another block of markets in which a second test treatment can be observed.

The following case studies will demonstrate these various procedures and show how media strategies – including those based on effective-frequency hypotheses – can be explored through controlled marketplace experiments.

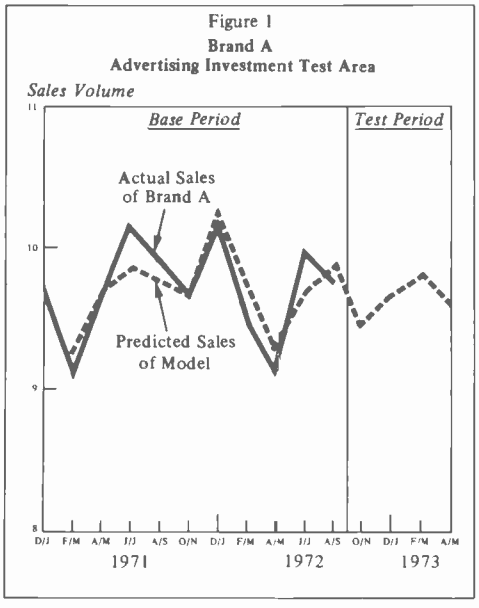
Case Study #1

How Greater Frequency Induced by Increased Advertising Investment Paid Out

One of the main benefits of the single-market historical regression model technique [2] is that it allows a company to circumvent the often unsolvable problem of having to match single test markets with markets to be observed for control purposes. This is achieved by relying solely on a mathematical regression model of the historical test-market brand and competitive data. Such a model is then used to predict what brand share or volume would have been under normal expenditures, that prediction becoming an accurate base against which higher advertising-investment-induced sales are compared to determine the incremental sales gain.

The author provided an example of this approach at an ARF Conference.[3] As seen in Figure 1, a model was constructed from several years of market data for Brand A and its competitors to explain marketplace variability in Brand A's sales volume. The eight-month test period predictions of the model for "normal" expenditures (i.e., with no change in Brand A advertising spending) are shown by the extended dotted line.

Figure 1
Brand A
Advertising Investment Test Area

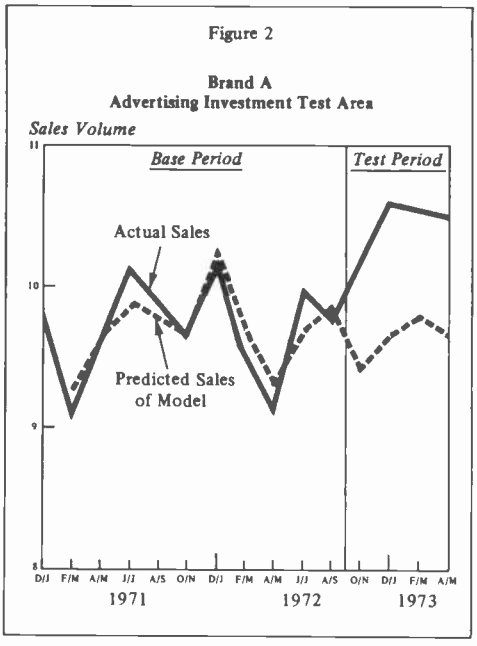


[2] For a more detailed description of this approach, see Rao, Ambar, and Peter B. Miller, "Advertising/Sales Response Functions," *Journal of Advertising Research*, April, 1975, 7-15.
[3] "Advertising Research '73: Microscope or Telescope?" Proceedings, 19th Annual Conference, 1973, 19-21.

During the test period, television advertising expenditures in the market were doubled, and a media plan designed to increase frequency against Brand A's target consumers was implemented. As depicted in Figure 2, a comparison of actual advertising investment test results with those predicted by the model was possible; the subsequent financial analysis proved beyond doubt that investment payout had been achieved.

Figure 2

Brand A
Advertising Investment Test Area



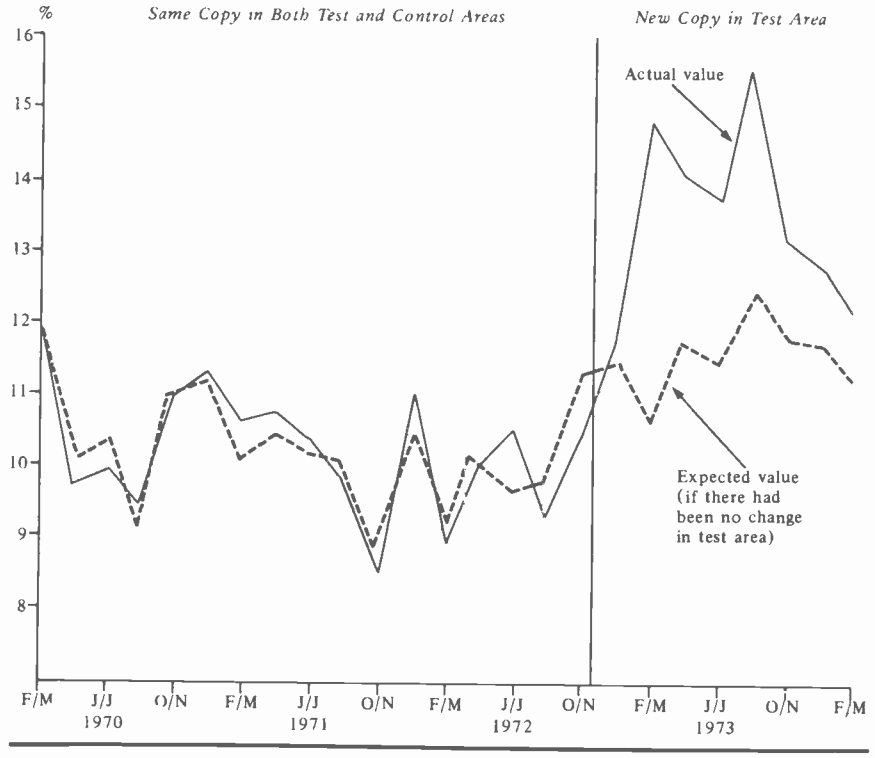
No attempt was made in this particular analysis to find a link to sales response based on different frequency levels ("opportunities to see"), yet it does appear that the increased frequency resulting from a 100% budget increase had a beneficial effect. (A more detailed example of a similar approach which does tie response to different frequency levels can be seen in Case Study #3 in this Appendix.)

Case Study #2

How Single-Market Historical Regression Modeling Works Even in Test Involving No Change in Advertising Spending Levels

Using the same methodology, test results similar to those in Case Study #1 were observed in England under the name of *Area Marketing Test Evaluation System* AMTES). Figure 3 shows the outcome from a new campaign for a milk-food drink, the results of which were significant at the 95% confidence level. The case is noteworthy in demonstrating how this approach can even be used to test the effects of new copy at the same budget level. The example appeared in the *Journal of Advertising Research.* [4]

Figure 3
Horlicks: Yorkshire-TV-Area Copy Test
(Sales in Test Area As a Percentage of Sales in Control Area)



[4] Bloom, Derek, Andrea Jay, and Tony Twyman, "The Validity of Advertising Pretests," April, 1977, 7-16.

Case Study #3

How Single-Market Historical Regression Modeling Was Used to Determine Explicit Frequency Media Planning Strategies

A few years ago a major beverage manufacturer conducted experiments similar to those of Case Studies 1 and 2; however, he also included the additional step of translating the results into explicit media planning strategies. In a very real sense, this advertiser virtually "put it all together" by first building the relevant model, then conducting empirical marketplace tests against the model predictions, and finally, translating the outcome into specific frequency-related media planning targets and strategies for the brand – with an end result of significant sales gains.

In setting up this quantitative approach to its media planning, the company followed a three-phase program, which it outlined as follows:

1. The first phase is the development of a methodology for estimating advertising-sales response functions, and related quantities, such as the time lag before a change in advertising expenditures causes a change in sales.

2. The second phase is the construction of a media planning model for budget allocation. This model can also be used to determine the impact of changing the national advertising budget.

3. The third phase is the development of a system to monitor the results of media plan implementation, and to adjust the plan and/or estimates used in the plan if significant deviations arise.

Although the manufacturer was motivated to develop this approach because of advertising problems for its inexpensive, frequently-purchased packaged goods, there should be no conceptual difficulty in extending applications to other types of consumer products. Here is a description of the approach, the results that were achieved and the conclusions that were drawn from this case study.

* * *

Before proceeding with its undertaking, the company had to make two important decisions with respect to the gathering of data. The first concerned the time unit for data-gathering (e.g., monthly, bi-monthly); the second concerned the total span of time to be used (e.g., two years, five years). The main considerations were described by the company as follows:

1. Time Unit

One of the problems in statistical and econometric studies of advertising effectiveness is the separation of cause and effect. This problem arises because companies normally allocate advertising funds as a fixed proportion of expected sales. Thus, a statistically significant relationship between advertising and sales might merely indicate that management was following its budgetary decision rule carefully. It is particularly likely when the time unit selected for data gathering is about the same as (or an integer multiple of) that used by management for budgetary decision-making. For example, an excellent correlation is usually found between annual sales and annual advertising expenditures of a company – indicating only that the company has carefully followed its decision rule of budgeting advertising as a fixed portion of sales.

The time-unit problem can be avoided, however, by selecting a sufficiently small time interval for data-gathering. The smaller the interval, the less likely it is that management plans its allocation of advertising funds as a proportion of expected sales in that interval. Counterbalancing this advantage is the increase in data-collection costs as the time interval becomes smaller.

In most studies, as in the one described here, a reasonable compromise is to gather data on a 28-day basis, in order to be consistent with the normal data-gathering interval for SAMI, which measures sales via warehouse withdrawals. But in theory, there is no reason why weekly or monthly data could not be used.

2. Time Span

For most practical applications it has been found that two to three years of data (market share) are adequate for model construction. Although a greater time span might intuitively seem desirable, such an extension may complicate the model-building process rather then simplify it. Examples of difficulties encountered in longer time spans are new product introductions which alter shares in unpredictable ways, sales district redefinitions, and major changes in advertising themes. Any of these could be expected to change the basic relationship between advertising and sales.

* * *

Background

In the spring and summer of 1975, a major change in the advertising concept and media mix for a nationally distributed beverage was tested in ten markets. The testing was carried out by modeling, with brand sales expressed in SAMI warehouse

withdrawals. Table 1 gives a schematic representation of the test, showing the relative results obtained in the test markets listed there.

TABLE 1

EXPERIMENTAL LAYOUT

Media Mix	"New" Creative		"Old" Creative	
	Sales Change		Sales Change	
TV/Radio	+18.8	2 Markets	+11.1	2 Markets
TV – Prime	+21.8	2 Markets	+16.6	2 Markets
TV – Fringe	+13.6	2 Markets	+16.2	2 Markets
Radio	Not Tested		+ 7.8	4 Markets
Control	(+10.0	15 Markets)		

Note that one test cell produced a finding, on a modeled basis, of +21.8%, which was a net 11.8% improvement for this brand, because controlled markets were also up at a +10% rate. In other words, something good was happening to this brand anyway, exclusive of the effect of the change in creative and media mix, which was the subject of the experiment.

The new advertising and media mix, with its projected 11.8% improvement in sales, went national in September, 1975. A year later, it was decided to conduct a follow-up evaluation of this national implementation of a successful marketing experiment.

Measured Campaign Effects

Here is a review of what happened to the beverage and its new campaign for a period that roughly coincides with year I of national airing, which began in September, 1975. The brand performed very well in contrast to other segments of its market:

TABLE 2

	SAMI Equivalent Cases First Year of New Campaign vs. Prior Year
Test Brand	+16.9%
Competitive Brand A	+ 6.3
Competitive Brand B	−15.4
Competitive Brand C	−10.2
Competitive Brand D	− .8
All Brands	+ 4.4

Despite this strong relative performance, the question arose as to whether some or all of the increase was attributable to economic conditions and/or long-term trends. The answer was sought through an analysis of the factors that had significantly affected equivalent case withdrawals of this brand over the previous three years. These were:

- Real disposable personal income
- Test brand's price relative to the Consumer Price Index of Food at Home
- Change from old to new advertising copy.

The last factor – change in copy – was found to have very high explanatory powers, accounting for 39% of the variation in the brand's sales. It was quite time specific, with maximum explanatory power coming with a one-month lag between the change in copy and the effect on warehouse withdrawals as measured by SAMI.

The incremental case value assigned in the analysis to the copy change amounted to +11.9%. This is virtually the same number as the +11.8% (test markets over controls) in the original experiment that tested the copy during the summer of 1975. Although the latter comparison may seem so close as to be almost coincidental, the overall pattern is clear:

- Since the copy change, the brand compiled a uniquely favorable record among its competitors.
- The copy change was significant and necessary in explaining the recent history of the brand in an analysis that controlled for changes in income and prices.

Development and Use of Advertising Response Functions

In the spring of 1977, it was decided to estimate an advertising response function for the brand. The decision to do so had been deferred to this point, so that sufficient data reflecting the new campaign would be available for analytical purposes. However, based on similar work for other brands in the company, management believed that knowledge of the response function would help them fine-tune their spending plans and allocation decisions between radio and TV, and among markets.

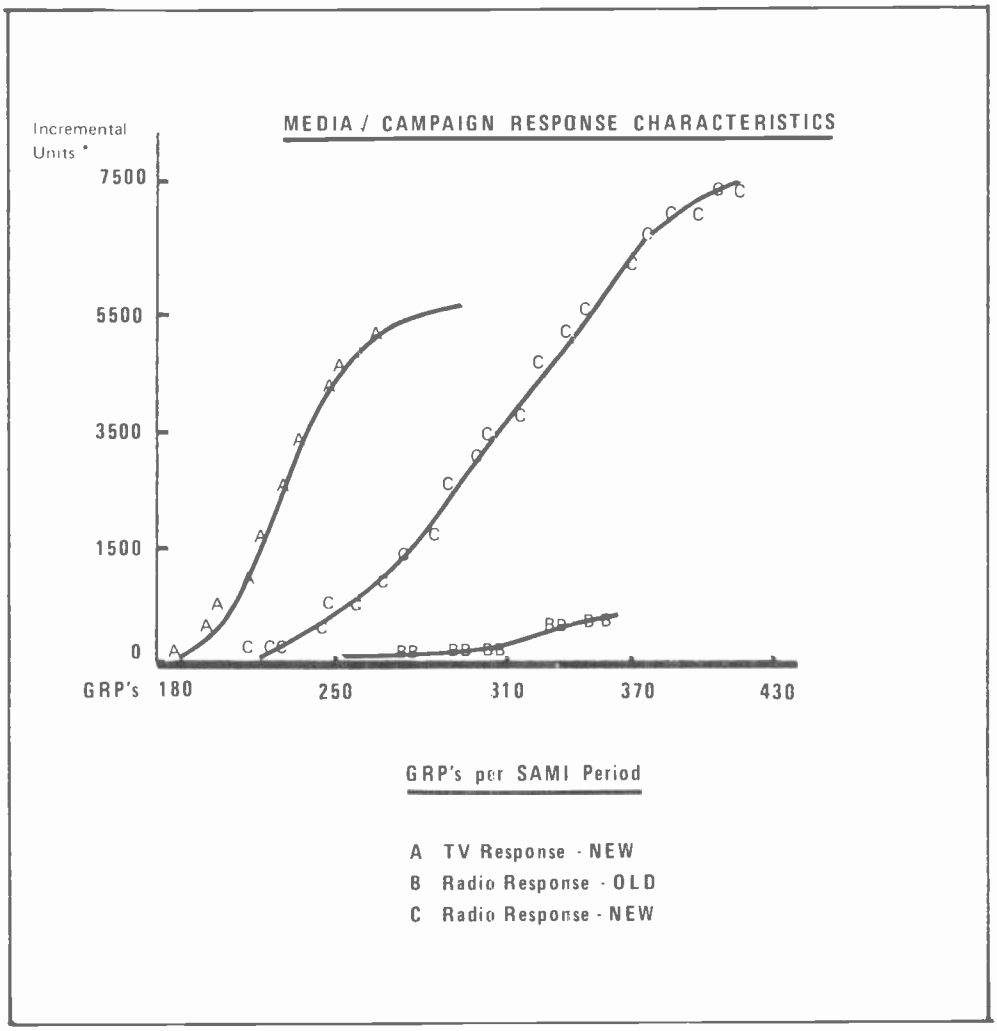
Using data from 33 SAMI markets, an advertising model-building analysis was conducted. Advertising exposures from radio and TV were pooled into an "advertising weight variable," and a response function was developed. This response function had practically no relationship to the 1975 experiment and subsequent 1976 analysis just described, an unfortunate result which was attributed to the pooling of radio and TV. The data were re-analyzed, this time estimating separate response functions for each medium, and for the old and new campaigns separately. The results were in conformity with those obtained in the experiment and the 1976 analysis.

These response functions were used for several purposes. The company first evaluated the cumulative effect of advertising on sales of the beverage for the entire duration of the new campaign and compared the effect with that produced by the old campaign. They found that the new campaign was responsible for approximately 10% of the total sales of the product (as compared to 11.8% obtained in the experiment). The old campaign's contribution to sales had been less than 1%. Thus, the response function analysis confirmed all the previous work on the brand (see Figure 4).

Observations Based on Figure 4 Response Functions

1. Both TV and radio appear to exhibit a direct relationship between increased GRPs and incremental oz's – with television actually doing slightly better.
2. Radio had sufficient upper-level experience to support the finding that it had flattened in responsiveness.
3. Television lacked sufficient high-level experience to support a flattening-out conclusion.

Figure 4



* 100 OZ. UNITS

It can be seen that the general response to advertising for this brand follows an S-shaped form, with a:

- lower threshold – exposure below this level produces no sales response
- upper threshold – exposure above this level produces no extra sales response
- most efficient exposure level (close to upper threshold) – i.e., a level that maximizes incremental sales per GRP.

General Conclusions: Old and New Campaigns

Table 3 shows that radio was the more efficient medium and that the new campaign was more efficient than the old. Incremental sales produced by television in the new campaign were 70% of the radio response at the most efficient GRP level.

TABLE 3

	OLD	NEW	
	Radio	Radio	TV
Lower Threshold	291	222	188
Upper Threshold	391	449	291
Most Efficient GRP (G*)	386	428	284
Incremental Sales+ Per Million Population at G* GRPs			
(A) Short-Term	187	453	319
(B) Long-Term Above Trend	97	185	130
(C) Long-Term Contribution to Trend	0	7550	5316
Total Incremental Sales +	274	8188	5755

+In 100 oz. Units

Incremental sales produced by radio in the old campaign are only 3% of those from the new campaign, at the most efficient GRP level. TV expenditures were negligible in the old campaign, and no response function could be estimated.

TABLE 4

	OLD CAMPAIGN	NEW CAMPAIGN
	1 Year	1 Year
Total Incremental Sales (100 oz. Units)	136,000	2,900,000
Percent of Total Sales	0.40%	8.0%

General Conclusions: Methodology

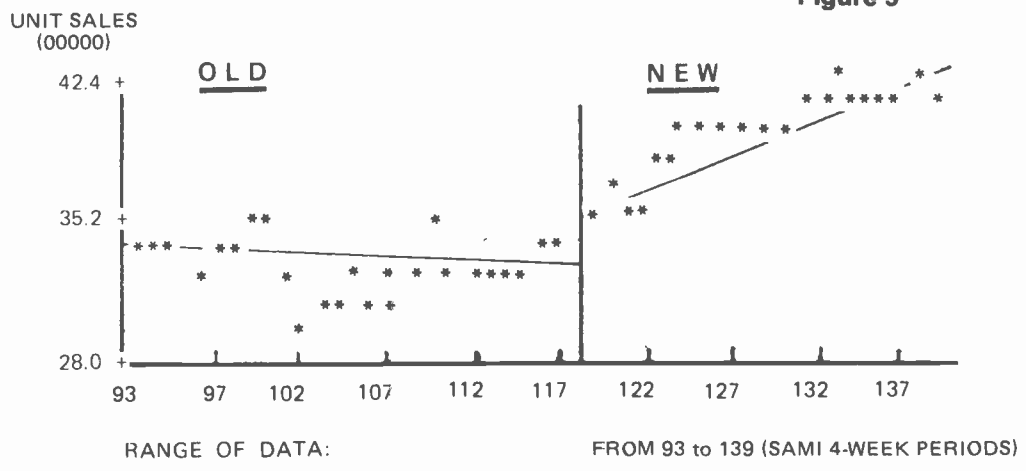
It was felt that the advertising response functions developed had important strategy implications with respect to:

- the sales impact of the current campaign and the prospect for maintaining the current sales trend
- media allocations between radio and television
- recommended GRP levels per period and the potential impact of pulsing
- maximum or saturation levels of media spending.

Media Mix/Campaign Impact on Brand Sales Trend

The dramatic national improvement in unit sales trend coincided exactly with the initiation of the new campaign in September, 1975, as shown in Figure 5. Extensive analysis indicated the trend change was due to the campaign, and similar findings had been reported from earlier media experiments.

Figure 5



Brand management concluded that the impact of the campaign on unit sales trends was critical in the evaluation of media expenditures because:

- a major portion of the incremental sales indicated by advertising response functions was due to the long-term trend impact.
- an effective campaign appeared to far outweigh all other spending factors.

After this initial evaluation, the response functions and historical expenditures were examined in greater detail, in order to extract managerial guidelines for advertising budgeting. It was found that both radio and TV response functions had well-defined threshold exposure levels – GRPs below those levels made no contribution whatsoever to sales. Comparing actual GRPs with these threshold values, it was found that in over 40% of the periods studied, exposures had been too low to be effective – the sales gains had come in spite of this, again attesting to the power of the new creative concept. On the other hand, evidence of a saturation spending level was weak – high exposure levels had not been encountered often enough to provide a really accurate estimate of a saturation GRP level.

These findings were incorporated into the brand's spending plans, and it was decided to update the response functions with six more months of data. One key reason for the update was that sales of the product had shown signs of softening, and brand management feared that this was due to "advertising wearout."

The update analysis was most enlightening. It did nothing at all to support the hypothesis of advertising wearout. Advertising still contributed about the same amount to sales as it had throughout the new campaign. Softening of sales was attributable directly to increases in the price of the brand. Because of price increases, the price elasticity of the brand had increased by a factor of three in many markets. These increases were far greater (percentagewise) than price increases of competitive beverages during the same period of time; as a result, a far wider range of products began to compete with the brand than had done so before. The advertising, far from wearing out, was helping maintain sales at a steady level instead of having them decline. Further analysis suggested that a policy of promotion, to provide short-term price relief, would be desirable.

Translating Advertising Response into Media Planning

What with the empirical evidence gained on advertising and media response, the brand stood in a unique position to utilize this data for sound media planning. For example:

- Frequency and reach decisions could be made.
- The brand had the benefit of the advertising response research to aid/support what normally is judgmentally determined.

- Analysis of several levels, including the lower and upper thresholds identified by the model, could help identify both.

Reach & Frequency Assessment

As shown in Table 3, the advertising response GRP levels per four-week period were:

	Lower Threshold	Upper Threshold
Radio	222	449
Television	188	291

The analysis for ***radio*** showed the following:

Standard reach & frequency, on a 4-week basis

	Lower Threshold*		Upper Threshold*	
	Unadjusted Program Aud.	Adjusted for Comml. Aud.	Unadjusted Program Aud.	Adjusted for Comml. Aud.
Reach	44	30	56	50
Freq. (avg.)	5.1	3.3	8.0	4.0
GRPs	222	100	449	202

Frequency distribution, on a 4-week basis

		Frequency					
Plan element	GRPs/week	1+	2+	3+	4+	5+	6+
Radio (LT) Unadjusted	56	44	31	24	19	16	13
Radio (LT) Adjusted	25	30	19	12	9	7	5
Radio (UT) Unadjusted	112	56	44	36	31	27	24
Radio (UT) Adjusted	50	43	30	23	18	15	12

*The adjusted figures referred to in this case represent an adjustment from *standard program audience* media data to more attentive *commercial audience estimates.* The adjustment used by this advertiser was .68 for TV and .45 for radio; these were derived using generally available research data from Burke and other sources.

The upper threshold of radio was near the practical reach ceiling. Other observations drawn from the foregoing data were:

- from lower to upper threshold represented a 100% increase in GRPs, with increase in reach as follows:* 43% @ 1x
  58% @ 2x
  92% @ 3x
  100% @ 4x

- the upper threshold reach increased at a substantially reduced rate in relation to GRPs added:

  A 40% increase in GRPs (50 to 70/wk) resulted in these increases in reach:
  12% @ 1x
  17% @ 2x
  22% @ 3x
  28% @ 4x

  A 100% increase in GRPs (50 to 100/wk) resulted in these increases in reach:
  26% @ 1x
  40% @ 2x
  48% @ 3x
  61% @ 4x

- at these upper GRP levels, "excess frequency" was accumulating beyond the 4+ level -- the apparent optimum in four weeks.

*These percentage increases in reach are calculated from attentive audience reach figures, as derived from the 4-week frequency distribution shown on page 119.

The analysis for ***television*** showed these characteristics:

Standard reach & frequency, on a 4-week basis

	Lower Threshold		Upper Threshold	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Reach	69	58	77	69
Freq. (avg.)	2.7	2.1	3.4	4.0
GRPs	188	123	291	190

Frequency distribution, on a 4-week basis

Plan element	GRPs/week	Frequency 1+	2+	3+	4+	5+	6+
Television (LT) Unadjusted	47	69	45	29	18	12	7
Television (LT) Adjusted	31	58	30	16	8	5	2
Television (UT) Unadjusted	73	77	56	41	30	23	16
Television (UT) Adjusted	48	69	45	29	18	12	7

The upper threshold of television was not found because the practical reach ceiling was not attained. The main observations drawn from these data were:

- from lower to upper threshold represented a 55% increase in GRPs, with the increase in reach as follows: 19% @ 1x
  50% @ 2x
  81% @ 3x
  125% @ 4x
- additional GRPs could be added to the upper threshold level without losing leverage:

  A 45% increase in GRPs (48 to 70/wk) resulted in these increases in reach:
  12% @ 1x
  24% @ 2x
  41% @ 3x
  67% @ 4x

  A 108% increase in GRPs (48 to 100/wk) resulted in these increases in reach:
  20% @ 1x
  47% @ 2x
  79% @ 3x
  128% @ 4x
- at these upper GRP levels, the additional frequency continues to push up reach at the lower exposure levels -- i.e., 3-4 proportion to the GRPs added.

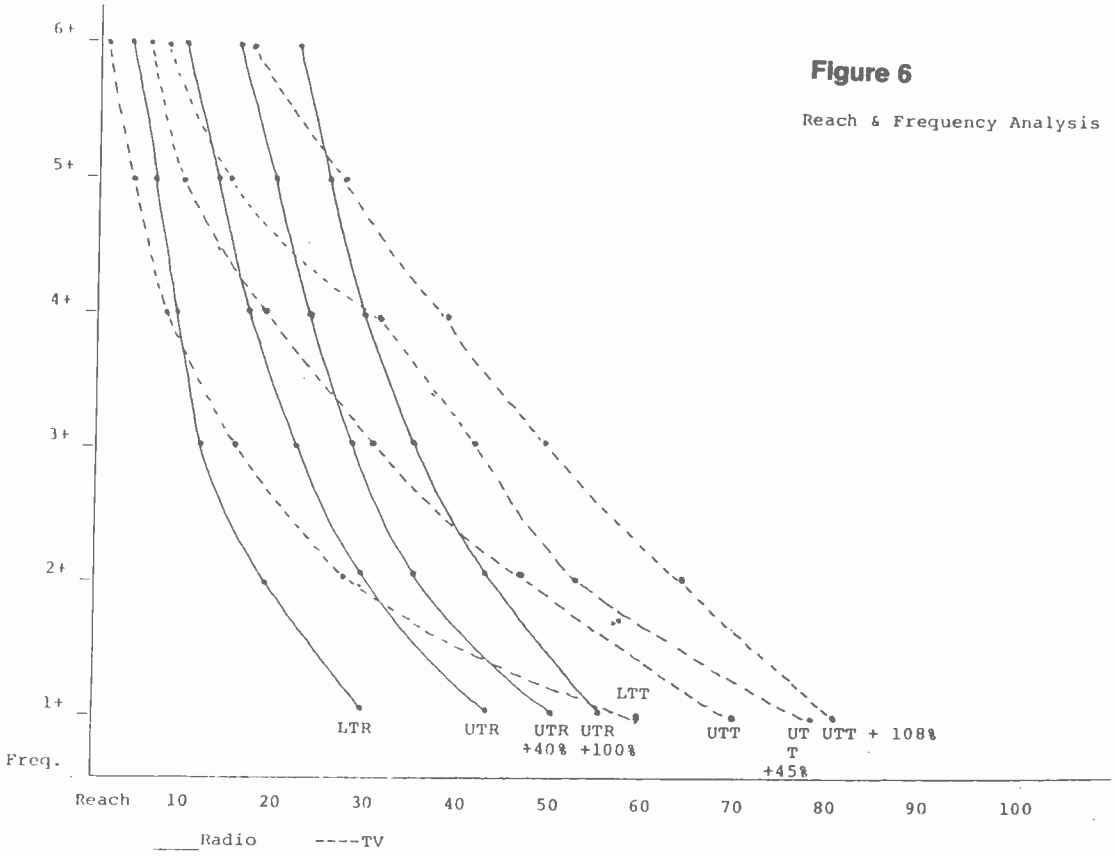
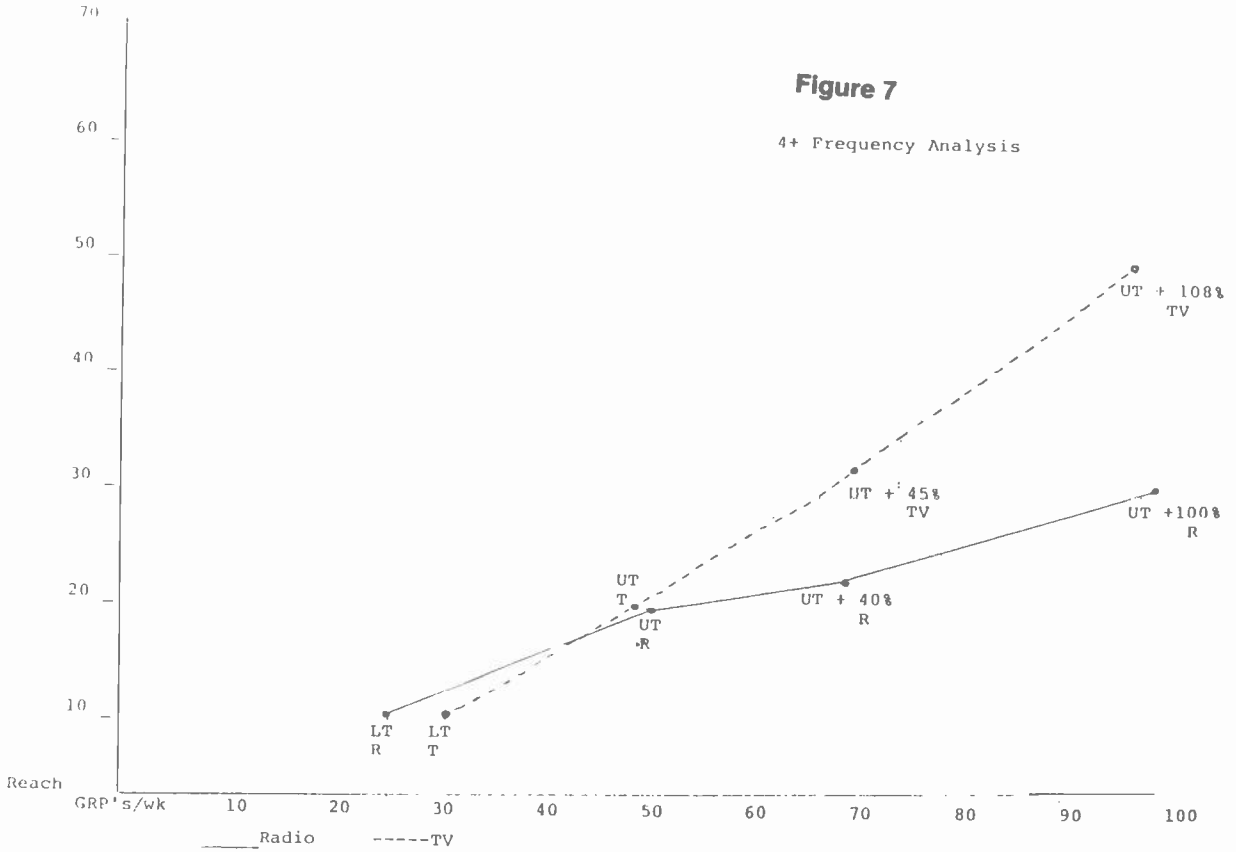


Figure 6

Reach & Frequency Analysis

Figure 7

4+ Frequency Analysis



Frequency Value Analysis

Both the lower and upper threshold activity for radio and television produced similar incremental results. It is therefore possible to build a series of values so as to find the set which results in roughly the same effective reach level. Here are the value options tried @ the 4 frequency goal:

VALUE OPTIONS	FREQUENCY			
	1	2	3	4
A.	30	60	90	100
B.	10	30	70	100
C.	5	10	50	100

Radio

FREQUENCY	LOW THRESHOLD			UP THRESHOLD		
	A	B	C	A	B	C
1	3	1	1	4	1	1
2	4	2	1	4	2	1
3	3	2	2	5	4	3
4	9	9	9	18	18	18
	19	14	13	31	25	23

Television

FREQUENCY	LOW THRESHOLD			UP THRESHOLD		
	A	B	C	A	B	C
1	8	3	1	7	2	1
2	8	4	1	10	5	2
3	7	6	4	10	8	6
4	8	8	8	18	18	18
	31	21	14	45	33	27

Conclusions

1. Both the advertising response model and the reach & frequency analysis identified a radio level which, when exceeded, offered reduced value.
2. The advertising response model lacked sufficient data to find a ceiling on television; however, it can be examined in reach/frequency terms – a doubling of television GRPs continued to offer excellent reach gain leverage at the 3x and 4x level.
3. The 3-to-4 exposure level in a four-week period is the optimum.
4. Reach minimums at the lower threshold level are 10 to 15; i.e., if the brand can reach a minimum of 10% to 15% of its target 4 to 3 (respective with reach levels) times in a four-week period, it will start to achieve incremental case lifts.
5. Weight value analysis indicates minimal value for 1-2 exposures in a four-week period.

Brand Strategies

1. The brand should advertise in four-week modules.
2. The frequency goal for each module should be 3 to 4 times, i.e., about 1x per advertised week.
3. Sufficient budget should be allocated to each module so as to insure a 29 (@3x) to 18 (@4x) reach level as a minimum – based on a four-week time frame – as this level results in substantial incremental cases.
4. Heavy-up testing should concentrate on adding more bursts at the upper threshold level.
5. Weight values used to determine effective reach, and thereby determine the cost effectiveness of plan options, should be:

Frequency	1	2	3	4
Weight Value	5	10	50	100

Case Study #4

How a Frequency Concentration Media Schedule Led to Increased Sales

This case study is a good example of the capability provided by the AdTel Split Cable/CATV-type facility to evaluate two different media strategies under tightly-controlled conditions within the same market. The study involved a continuous television advertising strategy (exposures every week) vs. a concentration strategy which increased frequency by bunching exposures into two-week periods, followed by two weeks without exposures. Both strategies represented the same dollar investment in advertising for the brand over the period of a year in the AdTel market. Thus, greater frequency during the two-week concentration periods was clearly the only variable to be evaluated vs. the brand's normal (continuous) advertising practice.

Table 5 displays the Gross Rating Point plan for the experiment, in terms of both the intended target levels and the actual buys. The point is, by exercising such close control over the experiment, it is possible to consider any test outcome with confidence – i.e., assurance that it truly represents the planned test conditions.

TABLE 5

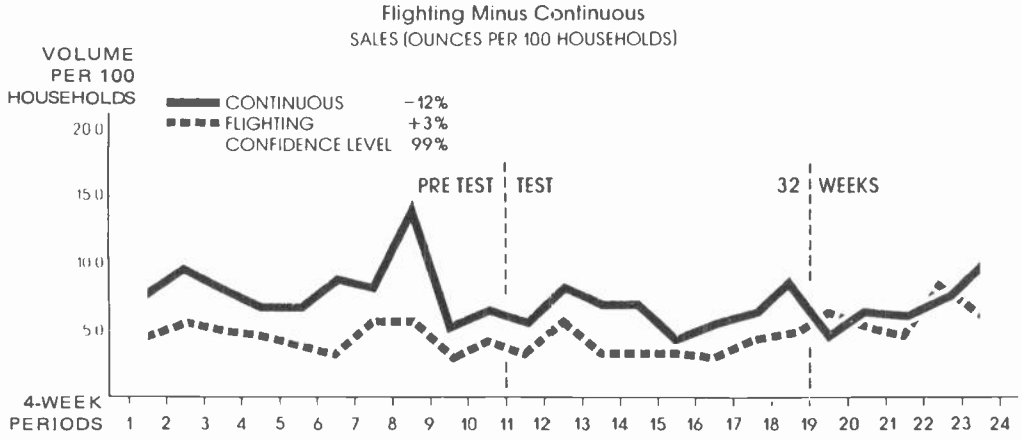
	Gross Rating Points*			
	Continuous Advertising Cable		Concentration Advertising Cable	
Test Week	Target	Actual	Target	Actual
1	100	112	200	202
2	100	106	200	214
3	100	93	–	–
4	100	91	–	–
5	100	102	200	197
6	100	104	200	184
7	100	107	–	–
8	100	93	–	–
9	100	98	200	205
10	100	106	200	200
11	100	100	–	–
12	100	105	–	–

* The record of Gross Rating Points for the additional 40 weeks of the test closely resembled that of the first 12 weeks.

The brand involved in this study was advertised nationally at better than a $5,000,000 rate. Prior to the experiment, however, sales had been declining due to the inroads made by a highly successful introduction of a competing brand. Figure 8 shows the sales records for the brand, as measured by AdTel's diary panels for each cable, both before the test began and for a year thereafter. As shown, the media concentration flighting strategy proved to be a clear winner.

Figure 8

Media Concentration



Case Study #5

How to Make Inter-Media Comparisons by Controlled Experimentation

The following summary of two controlled marketplace experiments does not address itself explicitly to the issue of frequency per se, yet there is little question that very different media (and perhaps frequency) strategies across radio and television were employed. There is also little question that such experimental programs can add significantly to a company's awareness of the possibilities for better media planning based on empirical findings.

The two studies were carried out by Coca-Cola USA and reported on by Roy G. Stout at an A.N.A. Media Workshop [5], as follows:

During the last two decades the literature in the area of advertising evaluation has been sporadically covered with objective ways of quantifying the sales effect of various advertising strategies. Some of these studies have concerned themselves with evaluating alternative messages, content, and different methods of execution, while others have dealt with comparisons between various media for advertising.

There have been varying degrees of success with such studies, but the most successful ones have used experimentation. In general, those that have been well planned and well executed have tended to generate results that have been sound and worthy of supporting major decisions; still there has been no great rush by the business world to conduct a large number of studies in this fashion.

A major factor in the limited use of such controlled experiments may be the number of details that have to be taken care of and properly managed in order to successfully complete them. Undoubtedly, the amount of resources necessary to complete such studies has also been a factor in controlling the amount of experimentation that has occurred. And, let's be honest – many executives are reluctant to make decisions based on experiments.

When a company employs the use of controlled experimentation to obtain information on what happened to sales – and/or to consumers' awareness and attitudes concerning an advertising program as the advertising strategy changes – there are several important things the planner should know about the

[5] "Inter-Media Comparisons by Controlled Experimentation," New York, Dec. 4, 1973.

market in order to be properly prepared. These questions deal with how long should an experiment run, how precisely can you measure the results, what will be the effect on distribution and on the frequency of purchase. In conducting several experiments pertaining to advertising strategies over the last several years we have wrestled with these types of questions, and have used different study designs and methods of analysis. We have used randomized blocks as a basic design and also rotational designs called Latin Squares.

The Basic Procedure We Employed

The methodology that we feel is the most productive, in terms of ability to implement analysis and draw conclusions with minimal costs, is to combine an experimental design with a forecasting system. For example, a forecast of sales in a market is prepared under the assumption that normal marketing operations will continue. All sales, up until a new strategy is imposed on a market, are used to make the forecast from that point forward. Actual sales are then compared with forecast, not only in the market where the new test strategies are being evaluated, but also in a set of control markets. The purpose of the control market is to check for accuracy in the forecasting szstem. Any deviation between forecast and actual in the control is applied as an adjustment factor in the test-market analysis.

In selecting a forecasting procedure, we were looking first for accuracy and efficiency. Furthermore, since we needed to establish the believability of this kind of yardstick, the methodology had to be commonly accepted and understood. As a result, we did not pursue elaborate correlation or simulation models, but used instead seasonal adjustment and trend projection techniques. Of course, this procedure could not give us a handle on uncontrollable factors such as competition and weather, which further required that the study be replicated in a sufficient number of markets.

Our sales data was generally quite seasonal and was collected monthly, with ample historical information available. To seasonally adjust the data, we used the Census XII program — a publicly available computer program that decomposes a time series into the underlying seasonal, trading day, and trend line components. If the results indicated a stable time series, a forecast was made by projecting the deseasonalized trend line via exponential smoothing and then imposing the seasonality pattern on this smooth projection. Overall, these procedures have worked quite well with our studies, expecially for those studies involving several markets.

Two such studies of this type compared different advertising expenditure levels in markets where the ratio of television to radio advertising was very high in favor of

television, with other markets where the ratio was very high for radio relative to television. Let's review how this was done.

Study No. 1

This was a comparison of the response to sales as advertising expenditures remained the same or were reduced by a significant amount. In the design of this study, three markets were designated to remain at normal expenditure levels and maintain their normal ratio of heavy television. Three markets were designed to maintain the expenditure levels but switch the expenditures to heavy radio. In the other six markets, the advertising expenditures were reduced by a significant amount. Three of these remained in the heavy television strategy; three markets not only reduced expenditure levels by a significant amount but also switched to a heavy radio strategy. This study ran for a period of nine months.

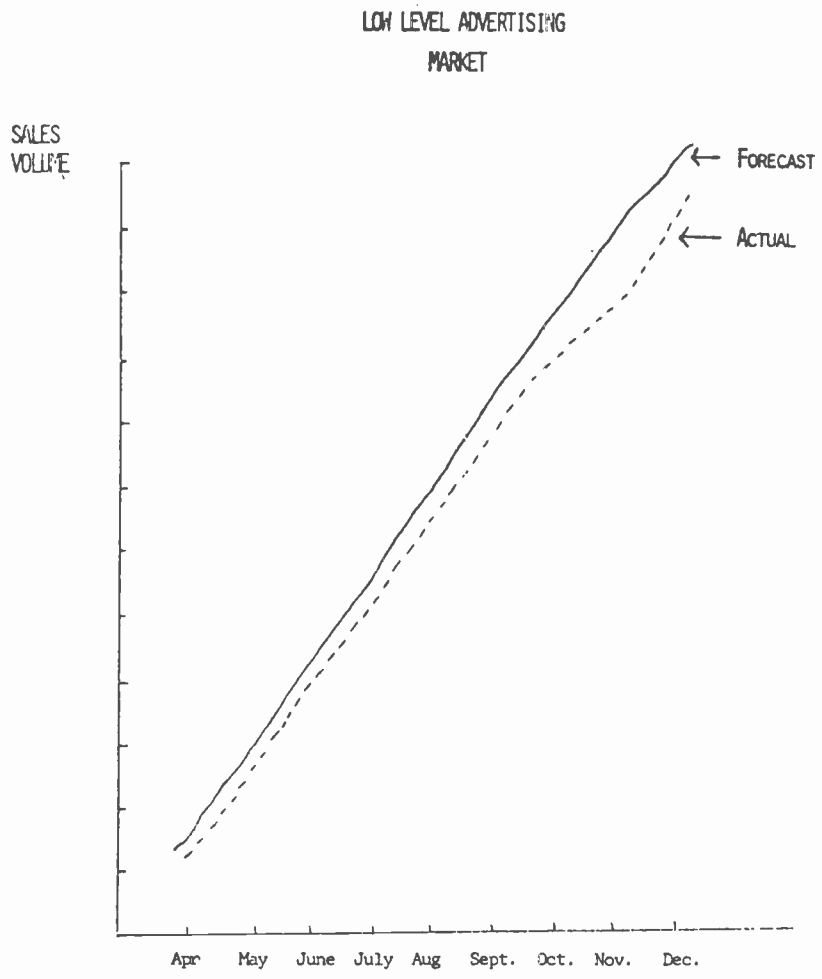
Strategy	Advertising Expenditure Levels	
	Low	Normal
Heavy TV	3 Mkts.	3 Mkts.
Heavy Radio	3 Mkts.	3 Mkts.

A forecasting equation was developed for each of the 12 markets and a forecast was generated for those nine months in each market. The analysis was completed by comparing the deviation between actual and forecast of sales to the change in expenditure levels and media usage.

Study No. 2

The design of the second study is very similar to the first one. The major difference is that in study number two the advertising expenditures were increased above normal by a significant amount, whereas number one involved a reduction in advertising. This study also ran for nine months and the procedure for analysis was the same as before – that is, generating a forecast for each market and then relating the deviations between forecast and actual sales with the expenditure levels and the media strategies.

Here is a monthly plotting of the cumulative forecast and actual sales in a market where the media was switched from heavy TV to heavy radio and expenditures reduced. By the end of nine months in this market, sales were about 7% below forecast.



These markets were selected for this test in such a manner that the heavy television was their normal strategy. Therefore, the change from normal strategy to the test strategy of heavy radio could create a change in sales because of two reasons: (1) the advertising expenditures generated greater buying appeal through the radio media than through television; or (2) it could be that the dynamics of change from one strategy to another would tend to generate a sales increase. It is our feeling that the dynamics of change of the media strategy is an important factor in measuring the difference in sales between the two strategies.

No doubt some of you are wondering why we conducted two tests by comparing the same change in strategy – why would one want to test heavy television versus heavy

radio in a situation where advertising expenditures were reduced and then test the same strategy at an increase in advertising levels? The reason for this was simply to address the question as to whether one could replace advertising dollars with a change in strategy. For example, if one strategy is more efficient than another, could you switch strategies and reduce advertising dollars and maintain the same sales level? Or, addressing the other question, could you change media strategies and hold advertising dollars at the same level and get an increase in sales? And finally, the question of whether or not you could change strategies and increase advertising dollars and get a greater sales increase than you would by increasing advertising dollars with no change in media strategy.

Results of the Studies

The results of these studies showed significant changes in sales. For those markets where there was a shift from heavy television to heavy radio but no change in spending levels, there was a slight increase in sales in favor of the radio media. In those markets where the advertising expenditures were reduced by a significant amount, the sales losses that occurred in the heavy radio strategy were nearly three times greater than the sales losses that occurred in the markets where the advertising expenditures were reduced but heavy TV remained the media strategy.

In the markets where the advertising expenditures were increased, sales for the heavy radio markets increased above the normal expenditure levels by about twice as much as the increase in sales in those markets where the strategy remained heavy television but only the expenditure weight increased.

	Down	Up
Heavy TV	−X	+X
Heavy Radio	−3X	+2X

So, what do we conclude from these two studies? In Study No. 1 we found that in switching from heavy television to heavy radio and reducing expenditures, the television strategy was a better sales producer than the heavy radio strategy. On the other hand, in those markets where we increased advertising expenditures, the sales increases for the heavy radio strategy was superior to the sales effect of the heavy television strategy.

What Did We Learn?

In practical language, here is how I interpret the results of these experiments:

> In the markets where we switched strategy and reduced expenditure levels, the sales volume gained from talking to new customers was less than the sales volume lost from old customers due to switching major expenditures out of television media. In other words, the pressure applied to the new audience was less than the pressure that had been applied before; therefore, new business generated was at a slower rate than the rate at which old business was lost.
>
> Whereas, in reducing expenditures and maintaining the same media, sales losses were less since there was no change in the audience.
>
> On the other hand, by switching strategy and increasing expenditures, the sales volume that was gained from the new consumers via radio was greater than the sales loss from the old consumers who received reduced pressure on the television media, and a net gain occurred.

Whether radio actually performs better than television, or television better than radio, may not be as important a lesson learned from studies such as this as is the realization that adept management of the expenditure level is a vital factor in achieving the best sales effect through a change in media.

It should be borne in mind, of course, that you cannot generalize the results of a study such as this to other product categories. But there is one final point that ought not to be overlooked – namely, the confidence that positive results from studies such as these give to management that advertising really works.

Appendix C

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