Advertising Repetition: A Critical Review of Wearin and Wearout[1]

Cornelia Pechmann and David W. Stewart

In 1988, a joint conference of academics and industry professionals sponsored by the Marketing Science Institute considered the topic, "Evaluating the Effects of Consumer Advertising on Market Position Over Time: How to Tell Whether Advertising Ever Works." One of the questions raised at this conference was whether there is any benefit at all to advertising. This is indicative of the pessimism that currently exists with regard to the value of advertising.

At least one factor that has contributed to this pessimism is the ambiguity in the literature with regard to the value of advertising *repetition*. The objective of this paper is to critically review this literature so as to resolve much of the ambiguity that surrounds it. It is the thesis of this paper that many of the empirical findings regarding advertising repetition that appear to be contradictory actually are complementary. Generally, where findings appear to be contradictory, the reason is that there are fundamental differences among the studies in terms of the methods and measures used. Hence, by grouping studies according to the methods and measures used, many apparent discrepancies can be resolved.

Introduction

In 1988, a joint conference of academics and industry professionals sponsored by the Marketing Science Institute considered the topic "Evaluating the Effects of Consumer Advertising on Market Position Over Time: How to Tell Whether Advertising Ever Works." One of the questions raised at this conference was whether there is any benefit at all to advertising. This is indicative of the pessimism that currently exists with regard to the value of advertising.

At least one factor that has contributed to this pessimism is the ambiguity in the literature with regard to value of advertising *repetition*. The objective

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of this paper is to critically review this literature so as to resolve much of the ambiguity that surrounds it.

This paper will demonstrate that one of the primary reasons for the ambiguity in the literature is that there are fundamental differences among studies of advertising repetition in terms of the methodologies and measures that are used. The major difference among the studies is whether they are conducted in the laboratory or in the field. In laboratory studies, exposures to the ads typically are required and massed or consecutive. In field studies, exposures to the ads typically are voluntary and distributed over time. Depending on the methodology that is used, very different results are obtained. Furthermore, results differ depending on whether the dependent variable that is measured is attention, immediate recall, delayed recall, cognitive responses, immediate brand attitudes, delayed brand attitudes or sales.

Hence, in this paper, previous studies of advertising repetition will be reviewed according to the methodologies and measures that were used. As a result, many apparent discrepancies in the results obtained will be resolved.

In addition, this paper will demonstrate that another reason why the literature on advertising repetition has been plagued with ambiguity is that too little attention has been paid to the critical distinctions among several related phenomena.

For example, wearin and wearout are distinct phenomena although both are produced by advertising repetition. An ad is said to have *worn in* at a particular level of repetition if, when consumers are exposed to it, it has a *significant positive effect* on them. An ad may wear in the first time consumers are exposed to it. On the other hand, an ad may not wear in or have a significant positive effect until the third time consumers are exposed to it, or until some higher exposure level has been reached. In fact, an ad may never wear in.

An ad that has worn in[2] is said to have *worn out* at a particular level of repetition if, when consumers are exposed to it, it *no longer has any significant effect* on them or even has a *significant negative effect*. An ad may wear out the third time consumers are exposed to it, the fifteenth time, at some other exposure level, or not at all. However, even if additional exposures to an ad no longer produce an *increase* in any outcome measures (such as brand recall or sales), this does *not* necessarily mean that the ad has worn out i.e. that it no longer has any significant positive effect on consumers. If additional exposures to the ad help to maintain or reinforce the increases in these outcome measures that already have been attained, the ad has not worn out. However, if additional exposures to the ad to *not* help to maintain or reinforce the increases in these outcome measures that already have been attained, the ad *has* worn out.

Since wearin and wearout are distinct phenomenon, in this paper empirical results pertinent to wearin effects will be distinguished from empirical results

pertinent to wearout effects. As a result, many other apparent discrepancies in the literature will be resolved.

Note that advertising carryover effects and advertising repetition effects also are distinct phenomena, albeit related. Research on advertising *carryover effects* is concerned with the *residual or cumulative effects of prior advertising exposures* at a subsequent point in time. In contrast, research on advertising *repetition* is concerned with the *differential effects of each successive advertising exposure,* i.e. on the differential effects of a given exposure within a sequence of exposures (including wearin and wearout effects). Since carryover and repetition effects are distinct phenomenon, this paper will focus primarily on repetition effects. It thereby will complement Sawyer and Ward's [1979] review which dealt solely with carryover effects.

This paper has one final purpose. It will demonstrate that yet another reason for the ambiguity in the literature is that too little attention has been paid to the fact that the exposure levels at which wearin and wearout occur are contingent on several variables. More specifically, repetition effects are contingent on whether the ad persuades via emotional images or verbal arguments, whether initially it is a high or low scoring ad (for example, whether the verbal arguments are strong or weak), and whether or not consumers are motivated and able to process the ad (for example, whether consumers purchase the advertised brand and what the level of competitive advertising or clutter is. Hence, this paper will discuss the variables on which repetition effects are contingent. This discussion also will help to resolve the ambiguity in the literature.

Since this paper addresses several different issues, it has been divided into three sections. The *first section* of this paper discusses the early laboratory studies that were done on advertising repetition. In these studies, repeated exposures were required and massed, and the dependent variables were measured immediately after exposure. These studies probably have had the most significant impact on the area of advertising repetition. The *second section* discusses the early field (and quasi-field) studies that were done. In these studies, repeated exposures were voluntary and distributed, and the dependent variables were measured after a delay. In some of these studies, individual- or micro-level analyses were performed; in others, aggregate- or macro-level analyses were performed. The *third section* discusses the more recent laboratory, quasi-field, and field studies that were done on advertising repetition. These more recent studies explicitly address how wearin and/or wearout are influenced by important mediating variables.

In the interests of brevity, the specific details of the studies reviewed in this paper will not be discussed in the text. However, Appendix A lists the samples, methods, and measures used in each study.

Early Lab Studies: Required, Massed Exposures

Early laboratory studies typically employed the following research paradigm for studying repetition effects. Research participants were *required* (i.e. directed or told) to view ads or other types of persuasive messages. These messages were *verbal arguments* advocating the merits of particular brands or points of view. Generally, research participants were exposed repeatedly to the *same message* rather than to a varied set of messages. Repeated exposures to these messages were *massed* in that they occurred within the course of a few minutes, or an hour. Immediately after exposure to these messages (i.e. *post-exposure*), participants were asked to fill out written questionnaires which measured how effective the messages were. Other variables that might *mediate* wearin and wearout typically were *not* manipulated, or even controlled for.

The results obtained in these early laboratory studies are discussed below. The implications of using this particular research paradigm will be discussed at the end of this section of the paper.

Post-Exposure Recall

Early laboratory studies found that, with regard to recall, wearin occurs immediately [Cacioppo and Petty 1979; 1980; Sawyer 1973; Ray and Sawyer 1971; also see Burke and Srull 1988; Hitchon, Thorson and Zhao 1988; Schumann, Petty and Clemons 1988; Rethans, Swasy and Marks 1986; Batra and Ray 1986]. Even after a single exposure, some people can recall at least some of the persuasive information contained in the message. Recall increases linearly as the number of exposures to the message increases from one to approximately six. Eventually, however, recall levels off, due to a ceiling effect [Gorn and Goldberg 1980; Cacioppo and Petty 1980; Ray and Sawyer 1971; also see Schumann, Petty and Clemons 1988; Hitchon, Thorson and Zhao 1988; Batra and Ray 1986]. The point at which recall levels off apparently depends, at least in part, on the difficulty of the recall task. Note that these results are consistent with years of research on verbal learning in psychology.

Cognitive Responses

Early laboratory studies found that it takes three exposures for wearin to occur with respect to cognitive responses, i.e., for positive thoughts to outnumber negative thoughts [Cacioppo and Petty 1979; Calder and Sternthal 1980]. After three exposures, the message immediately begins to wear out in that negative thoughts increasingly outnumber positive thoughts [Belch 1982].

TABLE 1

Interpretation of Results of Early Lab Studies:
The Cognitive Response Model

Stage	# Exp.[7]	Recall	Cognitions	Attitudes	Interpretation
1: beginning	1–2	low	negative	less favorable	message not appreciated [Cacioppo & Petty 1979]
					defensiveness [Sawyer 1981]
1: end	3	high	positive	more favorable	message appreciated [Cacioppo & Petty 1979]
					defensiveness dissipates [Sawyer 1981]
2	4+	very high	negative	less favorable	reactance/undue scrutiny [Cacioppo & Petty 1979]
					boredom & irritation [Belch 1982]

Post-Exposure Attitudes

Early laboratory studies found that attitudes and purchase intentions increase even during the first exposure, i.e., wearin is immediate [Petty and Cacioppo 1979]. However, attitudes and purchase intentions peak at three exposures, as do positive cognitive responses [Cacioppo and Petty 1979; 1980; Calder and Sternthal 1980; Ronis 1980; Ronis et al. 1977; also see Schumann, Petty and Clemons 1988; Gorn and Goldberg 1980]. At higher exposure levels, attitudes and purchase intentions decline, and cognitive responses become increasingly negative, even though recall may not decline.[3]

The Two-Stage Cognitive Response Model

The pattern of results obtained in these early laboratory studies suggests the following. When exposures are required and massed, and when the dependent variables are measured immediately after exposure, the thoughts or cognitive responses evoked by an ad mediate brand attitudes and purchase intentions [Calder and Sternthal 1980; Cacioppo and Petty 1979; 1980; Belch 1982]. Hence, the attitude modification process that occurs under these circumstances will be referred to as the Two-Stage Cognitive Response Model. This model has its origins in the 'two-factor' theories of Berlyne [1970] and Stang [1975], but these latter theories deal with the wearin and wearout of novel

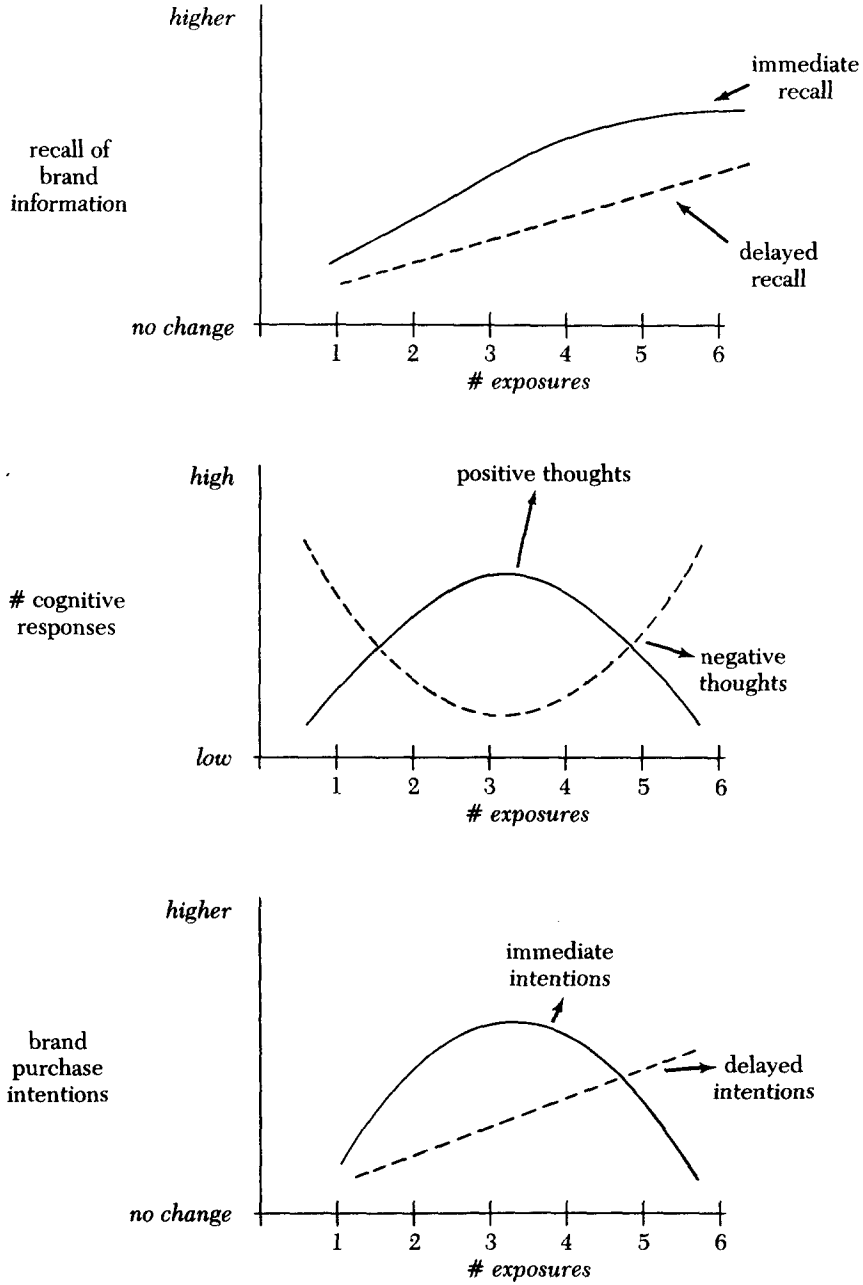

Figure 1. Results of early lab studies: exposures required and massed

nonsense syllables or 'mere exposure effects' [Harrison 1977; Grush 1976; Zajonc 1968].

Stage 1 or wearin occurs during approximately the first three exposures. At first, consumers generate counter-arguments because they do not yet fully appreciate the argument's merits [Cacioppo and Petty 1979] and/or because they distrust and resent ads in general and are on the defensive [Sawyer 1981]. However, during approximately the third exposure, positive thoughts finally outnumber negative thoughts. When consumers are exposed to the same ad three times in a row, they have more time to reflect upon its logic and merits and to generate support arguments [Cacioppo and Petty 1979]. In addition, or alternatively, their distrust and resentment of the ad may dissipate once expressed [Sawyer 1981]. That is, the act of expressing these negative feelings may be cathartic. Hence, although brand attitudes and purchase intentions are enhanced by even a single exposure, they peak at approximately three exposures.

State 2 or wearout begins with approximately the fourth exposure. When consumers are exposed to the same ad four or more times in a row, they become bored and irritated with it because it becomes tedious [Schumann, Petty and Clemons 1988]. Hence, they generate negative repetition-related thoughts [Belch 1982]. In addition, or alternatively, they once again generate counter-arguments because they have scrutinized the ad so extensively and/or because they are satiated [Cacioppo and Petty 1979]. These negative thoughts undermine the ad's persuasive impact.

The results obtained in these early laboratory studies are summarized in Table 1 and Figure 1.

A Critique of the Two-Stage Response Model

The Two-Stage Cognitive Response Model is based on the results of early laboratory studies in which exposures to the test ads were required and massed, the dependent variables were measured immediately after exposure, and mediating variables were not dealt with explicitly. Consequently, it is not clear to what extent this model generalizes to other settings, particularly typical advertising exposure settings.

First of all, under ordinary viewing conditions, it is not clear that consumers pay attention to an ad every time they are exposed to it [Greenberg and Suttoni 1973]. Even if consumers pay attention to an ad, they may only pay attention to part of it. Hence, the ad may not wear in after only three exposures. Secondly, it is not clear that wearout occurs at higher exposure levels because consumers generate counter-arguments and/or negative repetition-related thoughts. Under ordinary viewing conditions, consumers probably are more likely to mentally tune out or otherwise avoid the ad [Calder and Sternthal 1980].

In fact, it is not clear that these results always will generalize even to other laboratory settings [Petty and Cacioppo 1986; Cacioppo and Petty 1985]. Wearin and wearout rates are likely to depend on characteristics of the research participants and the persuasive message, not solely on characteristics of the laboratory setting.

Finally, it is not clear that the most appropriate time to measure the effectiveness of an ad is immediately after exposure (i.e. 'post-exposure'). The importance of measuring advertising effectiveness at the 'point of purchase' rather than at the 'point of exposure' to the ad is becoming increasingly apparent [Baker and Lutz 1988; Kisielius and Sternthal 1986]. If the objective is to maximize *later* recall and *later* brand attitudes, wearout probably will not occur after only three required and massed exposures—for the following two reasons.

First, even if consumers have been exposed to an ad three consecutive times and any additional exposures *at that time* will lead to wearout, the brand attitudes and purchase intentions that the ad produced probably will not last forever. Hence, it should be advantageous to expose consumers to the purportedly 'worn out' ad again *in the future* as a reminder. Even one future exposure will help to forestall forgetting of the ad's persuasive content [Cromwell and Kunkel 1952; Cook and Insko 1968].

Secondly, requiring consumers to pay attention to an ad more than three *consecutive* times should insure that they learn the persuasive information in the ad more thoroughly. Hence, it should be advantageous to expose consumers to the purportedly 'worn out' ad again, even at that same point in time—in order to maximize *advertising carryover effects*.

For example, it has been shown that three required and massed exposures are *not* optimal if the goal is to optimize later recall [Craig, Sternthal and Leavitt 1976]. Each additional exposure continues to have an effect, albeit not immediately discernible, in that it *prolongs* recall. More specifically, it has been found that people who are required to pay attention to an ad twenty-four consecutive times rather than fourteen times (or fewer), do not recall it better immediately afterwards or even two days later. However, they do recall it better one or two weeks later, indicating that wearout actually does not occur even at this very high exposure level, at least with respect to long-term recall.

It also has been shown that three required and massed exposures are *not* optimal if the goal is to optimize later attitudes [Johnson and Watkins 1971; Cacioppo and Petty 1980; also see Ronis 1980; Ronis et al. 1977]. For example, it has been found that people who are required to hear a persuasive message five consecutive times rather than just once recall it better. However, initially they appear to be less convinced of its merits because irritation and satiation undermine the message's persuasive impact. Nevertheless, four weeks later, they are in greater agreement with the message [Johnson and Watkins 1971]. Hence, perhaps even extensive exposures to a message are beneficial because

people will recall the message better later on if they learned it more thoroughly initially.

In addition, perhaps when an ad becomes tedious, consumers' negative attitudes towards it are stored in a different location in memory from their positive attitudes towards the brand. That is, these two memories are dissociated from one another. Subsequently, perhaps positive attitudes towards the *brand* are retrieved from memory whereas negative attitudes towards the *ad* are forgotten. That is, perhaps there is a 'sleeper effect' [Mazursky and Schul 1988; Ronis 1980; Ray, Sawyer and Strong 1971].

For these reasons, it appears that laboratory studies may greatly underestimate the number of repetitions necessary to produce both wearin and wearout.

Early Field Studies: Voluntary, Distributed Exposures

The research paradigm employed in early field (and quasi-field) studies was quite different from that employed in early laboratory studies. Research participants were not required to pay attention to the test ads; their attention was *voluntary*. Frequently, the test ads appeared on regular TV, so the exposure setting was completely naturalistic. Repeated exposures to the ads were *distributed* over the course of several days or weeks rather than massed. Furthermore, the dependent variables typically were measured after a *delay* rather than immediately after exposure. However, two of the weaknesses of the early laboratory studies just discussed were not corrected. Other variables that might *mediate* wearin and wearout typically were *not* manipulated or even controlled for, and the emphasis was on ads with *verbal messages*.

In this section of the paper, two types of field (and quasi-field) studies will be reviewed: individual- or micro-level studies (measuring attention, recall, and brand sales) and aggregate- or macro-level studies of the shape of the advertising/sales response function. In general, these results demonstrate that consumers probably must see an ad more than one time before it wears in. Furthermore, an ad may not wear out after only three exposures. In fact, an ad campaign may never wear out if the exposure *rate* is *low* enough and if the ads are *updated* or *modified* periodically.

Attention

Early field studies found that attention to an ad gradually increases and is highest after about two months if consumers are exposed to the ad only about fifteen times during this two month period [Marplan study cited in Greenberg and Suttoni 1973; also see Axelrod 1980; Grass and Wallace 1969]. At higher

TABLE 2

Interpretation of Results of Early Field Studies: The Learning Model

Stage	# Exp.[8]	Recall	Brand Sales	Interpretation
1: beginning	low	low ?	no increase ?	message not attended to and thereby not learned due to: —lack of ability/distractions [Wright 1981] —lack of motivation/interest [Krugman 1977]
1: end	mod.	mod.	increase	—learning eventually occurs despite distractions and/or low interest [Greenberg & Suttoni 1973] —message is learned more thoroughly [Johnson & Watkins 1971] and/or reinforced [Cromwell & Kunkel 1952] —message is appreciated [Petty & Cacioppo 1979] and/or defensiveness dissipates [Sawyer 1981]
2	high (8-16+)	high ?	stabilize ?	—attention and recall can be renewed by using a series of ads [Zielske 1959; Grass & Wallace 1969; McCullough & Ostrom 1974] —repetition reinforces existing habits [Ehrenberg 1983] —even fleeting awareness reinforces attitudes [Greenberg & Suttoni 1973]
			at BELOW the peak but ABOVE prior level	—only a fraction of the triers repeat —defensive reactions by competitors —market depletion/borrowed sales [Little 1980]
			BUT no further increases	—fewer prospects are left to be reached and persuaded [Blair 1987] —remaining prospects are less accessible and/or receptive [Ozga 1960]

[8]exposures

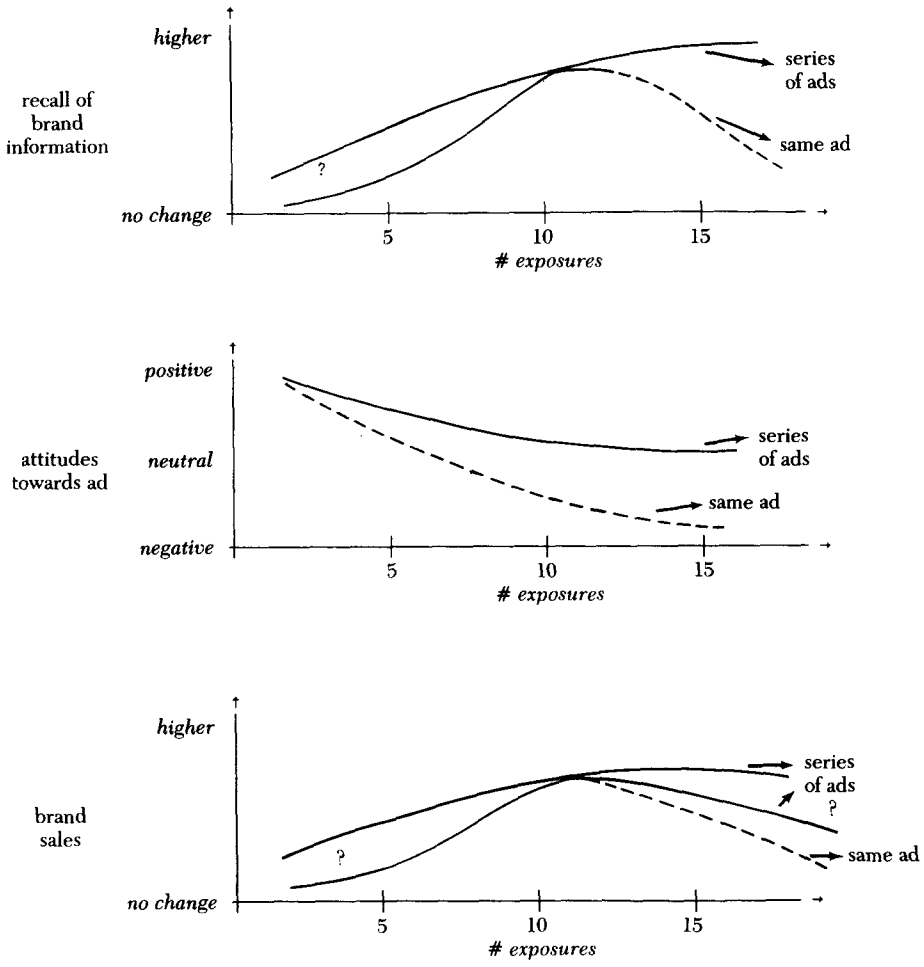

Figure 2. Results of early field studies: exposures voluntary and distributed

exposure levels, attention gradually declines, i.e., the ad wears out. However, a relatively high level of attention can be maintained if the ad campaign consists of a *series* of ads [Grass and Wallace 1969].

Recall

Early field studies found that recall also is highest after about two months as long as consumers are exposed to the ad only about twelve times during this

two-month period [Grass 1970 as cited in Greenberg and Suttoni 1973; also see Axelrod 1980; Appel 1971; Grass and Wallace 1969]. However, recall is highest after only one month if consumers are exposed to the ad about seven to twelve times during this one-month period. At higher exposure levels, recall gradually declines, i.e., the ad wears out.

Hence, it appears that both attention and recall peak after about seven to fifteen exposures during a two-month period, and then decline. It has yet to be determined whether *wearin* is immediate (in that the first exposure has a positive effect) or gradual. It probably depends on the circumstances. However, it appears that the greater the exposure *rate*, the faster attention to, and recall of the ad will *peak* and then *wear out*.

Note that as with attention, recall can be maintained at a relatively high level or even increased if the ad campaign consists of a *series* of ads [Zielske and Henry 1980; Zielske 1959; also see Katz 1980; Simon 1979; Strong 1974; Schumann, Petty and Clemons 1988]. For example, Zielske [1959] found that if consumers are exposed to a different print ad for the advertised brand each week, recall continues to increase even after the thirteenth weekly exposure.[4]

Cognitive Responses

Cognitive responses or thoughts typically are not measured in field studies. However, *attitudes towards the ad* frequently are measured in field studies, and attitudes towards the ad probably are indicative of ad-related thoughts (albeit not message-related thoughts). Early field studies found that attitudes towards the ad become increasingly negative as exposure level increases [Burke and Edell 1986; Grass and Wallace 1969; also see Burke and Srull 1988; Schumann, Petty and Clemons 1988; Rethans, Swasy and Marks 1986; Alpert, Golden and Hoyer 1983; Calder and Sternthal 1980]. Thus, it appears that attitudes towards the ad wear out more quickly than other dependent variables.

However, once again wearout can be retarded—albeit not completely avoided—by using a *series* of ads in a campaign. For example, it has been found that people who are exposed to three different ads rather than the same ad three times have more favorable attitudes towards the ad [Calder and Sternthal 1980; also see Schumann, Petty and Clemons 1988; McCullough and Ostrom 1974].

Brand Sales

Early field studies found that as attention and recall increase, sales of the advertised brand increase correspondingly [Axelrod 1980; Greenberg and Suttoni 1973; Grass and Wallace 1969]. In contrast, attitudes towards the ad begin to deteriorate relatively quickly. Brand sales peak about when attention and

recall peak (at approximately seven to fifteen exposures, depending upon the exposure rate). At even higher exposure levels, repetition *maintains or reinforces* brand sales despite the fact that attention, recall, and attitudes towards the ad have begun to decline. Furthermore, as stated earlier, it may be possible to forestall most—if not all—of these wearout effects by periodically switching to *another ad* as needed.

The Two-Stage Learning Model

The pattern of results obtained in these early field (and quasi-field) studies suggests the following. When exposures are voluntary and distributed, and when the dependent variables are measured after a delay, the learning of positive information about the advertised brand mediates brand sales. Hence, the attitude modification process that occurs under these circumstances will be referred to as the Two-Stage Learning Model.

Stage 1 or wearin occurs during approximately the first seven to fifteen biweekly exposures, at least according to existing field data. At the very beginning of Stage 1, exposure to the ad may have no effect whatsoever until it has worn in. Once the ad has worn in, each additional exposure to it is beneficial.

Repetition has a positive effect during Stage 1 because consumers do not pay full attention to ads [Greenberg and Suttoni 1973]. Rather, consumers monitor ads and pay attention or withdraw their attention sporadically. They may withdraw their attention for several different reasons. For example, they may be *unable* to pay attention because the external environment and/or program content in which an ad is embedded is too distracting [Wright 1981]. Or, they simply may not be *motivated* to pay attention at a particular point in time or to pay attention to a particular ad [Krugman 1972]. They may not expect to need the product in the near future, for instance. If consumers are not interested in an ad, they may passively ignore it, or they may actively avoid it by changing the channel or flipping the page.

Since consumers may not be paying attention during any given exposure to an ad, it is beneficial to insure that they are exposed to an ad repeatedly. Repetition has several distinct advantages. If a consumer does not pay attention during a given exposure to an ad simply because of the circumstances (high distraction, not yet interested but soon will be, or the like), (s)he is likely to pay attention during subsequent exposures [Krugman 1972]. If a consumer does not pay attention because (s)he is not interested in an ad, perhaps after repeated exposures the persuasive information will sink in anyway [Greenberg and Suttoni 1973].

Eventually, repetition should lead to more thorough learning of this information which will reduce the likelihood that it will be forgotten [Johnson and Watkins 1971]. Repetition over time also will serve as a reminder and forestall forgetting [Cromwell and Kunkel 1952; Cook and Insko 1968].

Finally, repetition increases the likelihood that consumers will appreciate the message [Cacioppo and Petty 1979] and/or that their defensiveness will dissipate [Sawyer 1981]. In other words, *cognitive responses probably also play a mediating role*, as predicted by the Cognitive Response Model. However, the prime objective of advertising repetition in the real world is to expose consumers to an ad enough times so that they *comprehend, learn, are reminded of, and remember it.*

Note that although attitudes towards the ad deteriorate or wear out even during Stage 1, apparently this is relatively inconsequential. As mentioned earlier, perhaps negative attitudes towards the *ad* are quickly forgotten whereas positive attitudes towards the *brand* are retained and thereby have a much greater influence on purchase decisions. That is, perhaps there is a 'sleeper effect' [Mazursky and Schul 1988; Ronis 1980; Ray, Sawyer and Strong 1971]. Furthermore, using a *series* of ads can retard wearout of attitudes towards the ad [Schumann, Petty and Clemons 1988; Calder and Sternthal 1980; McCullough and Ostrom 1974].

Unfortunately, Stage 1 is not completely understood. There is controversy over how *long* it takes *wearin* to occur [Krishnamurthi, Narayan and Raj 1986]. In other words, there is controversy over the shape of the lower region of the advertising/sales response function.

Some researchers have determined that the advertising/sales response function is S-shaped. That is, at very low levels of advertising, brand sales do not increase significantly. At higher levels of advertising, brand sales increase at an increasing rate. However, at still higher levels of advertising, brand sales eventually begin to increase at a decreasing rate or level off [Little 1980; Rao and Miller 1975]. If the response function is *S-shaped*, this means that *wearin is gradual.* That is, the first exposure(s) has/have virtually no effect on brand sales; only subsequent exposures do.

Other researchers have determined that the advertising/sales response function is concave, which implies monotonically decreasing returns to scale [Simon and Arndt 1980; Simon 1969]. That is, even at very low levels of advertising, brand sales increase significantly, but always at a decreasing rate. Once again, this means that brand sales eventually level off [Little 1980; Rao and Miller 1975]. If the response function is *concave*, this means that *wearin is immediate.* That is, even the first exposure has an effect in terms of increasing brand sales.

A recent study [Krishnamurthi, Narayan and Raj 1986] found that if the advertising weight is doubled, effects on sales of a dominant brand will be observed almost immediately, i.e., within one purchase cycle. These results seem to indicate that the advertising/sales response function is concave. However, these results may generalize only to situations in which there was prior advertising and the advertised brand is the dominant brand.

More generally, the shape of the lower region of the advertising/sales re-

sponse function probably is contingent on several mediating variables that were not addressed in these early studies, but have been addressed in more recent studies. These mediating variables will be discussed in the next section of this paper.

Stage 2 (maintenance, and possibly wearout) begins with approximately the eighth to the sixteenth biweekly exposure, at least according to existing field data. Due to irritation and/or satiation, consumers no longer pay attention to the ad and they generate fewer message-relevant thoughts or cognitive responses [Calder and Sternthal 1980]. Instead, they are said to engage in 'topic-irrelevant ideation'. Hence, recall of the message declines i.e. exhibits wearout.

Nevertheless, it is commonly believed that *advertising may not ever wear out*, at least with respect to brand sales. Each additional advertising exposure, given that it is distributed over time, continues to have an effect in terms of maintaining brand sales at a higher level than they had been initially. That is, continued advertising *reinforces* existing habits or propensities to purchase the advertised brand and thereby *defends* the brand's consumer franchise [Ehrenberg 1983; Stewart 1988; Little 1980; Ostheimer 1970]. Presumably, even 'fleeting awareness' of the ad is reinforcing [Greenberg and Suttoni 1973]. Without it, brand sales would drop back to their initial, pre-advertising level. Hence, 'overadvertising' has been characterized as a relatively inexpensive and effective way to buy market share [Tull et al. 1986].

Notwithstanding, clearly there are decreasing returns to advertising. That is, as advertising expenditures mount, brand sales increase at a decreasing rate and finally reach an asymptotic level [Little 1980; Simon and Arndt 1980; Rao and Miller 1975]. Brand sales do not and cannot continue to increase indefinitely. One reason why there are diminishing returns is that the greater the level of advertising expenditure in a given time period, and the longer the ad runs, the fewer consumers remain to be reached and persuaded [Blair 1987]. In addition, these remaining consumers are less receptive and/or accessible. Consumers who are most receptive and accessible are the first to be persuaded [Ozga 1960].

In fact, it is likely that despite continued advertising, brand sales level off at an equilibrium point that is somewhat *lower* than *peak* brand sales had been during the advertising campaign, but *higher* than brand sales were *prior* to the advertising campaign and *higher* than brand sales would be *without continued* advertising. Sales increases may not be fully maintained for several reasons [Little 1980]. First of all, only a fraction of those who try a brand may end up becoming repeat purchasers. The brand might not meet every consumer's expectations, it might lose its novelty appeal, or it simply might not be any better than (albeit no worse than) other competing brands. Secondly, competing firms are likely to retaliate with advertising and/or other promotions in order to win back sales. Typically, the more effective an ad campaign is, the

greater the likelihood of and the more extreme the level of retaliation. Finally, brand sales may drop due to market depletion or the borrowing of future sales. This is particularly likely with ads promoting durables, since the number of potential purchasers is limited at any given point of time. However, continued advertising for consumer packaged goods also may deplete markets temporarily because of stockpiling.

Furthermore, just as in laboratory studies, as the *exposure rate increases* and exposures become increasingly massed, *wearout becomes increasingly likely even under ordinary viewing conditions*. More specifically, advertising at a high rate may be *no more* effective—or even *less* effective—than advertising at a low rate [Tellis 1988; Batra & Ray 1986].

In addition, those who advocate that advertising be continued as a defensive measure apparently assume that the ad campaign will consist of a *series* of ads [Stewart 1988; Zielske and Henry 1980; Little 1980; Ostheimer 1970; Zielske 1959]. It is highly likely that if the very same ad is used continuously, eventually it will be ignored and brand sales will suffer. Also, in order for an ad campaign to maintain its effectiveness, it must be updated periodically to reflect changes in tastes, consumer demographics, offensive moves by competing brands, and the like.

Finally, as with the wearin rate, the wearout rate probably is contingent on several mediating variables that were not addressed in these early studies, but have been addressed in more recent studies. These mediating variables also will be discussed in the next section of this paper.

The results obtained in these early field studies are summarized in Table 2 and Figure 2.

In summary, wearout must be guarded against even under ordinary viewing conditions for the reasons just discussed and for another reason that will be discussed below.

Advertising Carryover Effects Revisited

The Two-Stage Learning Model assumes that wearout does not occur even when brand sales reach an asymptotic level. However, the fact that brand sales level off does not necessarily indicate that advertising continues to have a positive effect in terms of reinforcing brand sales. Even if advertising is discontinued, brand sales may remain at the same level for an extended period of time due to the *carryover effects of prior advertising* [Axelrod 1980]. An ad that no longer has an immediately discernible effect in terms of maintaining brand sales has, in a sense, worn out.

This type of wearout occurs if and when the carryover effects are such that brand sales can be maintained without advertising. Hence, understanding the magnitude of carryover effects and how carryover effects build over time is critical to understanding wearout [Katz 1980; Simon 1979]. Unfortunately,

relatively little is known about advertising carryover effects. The general consensus is that if advertising is discontinued, particularly for an established brand, the decline in sales is gradual due to carryover effects [Ehrenberg 1983; Little 1980]. Consumers generally are in the habit of purchasing the brand and continue to buy it, at least in the short-run, because they are relatively satisfied with it. In fact, research conducted at Anheuser-Busch [Ackoff and Emshoff 1975] revealed that sale of the leading brand of beer, Budweiser, remained stable for over a year and a half in the absence of advertising due to advertising carryover effects.

Clarke [1976] estimated that, in general, carryover effects last less than a year but are quite substantial nonetheless. After correcting for a data interval bias, Clarke determined that 90% of the carryover effects of advertising on sales of mature, frequently purchased, low-priced products occurs within *three to nine months* of when the advertising ceases.

However, advertisers may want to be able to predict at what point a *significant* percentage, *perhaps less than 90%*, of the carryover effects of advertising has occurred. If they can predict this, they can resume advertising just before brand sales would exhibit a noticeable decline. The Clarke model can be used to predict this, but it must be assumed that decay is exponential and this might not be a valid assumption. Another option is to use a test market as a leading indicator. Advertising can be eliminated in the test market before it is eliminated in the entire market. Then, when sales begin to exhibit a noticeable decline in the test market, advertising can be resumed in all markets [Stewart 1988].

A Critique of the Two-Stage Learning Model

The Two-Stage Learning Model has been supported by field (and quasi-field) studies in which exposures to the test ads are voluntary an distributed, and the dependent variables are measured after a delay. Hence, it is more likely that this model generalizes to the typical advertising exposure situation than the Two-Stage Cognitive Response Model discussed earlier.

However, even the Learning Model appears to be overly simplistic. More recently, it has been found that the exposure levels at which wearin and wearout occur appear to be contingent on several mediating variables that are not discussed in the model [Batra and Ray 1986; 1984; Petty and Cacioppo 1986; Cacioppo and Petty 1985; Sawyer 1981; Axelrod 1980; Naples 1979]. These variables will be discussed in the third and final section of this paper.

More Recent Studies on Advertising Repetition: Other Variables That Influence Wearin and Wearout

More recent studies on advertising repetition have focused almost exclusively on identifying mediating variables that significantly influence wearin and wearout. Work in this area is only just beginning, and many mediating variables probably have not been identified yet. However, three such variables already have been identified: (1) whether the ad persuades via emotional images or verbal arguments, (2) whether initially it is a high or low-scoring ad (for example, whether the verbal arguments are strong or weak), and (3) whether or not consumers are motivated and able to process the ad (for example, whether consumers purchase the advertised brand and what the level of competitive advertising or clutter is). The impact of these three mediating variables on wearin and wearout will be discussed below.

Note that laboratory, quasi-field, and field results pertaining to the same mediating variable will be discussed simultaneously because the effect of a variable on wearin and wearout appears to be the same regardless. For example, there is no indication that there is an interaction between the timing of exposures (massed versus distributed) and any of these other mediating variables.

Emotional Images Versus Verbal Arguments

It has been suggested that ads with emotional images elicit 'imagery' processing whereas ads with verbal arguments elicit 'discursive' or cognitive processing [MacInnis and Price 1987]. That is, it has been suggested that these two types of ads persuade in two fundamentally different ways. As a result, these two types of ads also might differ in terms of how quickly they wearin or wearout. For example, it is commonly believed that 'soft sell' ads which persuade via emotional images *wear out more slowly* than 'hard sell' ads which persuade via verbal arguments [see Silk and Vavra 1974; Ray and Sawyer 1971].

These notions now have some empirical support. A recent laboratory study [Hitchon, Thorson and Zhao 1988] has demonstrated that ads which elicit highly positive emotional reactions wear out more slowly than ads which do not elicit much emotion. More specifically, this study found that when an ad is unemotional, attitudes towards the ad deteriorate by the fourth exposure and both brand attitudes and purchase intentions deteriorate by the eighth exposure. In contrast, when an ad is highly emotional, neither attitudes towards the ad nor attitudes towards the brand deteriorate even after twelve exposures, and the deterioration of purchase intentions is much more gradual. This study also found that a highly positive emotional response towards the advertised

TABLE 3

Other Variables that Influence Wearin and Wearout

Interpretation	Specific Empirical Results
Image or emotional ads wear out more slowly than verbal messages	—Classical conditioning occurs even during the 20th lab exposure[9] [Stuart, Shimp & Engle 1987]
	—There is little or no wearout even after 12 lab exposures if the ad is emotional, whereas wearout occurs by the 8th exposure if the ad is emotional [Hitchon, Thorson & Zhao 1988]
Low scoring ads (weak messages) do not benefit from repetition	—Recall and persuasion decline with each successive exposure [Blair 1987; Cacioppo & Petty 1980; Appel 1971]
High motivation/ability to process leads to faster wearin; low motivation/ ability to process leads to slower wearin	—Purchasers of the advertised brand increase their purchases even at low exposure levels; nonpurchasers may not buy it even at high exposure levels [Tellis 1988; Raj 1982; Sawyer 1973]
	—Given high motivation/ability, even 1 lab exposure increases purchase intentions; given low motivation/ability, purchase intentions do not increase until the 4th lab exposure [Batra & Ray 1986]
	—Recall increases after each lab exposure if there are not ads for competing brands; recall of an ad is low even after 3 lab exposures if there are ads for competing brands [Burke & Srull 1988]
. . . but high motivation/ability to process also leads to faster wearout	—Purchasers of the advertised brand increase their purchases at low exposure levels but not at high [Tellis 1988]
	—Given high motivation/ability, purchase intentions decline after only 2 lab exposures [Batra & Ray 1986]
	—Given a longer ad, purchase intentions decline after only 3 lab exposures [Rethans, Swasy & Marks 1986]

[9]Relative to ordinary exposures, lab exposures are required & massed.

TABLE 4

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Appel [1971]	Appropriate households members	Voluntary (field)	Distributed: Ads were broadcast on television	81 different 60 second TV ads for 31 different brands. Compared ads scoring above average on recall vs. below average	Unknown, but recall was reassessed one week to several years after the ad was first broadcast and first tested.	Difference in observed vs. expected day-after recall scores during the retest
Batra & Ray [1986]	131 housewives	Required (lab)	2 exposures were distributed over 2 weeks, but 4 exposures were massed (2 per week)	6 different TV ads: 3 promoted leading brands, 3 promoted nonleading brands	1, 2, or 4 exposures to the same ad	1) Unaided brand name recall 2) Brand familiarity 3) Brand attitudes (6 semantic differentials) 4) Brand purchase intentions (7 point scale)
Belch [1982]	260 adults	Required (lab)	Massed: The ad was embedded in a one-hour television program	TV ad for a fictitious brand of toothpaste	1, 3, or 5 exposures to the same ad	1) 2 minute thought listing 2) Attitudes towards using the brand (4 semantic differentials) 3) Intentions to try the brand (3 semantic differentials) 4) Unaided recall 5) Aided recall (6 multiple choice questions)

Blair [1987]	Adults	Voluntary (field)	Distributed: Each ad appeared on regular TV as regularly scheduled	20 TV ads promoting a variety of consumer packaged goods & services; some were "image" ads and some were low-scoring	Unknown, but additional GRPs ranged from 4200–334	The difference between actual and expected post-exposure preferences for the advertised brand vs. competing brands
Burke & Edell [1986]	184 people within a university community	Voluntary (field) plus 1 required (lab) exposure	Distributed: Ads appeared on sports broadcasts during a 4 month season and a 48 hour tournament	9 TV ads promoting well known brands, some competing	Single, normal or intense exposure	1) Attitudes toward the ad on 34 (5 point) adjective scales 2) Overall opinion of the ad (7 point scale)
Burke & Srull [1988] Experiment 3	96 college undergrads	Required (field)	Massed: The ad was embedded in a stimulus set of 22 ads; exposure was self paced	Photos (slides) of real magazine ads for a watch, running shoe, beer, or car	1, 2, or 3 exposures to the same ad. Also, 0–3 exposures to ads for competing brands	1) Aided recall of information about the advertised brand and ad 2) Free recall 3) Brand purchase likelihood (9 point scale) 4) Ad interest ratings (9 point scale)
Cacioppo & Petty [1979]	326 college undergrads	Required (lab)	Massed (consecutive): Participants heard taped messages on headphones	8 short arguments in favor of increasing university expenditures	1, 3, or 5 exposures to the same ad	1) Agreement with advocated stance (15 point scale) 2) Unaided recall of message arguments 3) 3 minute thought listing

TABLE 4 (continued)

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Cacioppo & Petty [1980] Experiment 1	159 college undergrads	Required (lab)	Massed (consecutive): Participants heard taped messages on headphones	5 short counter-attitudinal arguments in favor of either a ban on alcohol on campus or an increase in the driving age to 21	1, 3, or 5 exposures to the same ad	1) Thought listing 2) Evaluation of the advocacy (on 4 scales) immediately afterwards, and again one week later 3) Unaided recall of message arguments
Cacioppo & Petty [1980] Experiment 2	133 adults	Required (lab)	Massed (consecutive); Participants heard taped messages on headphones	7 strong, weak, or novel arguments for why the subscription price of a local paper would be increased	1, 3, or 5 exposure to the same ad	1) 2.5 minute thought listing 2) Unaided recall of message arguments 3) Attitude towards the price increase (11 point scale) 1–2 weeks later
Calder & Sternthal [1980]	243 undergrads and graduate students	Required (lab)	Massed and distributed: Ads were embedded in one-hour TV shows; students attended either 1, 3 or 6 biweekly sessions	6 TV ads for 2 nationally distributed brands, 1 an unfamiliar brand and 1 a familiar nonsupermarket brand	3 exposures to the same ad or to 3 different ads promoting the same brand—for 1, 3, or 6 sessions	1) Reactions to using the brand (on 5 semantic differential scales, later factor analyzed) 2) 3 minute thought listing 3) Ratings of ads (on 16 scales, later factor analyzed)

Cook & Insko [1968]	298 college undergrads	Required (lab)	Distributed: Reexposure took place approx. 2 days later, via postcards	2,300 and 1,900 word tape recorded arguments that the U.S. president should be elected by Congress	1 vs. 2 (but reexposure was to the conclusion only, not to the entire argument)	Agreement with the advocated stance after a 0, 4, 7, or 11 day delay (11 point scale)
Craig, Sternthal & Leavitt [1976] Experiment 1	180 college undergrads	Required (lab)	Massed: Consecutive 5 second exposures to test ads (on slides)	12 print ads (products not specified)	7, 14, or 21 exposures to each of the 12 ads	Unaided recall of the brand names after a 0, 1, 7, or 28 day delay
Craig, Sternthal & Leavitt [1976] Experiment 2	70 college undergrads	Required (lab)	Massed: Consecutive 5 second exposures to test ads & 8 control ads (on slides)	8 print ads promoting TWA, Amelia Earhart, *Vanity Fair*, Sears, Porsche, Buxton, VW, & Jantzen	6, 12, 18, or 24 exposures to each of the 8 ads	Unaided recall of the brand names after a 0, 2, 7, 14 or 28 day delay
Cromwell & Kunkel [1958]	248 college undergrads	Required (lab)	Distributed: A 2nd exposure took place 30 days later	2 eight minute tape recorded speeches regarding the role of the U.S. federal government	1 vs. 2 exposures to the same speech	Predicted vs. actual post-exposure attitudes toward the advocated stance

TABLE 4 (continued)

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Gorn & Goldberg [1980]	151 boy scouts (8–10 yrs old)	Required (lab)	Massed: Ads were embedded in a 30 minute TV program	5 30 second TV ads promoting an unfamiliar brand of ice cream (Danish Hill)	0, 1, 3, or 5 exposures to the same ad, or 3 or 5 exposures to different ads for the same brand	1) Preference for the brand (5 point scale) 2) Preference for ice cream as a snack (rank order of 4 snacks) 3) Aided recall of brand name and # flavors 4) Amount of ice cream consumed
Grass & Wallace [1969] Experiment 1	800 adult product users	Voluntary (field)	Distributed: Ads broadcast on TV for 15 months	8 different TV ads promoting the same consumer product	Unknown, but most variables were assessed 4, 7, 10, and 15 months after each ad was first broadcast	1) Day-after recall of principal copy points 2) Day-after attitudes toward the brand (3 point scale) 3) Day-after intent to try to repurchase the brand (3 point scale) 4) Attitudes toward ad (3 point scale)

Grass & Wallace [1969] Experiment 2	200 adult product users	Voluntary (field and quasi-field)	Massed: Ads were embedded in a 30 minute film; in addition they were broadcast on TV for 15 months	5 different TV ads promoting the same consumer product (3 60 second ads and 2 30 second ads)	6 exposures to 5 ads for the same brand, or 4 exposures to the same ad and 2 exposures to a different ad for the same brand, or 6 exposures to the same ad	Interest in or attention to the ad as measured by Conpaad (amount of work performed)
Grass [1970] [in Greenberg & Suttoni 1973]	Adults	Voluntary (field)	Distributed: The ad was broadcast on TV for 12 weeks	A TV ad for a consumer product	Rate of exposure to the ad was light (1–3 exposures/ month) medium (4–6 exposures), or heavy (7–12 exposures)	Brand name recall
Grass [in Greenberg & Suttoni 1973]	Adults	Voluntary (field)	Distributed: The ad was broadcast on TV for 8 months	A TV ad for a consumer product	Unknown, but recall was assessed monthly starting when the ad was first broadcast	Brand name recall

TABLE 4 (continued)

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Hitchon, Thorson, & Zhao [1988]	53 college undergrads	Required (lab)	2 and 4 exposures were distributed over 4 days, but 6 & 12 exposures were massed (2–3 per day)	Actual TV ads promoting 16 different noncompeting products & services. There were 2 types of products: low emotion & high emotion. There were also 2 types of ads: low emotion & high emotion	2, 4, 6, or 12 exposures to the same ad for each of the 16 test brands (across the 4 sessions)	1) Brand name recall (% recall) 2) Attitudes toward ad (1–7 scale) 3) Attitudes toward brand (1–7 scale) 4) Purchase intentions (1–7 scale)
Johnson & Watkins [1971]	76 college undergrads	Required (lab)	Massed: There was a 20 second delay between consecutive exposures	350 word tape recorded argument against the use of chest x-rays to detect TB	1 vs. 5 exposures to the same argument	1) Agreement with the advocated stance (on 2 15 point scales) 2) Aided recall of the message (fill in 20 blanks) 3) Agreement with the advocated stance 4 weeks after exposure (on 2 15 point scales)

Krishna-murthi, Narayan & Raj [1986]	900 Adtel panelists	Voluntary (field)	Distributed: Advertising appeared on regular TV for 52 weeks (baseline) plus 24 weeks (experiment)	TV advertising for a frequently purchased, dominant brand	Normal GRPs vs. twice the normal	Self reported purchases of each of the brands in the product category (panel diary data)
Marplan [in Greenberg & Suttoni 1973]	Adults	Voluntary (quasi-field)	Distributed: Repeated exposures took place over an 8 week period	TV ads	4–24 exposures to the same ad	Viewer interest or attention as measured by an eye-camera
McCollough & Ostrom [1974]	57 college undergrads	Required (lab)	Massed: Experimenter incrementally exposed each ad via 4 45 second slides	10 magazine ads—5 different ads for Yardley after shave and 5 different ads for the United Service Organization	1–5 exposures to different ads promoting the same brand	Thought listing regarding the ad after *each* incremental exposure
Raj [1982]	829 Adel panelists classified on the basis of brand loyalties	Voluntary (field)	Distributed: The ad campaign was broadcast on TV for 200 weeks	"Mood" advertising for a frequently purchased, readily available grocery store item, the leader in the category	400 GRPs vs. 630 GRPs for 100 weeks	Self reported weekly purchases of each of the brands in the product category (panel diary data)

TABLE 4 (continued)

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Ray & Sawyer [1971]	168 adult female shoppers	Required (lab)	Massed: Consecutive exposures to 9 test ads & 20 control ads	18 print ads for 9 consumer packaged goods (mouthwash, soap, soup, etc.) and for 9 durables (TVs, washing machines, garments); 4 were hard sell, 14 were not; some promoted well known brands, some lesser known brands	1–6 exposures to each of 9 test ads either for the packaged goods or the durables	1) Unaided recall of the ad 2) Brand attitudes (6 point scale) 3) Intentions to purchase the brand (choice of 1 brand) 4) Coupon return rate
Rethans, Swasy & Marks [1986]	130 college undergrads	Required (lab)	Massed: The test ads were embedded in a 40 minute TV program	A 30 second and a 90 second TV ad for the Kodak Disc camera *before* it was launched	1, 3, or 5 exposures to either the longer or shorter ad	1) Thought listing 2) Aided recall of 5 product claims made in the ad 3) Desire to see ad again (3 semantic differentials) 4) Attitudes towards the ad, product, & company (3 semantic differentials) 5) Brand purchase intentions (2 semantic differentials)

Ronis et al. [1977]	72 college undergrads	Required (lab)	Massed: Consecutive exposures took place either every 2 or 8 minutes	75–175 word written messages on 36 different topics regarding past U.S. presidents, socio-political issues or consumer questions	1–3 exposures to the same message for each of several messages	Option change (treatment-control) after either a 0, 2 minute, or 8 minute delay. Agreement with the advocated stance was measured on a 15 point scale
Ronis [1980]	98 college undergrads	Required (lab)	Massed: The average interval between repetitions was approximately 10 minutes	Messages about fictitious brands of consumer products (such as a car and furniture polish) displayed on a TV monitor	1 vs. 3 exposures to the same message for each of several messages	Product ratings on a 15 point scale (poor to excellent) measured post-exposure and (again) after a 10 minute delay
Sawyer [1973]	240 adult female shoppers classified on the basis of brand loyalties	Required (lab)	Massed: 10 second consecutive exposures to 5 test ads, 5 ads for competing brands & control ads for a total of 47 10-second exposures	Refutational and supportive print ads for each of 5 brands: Parker pens, Bayer aspirin, Renault cars, Lava soap, & Slender diet drink	1-6 exposures to either a refutational or supportive ad for each of the 5 brands	1) Unaided recall of the ad's principal copy points 2) Brand attitudes (6 point scale) 3) Intention to purchase the brand 4) Coupon return rate

TABLE 4 (continued)

Study	Research Participants	Type of Exposure	Timing of Exposures	Type of Message	# Message Exposures	Dependent Variables
Schumann, Petty & Clemons [1988]	494 college undergrads	Required (lab)	Massed: 25 second consecutive exposures to 15–20 test & control ads (on slides)	Print ads promoting a fictitious brand of pen (Omega 3). 8 ads had cosmetic variations (different endorsers, layout, etc) & 8 ads had substantive variations (different message arguments).	Either 1, 4 or 8 (study 1) or 1, 3 or 5 (study 2) exposures to either the same ad, to different ads with cosmetic variations, or to different ads with substantive variations.	1) Attitude towards the product (4 semantic differentials) 2) Attitude towards the ad (2 semantic differentials) 3) Unaided recall of products and brands 4) Aided recall of message arguments 5) Behavioral intentions (3 semantic differentials)
Tellis [1988]	251 IRI panelistics in a test city classified on the basis of brand loyalties	Voluntary (field)	Distributed: Ads appeared on regular TV as regularly scheduled throughout the year	Actual TV ads promoting various brands of toilet paper	0-7 exposures per week as measured by meters in panelists' homes	# units (rolls) purchased per week

Zielske [1959]	3,650 adult females	Voluntary (field)	Distributed: Consecutive exposures took place either every week for 13 weeks or every 4 weeks for 1 year	13 different newspaper ads promoting the same brand—a food that is a staple in every home	Exposure to 1–13 different ads promoting the same brand	Aided recall of what the ad look like and principal copy points (telephone interviews conducted throughout the year)
Zielske & Henry [1980]	25,000 adults	Voluntary (field)	Distributed: Ads were broadcast on TV for a period of time ranging from 13–52 weeks	17 TV ads promoting 6 products and services; all were established brands not heavily advertised on a continuing basis; included were a variety of food and automotive products, and several retail, transportation, and financial service organizations	Unknown, but recall was assessed after exposure of 100 GRPs/wk for 13 weeks, 50 GRPs/wk for 26 weeks, 25 GRPs/wk for 52 weeks or 100 GRPs at 4 week intervals for 52 weeks	Unaided recall (details not specified)

Note: All dependent variables are measured immediately after exposure unless otherwise indicated.

product also forestalls wearout effects, but to a lesser extent than does a highly positive emotional response towards the ad.

Similarly, laboratory studies have demonstrated that classical conditioning of what are essentially image or emotional ads (brand names paired with pleasant scenes) occurs with each successive exposure even at very high exposure levels. For example, recently it has been shown that classical conditioning occurs even during the twentieth required and massed exposure in that brand attitudes continue to improve [Stuart, Shimp and Engle 1987]. In contrast, as indicated in Table 1, wearout of verbal messages typically occurs starting with the fourth required and massed exposure in that brand attitudes begin to deteriorate.

Initially High Versus Low Scoring Ads (Strong Versus Weak Arguments)

If expectations for an ad are high, but the ad scores poorly when tested, this disappointing result typically is viewed with skepticism. Frequently, it is argued that the ad will improve with repetition. This argument is particularly likely to be made in defense of ads which persuade via *emotional imagery*, because such ads purportedly *wear in more slowly* as well as wear out more slowly [Blair 1987]. This argument is intuitively plausible, but it has not been supported empirically.

Several different studies have found that if an ad scores poorly under optimal exposure conditions (i.e. conditions which virtually insure *immediate wearin*, if wearin is to occur, such as in-theater testing), it will not benefit from repetition even if it is an image or emotional ad [Blair 1987; Greenberg and Suttoni 1973; Appel 1971; Ray and Sawyer 1971]. Similarly, it has been found that verbal arguments explicitly constructed to be weak will not benefit from repetition [Petty and Cacioppo 1986; Cacioppo and Petty 1980]. If under optimal conditions an ad scores poorly on recall or persuasion, after each additional exposure its score will drop even lower or, at best, remain unchanged.

Consumers' Motivation and Ability to Process the Ad

Recent empirical evidence indicates that when consumers are *highly motivated* to process an ad and are *able* to do so, *wearin in accelerated*, i.e., fewer repetitions are needed before the ad will have a positive effect. However, *wearout also is accelerated*, i.e., fewer repetitions also are needed before the ad will have no effect or even a negative effect. Finally, it has been found that when consumers are *not motivated* to process an ad and/or are *unable* to do so, *wearin is retarded* (which, simply by definition, retards wearout).

The prediction that people's motivation and ability to process a persuasive message are important mediating variables in the persuasion process, is grounded in the Elaboration Likelihood Model of Persuasion [Schumann,

Petty and Clemons 1988; Petty and Cacioppo 1986; Batra and Ray 1986; 1984]. This Model has received substantial empirical support in recent years. Hence, it is beginning to have a major impact on research regarding advertising repetition.

Recent studies either manipulated or measured consumers' motivation and ability to process the test ads in the following manner. Consumers with high motivation and ability to process met one or more of the following criteria. They: (1) already purchased the advertised brand; (2) already were knowledgeable; (3) cared about the decision; (4) had sufficient time to process a TV ad because it was long; and/or (5) were not exposed to ads promoting competing brands in the product category. Correspondingly, consumers with low motivation and ability to process met one or more of the following criteria. They: (1) did not already purchase the advertised brand; (2) were not already knowledgeable; (3) did not care about the decision; (4) did not have sufficient time to process a TV ad because it was short; and/or (5) were exposed to ads promoting competing brands in the product category.[5]

The following results have been obtained in both field studies [Tellis 1988; Raj 1982] and a laboratory study [Sawyer 1973] that have examined how consumer brand loyalties influence wearin and wearout.

These studies found that consumers who *already purchase* the advertised brand are very responsive to ads promoting it and increase their purchases of it (i.e. stockpile) even at very low exposure levels. That is, *wearin is accelerated.* However, *wearout also is accelerated* in that advertising at higher exposure levels actually has a negative effect relative to advertising at lower expsure levels. For example, Tellis [1988] found that consumers who regularly purchase the advertised brand increase their purchases of it when exposed to two ads per week, but do not increase their purchases of it when exposed to four ads per week.

These studies also found that consumers who *do not already purchase* the advertised brand, and purchase other competing brands, react very differently. Typically, these consumers are not responsive to ads promoting the advertised brand and do not increase their purchases of it even at very high exposure levels. That is, *wearin is retarded.* In fact, wearin may never occur at all; the ad may never have a positive effect on this particular group of consumers since it is counter-attitudinal.

Similar results were obtained in a recent quasi-field study [Batra and Ray 1986]. The objective of this particular study was to manipulate consumers' motivation and ability to process an ad, and to do so the advertised brand's market share was manipulated as well as two other variables. Ads constructed so that consumers would be highly motivated and able to process them promoted leading brands in product categories that consumers cared about and were knowledgeable about. In contrast, ads constructed so that consumers

would not be highly motivated, nor able to process them, promoted nonleading brands in product categories that consumers did not care about and were not knowledgeable about.

This study found that even one exposure to the high motivation/ability ads increases purchase intentions for the advertised brands, but the fourth exposure actually produces a decline in purchase intentions. That is, given *high motivation/ability, wearin is accelerated but so is wearout.* In contrast, the first few exposures to the low motivation/ability ads do not increase purchase intentions for the advertised brands, but the fourth exposure produces a significant increase in purchase intentions. That is, given *low motivation/ability, wearin is retarded* (which, by definition, retards wearout).

Yet another recent study, a laboratory study, attempted to determine how prior knowledge and ad length mediate repetition effects [Rethans, Swasy and Marks 1986]. Unfortunately, the prior knowledge manipulation apparently was unsuccessful due to a floor effect. More specifically, the test ad promoted a *novel* product that had not yet been launched (the first Kodak disc camera) so even the so-called 'knowledgeable' group of consumers had no knowledge of the advertised brand.

The ad length manipulation essentially manipulated consumers' ability to process the ad. Exposing consumers to a longer TV ad facilitated processing by giving consumers more time to process it. Exposing consumers to a shorter TV ad hindered processing by giving consumers less time to process it [Petty and Cacioppo 1986].[6]

The findings discussed in this final section of the paper are summarized in Table 3.

This study found that a *longer* TV ad (90 seconds long versus only 30 seconds) *wears out* after only the third required and massed exposure in that purchase intentions actually decline. In contrast, a *shorter* TV ad continues to wear in or enhance, purchase intentions even during the sixth required and massed exposure (which, by definition, means slower wearout).

Finally, the following results have been obtained in a laboratory study on how the number of ads for competing brands influences wearin [Burke and Srull 1988; see also Geiger 1971].

This study found that when people are not shown ads for competing brands, their recall of the test ad increases after each of three exposures. That is, given the *maximum 'share of voice'*, the ad *wears in immediately* or has an immediate positive effect. Under this condition, the lower region of the advertising/sales response function is concave.

In contrast, when people are shown ads for competing brands, their recall of the test ad is low even after three exposures. That is, given a *low 'share of voice'*, the ad *does not wear in* or have a positive effect even during the third exposure. Under this condition, the lower region of the advertising/sales response function is S-shaped. Presumably, even three exposures will not

strengthen the brand-attribute associations enough to exceed the minimum level necessary for information retrieval.

Conclusions and Future Research Directions

Conclusions

This paper presents a comprehensive review of the literature on advertising repetition, with a focus on wearin and wearout as opposed to advertising carryover effects. This review contributes to our understanding of advertising repetition in two ways. First, it integrates the empirical studies and conceptual papers of psychologists, consumer behaviorists, advertising practitioners, and marketing modelers. Secondly, it provides a framework for organizing the literature and for demonstrating that seemingly incongruent findings are complementary. On the basis of this review, the following four conclusions can be drawn:

1. When consumers are required to pay attention to an ad, when exposures to the ad are massed, and when the dependent variables are measured immediately after exposure, if wearin occurs at all it occurs immediately. That is, even a single exposure to the ad produces positive effects in that consumers recall the information in the ad and have more favorable brand attitudes and purchase intentions. However, with each successive exposure, favorable thoughts, brand attitudes, and purchase intentions steadily increase and peak at approximately three exposures.

   Starting with approximately the fourth exposure, wearout of the ad begins. That is, additional exposures actually produce negative effects in that favorable thoughts, brand attitudes, and purchase intentions begin to decline, although recall may continue to increase.

   These results can be explained by a Two-Stage Cognitive Response Model. This model states that at low exposure levels, negative cognitive responses (counterarguments) outnumber positive cognitive responses. During the third exposure, positive cogntive responses (support arguments) outnumber negative cognitive responses. At still higher exposure levels, negative cogntive responses (complaints about the ad being tedious and/or counterarguments) increasingly outnumber positive cognitive responses.[7]
2. In contrast, when consumers are not required to pay attention to an ad, when exposures to the ad are distributed, and when the dependent variables are measured after a delay, even if wearin occurs it may not occur immediately. That is, the first exposures to the ad may not produce any positive effects in that consumers may not recall the persuasive informa-

tion in the ad and brand sales may not increase. Consumers may need to be exposed to the ad multiple times before it will wear in or have positive effects.

Furthermore, an ad campaign may continue to have a positive effect in terms of maintaining brand sales even at very high exposure levels—if consumers are exposed to a series of ads, and if the exposure rate is relatively low. However, it is not yet known what constitutes a 'series of ads' and a 'low exposure rate'; this must be the subject of future research. In addition, it is possible that brand sales can be maintained at the same level for an extended period of time even in the absence of advertising, due to advertising carryover effects. This also is a form of wearout, and it also merits further attention.

These results can be explained by a Two-Stage Learning Model. This model states that during wearin, consumers learn favorable information about the advertised brand (and perhaps also elicit more positive cognitive responses). Afterwards, repetition leads to more thorough learning and forestalls forgetting, thereby reinforcing or maintaining brand sales.

3. Several other variables also mediate wearin and wearout. For example, ads which persuade via emotional images wear out more slowly than ads which persuade via verbal arguments. Ads that initially are low-scoring (such as ads with weak verbal arguments) do not improve with repetition. When consumers are highly motivated and able to process an ad (such as when they purchase the advertised brand and there is a low level of competitive advertising or clutter), this leads to faster wearin, but also to faster wearout. When consumers are not highly motivated and/or not able to process an ad, this leads to slower wearin (which, simply by definition, leads to slower wearout).

   These findings have important implications. For example, it appears that when consumers are highly motivated and able to process an ad, a highly emotional ad should be used so as to forestall wearout. However, perhaps the most important implication of these findings is that they demonstrate that a contingency model is needed to fully explain the effects of advertising repetition. Both the Two-Stage Cognitive Response Model and the Two-Stage Learning Model are overly simplistic because these models essentially ignore the fact that repetition effects are contingent on several mediating factors.

4. Many brands in the domestic market of the U.S.A. already have strong consumer franchises, but realistically cannot expect to increase their sales or market shares significantly because they face stiff competition and low product category growth. For brands such as these, continuing to advertise may not lead to significant increases in brand recall, favorable attitudes, or sales. However, this does not mean that advertising should be discontinued. In fact, continuing to advertise may be imperative. Other-

wise brand recall, attitudes and sales may decline, particularly if competitors continue to advertise [Ehrenberg 1983].

Hence, if advertising is being done to defend a brand's consumer franchise, deciding whether or not to continue to advertise should not be based on whether or not brand sales are increasing. Rather, this decision should be based on whether or not brand sales will decline if advertising ceases.

Future Research Directions

Based on the comprehensive review of the comparative advertising literature presented in this paper, the following recommendations can be made regarding research that should be pursued in the future:

1. In order to determine whether ot not an ad will wear in or have significant positive effects the first time consumers are exposed to it, studies must include a control group that is not exposed to the test ads. Unless baseline brand attitudes, purchase intentions, and brand sales are known, it cannot be determined whether the first exposure to a test ad has significant positive effects on these dependent variables.
2. Empirical results on comparative advertising are highly sensitive to the following three mediating variables: (1) whether the ad persuades via emotional images or verbal arguments, (2) whether initially it is a high or low scoring ad (for example, whether the verbal arguments are strong or weak), and (3) whether or not consumers are motivated and able to process the ad (for example, whether consumers purchase the advertised brand and what the level of competitive advertising or clutter is). Hence, in the future these variables either must be explicitly controlled for or manipulated. Additional studies also should be done to further investigate the effects of these and other variables on advertising wearin and wearout.
3. Empirical results regarding advertising repetition are highly sensitive to characteristics of the research paradigm that is employed. For example, different results are obtained depending on whether advertising exposures are required or voluntary, and massed or distributed. As a result, the more dissimilar advertising exposures in the laboratory are to advertising exposures in the real world, the less likely it is that the laboratory results will generalize directly to the real world. For this reason, it is very important to conduct ecologically valid experiments [Brunswik 1956].

   Of course, this does not mean that laboratory research should be abandoned entirely in favor of field studies. Controlled experimentation is the only means for building explanatory models of advertising effects. How-

ever, it appears that a more concerted effort should be made to insure that advertising exposures in the laboratory stimulate advertising exposures in the real world in important ways. For example, since consumers in the real world often are exposed to ads sporadically and do not pay much attention to them, advertising exposures in the laboratory probably should be distributed rather than massed, and voluntary rather than required.

Furthermore, further attention should be devoted to undertanding how the methodologies and measures employed in laboratory and field studies influence the results that are obtained. In this way, the utility of different approaches to studying advertising repetition can be evaluated and the need for new approaches can be ascertained. Furthermore, if laboratory and field results differ only in magnitude, perhaps these differences can be documented and laboratory results can be extrapolated to the field.

Finally, perhaps more concerted efforts should be made to conduct controlled field studies in collaboration with professional advertising testing services. The opportunities for measuring advertising exposures in the home, and for correlating these exposures with actual brand purchases in the stores, have never been greater and should be fully exploited.

4. Since the effects of advertising repetition are highly sensitive to the exposure rate, this issue also should be explored further. Media scheduling is an issue that behavioral reserachers largely have ignored. Marketing modelers [for example, Rust 1986] have given the issue of media scheduling far greater attention, but typically they have analyzed secondary data at the aggregate level.

   Therefore, it would be useful to collect primary data and to analyze it at the individual level so as to better understand the relative effectiveness of different advertising exposure rates (or media schedules) given different contingencies (or independent variables) and different measures of advertising effectiveness (or dependent variables).

5. From the time a consumer is exposed to an ad to the time when this consumer makes a purchase decision pertaining to the advertised product, intervening events may distort or even eliminate the original impact of the advertising exposure [Baker and Lutz 1988]. Hence, it would be very informative to measure the effects of advertising after a delay instead of or in addition to immediately after exposure. Such data would greatly increase our understanding of the extent to which and the manner in which advertising effects are distorted or forgotten over time, and how repetition forestalls these undesirable effects.

   Furthermore, it would be very beneficial to identify factors that decrease advertising carryover effects (such as the length of the purchase

cycle and the level of competitive advertising), and then study whether advertising repetition counteracts these effects. It also would be beneficial to identify factors other than advertising repetition that prolong advertising carryover effects (such as advertising executional devices, point-of-purchase devices, and word-of-mouth), and then study whether advertising repetition magnifies these effects.

6. In the interests of brevity, this review has focused almost exclusively on how advertising repetition influences advertising wearin and wearout. Two issues that have not been addressed, but that need further attention, are these.

   First, further attention should be devoted to understanding the effects that take place after the ad has worn in but before it has begun to wear out. Once an ad has worn in, how *much* does each subsequent exposure increase brand recall, attitudes, purchase intentions, and sales before it eventually wears out? That is, what are the *rates* of these increases? Furthermore, how do moderating variables such as those discussed in this review (for example, consumers' motivation and ability to process an ad) influence the rates of these increases? Similarly, after an ad has worn out, how *much* does each subsequent exposure decrease brand recall, attitudes, purchase intentions, and sales? That is, what are the *rates* of these decreases? Furthermore, how do moderating variables such as those discussed in this review influence the rates of these decreases?

   In other words, since this review focused on the *general shape* of the advertising response function, the *magnitude* of the effects that are produced as the advertising exposure level increases should be addressed in a future review and in future research.

7. One final issue that should be explored further pertains to when and why using a series of ads forestalls advertising wearout, accelerates advertising wearin, and/or influences the rate at which repetition produces desirable or undesirable outcomes.

   Until recently, attention has been focused almost exclusively on using a series of ads to forestall wearout. However, a recent study by Schumann, Petty and Clemons [1988] suggests that using varied ads also can influence the rate at which repetition produces learning and attitude changes.

   Furthermore, until recently, very little attention has been focused on determining *how* ads should be varied, which inadvertently may have created the impression that the type of variation used is relatively unimportant. However, the Schumann, Petty and Clemons study [1988] found this not to be the case at all. In fact, whether an ad is varied cosmetically (by changing the spokesperson, layout, or the like) or substantively (by changing the message arguments that are made), may be very important indeed. More specifically, it was found that cosmetic variations mediate

repetition effects only under conditions of low motivation (or elaboration likelihood), whereas substantive variations mediate repetition effects only under conditions of high motivation (or elaboration likelihood).

One important implication of these findings is that when elaboration likelihood is low (which it often is), advertisers can vary an ad cosmetically in order to forestall wearout. They need not vary the ad substantively by changing the persuasive arguments that are made, which inadvertently might change the advertised brand's positioning rather than reinforcing its current positioning. However, perhaps the most important implication of these findings is to demonstrate that issues regarding advertising variation deserve far greater attention than they have received in the past.

Summary

In summary, a substantial amount of very valuable research already has been done on advertising repetition, namely on the wearin and wearout phenomena. However, further research is sorely needed to better understand these phenomena. Most importantly, research is needed to identify the mediating variables that influence wearin and wearout. Ultimately, this research will need an organizing framework that is likely to take the form of a contingency model. It is hoped that by organizing past research into an integrative framework, albeit not a contingency model, this paper will stimulate much needed additional empirical and conceptual work on advertising repetition.

Notes

1. The authors wish to sincerely thank Tony Zahorik, Russ Winer, Allan Kuse, and David Horne for their helpful comments on earlier drafts of this paper.
2. Note that if an ad never wears in, by definition wearout never occurs either. That is, wearin must always precede wearout.
3. Note that many studies did not measure attitudes and purchase intentions at zero exposures. If there is no baseline or control group, it is not possible to determine if the first exposure has a measurable positive effect or not, i.e., if wearin is immediate or delayed.
4. A follow-up study by Zielske and Henry [1980] essentially replicated these results using television ads. Advertising at 100 GRPs (gross rating points) per week for 13 weeks, at 25 GRPs per week for 52 weeks, and at various other rates continues to enhance advertising recall throughout the entire campaign.

5. Note that there are several other ways in which motivation and ability can and should be manipulated in future studies. For example, ability can be manipulated by varying the complexity of the message and the speed with which it is presented [Petty and Cacioppo 1986].
6. Manipulating the length of a broadcast (TV or radio) ad is an appropriate way of manipulating ability to process an ad, since exposure is not self paced. If a TV or radio ad is short, people cannot spend much time on it. (However, even if a print ad is short, people can spend as much time on it as they want to.)
7. Note that these results have important pragmatic implications for advertisers. Advertisers generally "copytest" their ads in laboratory or forced exposure settings to determine how effective their ads will be before actually airing them. Typically, a group of respondents is exposed to a given ad once time, and the ad's effectiveness is measured immediately afterwards. There has been some concern that one laboratory exposure is not sufficient to measure an ad's positive impact. This concern probably is unwarranted. It appears that one laboratory exposure is sufficient to measure how effective an ad will be immediately upon wearing in. However, one laboratory exposure probably does not predict an ad's "maximum" effectiveness because its effectiveness probably will increase with additional exposures (at least up to three exposures). Furthermore, since wearin is accelerated in laboratory settings, the results obtained in such settings do not necessarily predict the effect that an ad will have in the field. Intervening factors such as those cited in this paper will mediate the ad's actual effectiveness in the field.

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