1986

THE ELABORATION LIKELIHOOD MODEL OF PERSUASION

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ADVANCES IN EXPERIMENTAL
SOCIAL PSYCHOLOGY, VOL. 19

I. Introduction

The study of attitudes and persuasion began as the central focus of social psychology (Allport, 1935; Ross, 1908). However, after a considerable flourishing of research and theory from the 1930s through the 1960s, interest in the topic began to wane. Two factors were largely responsible for this. First, the utility of the attitude construct itself was called into question as researchers wondered if attitudes were capable of predicting behavior. Because of this concern, some even concluded that it might be time to abandon the attitude concept (Abelson, 1972; Wicker, 1971). Second, so much conflicting research and theory had developed that it had become clear that "after several decades of research, there (were) few simple and direct empirical generalizations that (could) be made concerning how to change attitudes" (Himmelfarb & Eagly, 1974, p. 594). Reviewers of the attitudes literature during the early 1970s lamented this sorry state of affairs (e.g., Fishbein & Ajzen, 1972). For example, Kiesler and Munson (1975) concluded that "attitude change is not the thriving field it once was and will be again" (p. 443).

By the late 1970s considerable progress had been made in addressing important methodological and theoretical issues regarding the first substantive problem plaguing the field—the consistency between attitudes and behaviors. Conditions under which attitudes would and would not predict behavior were specified (e.g., Ajzen & Fishbein, 1977, 1980; Fazio & Zanna, 1981) and researchers began to explore the processes underlying attitude–behavior correspondence (Sherman & Fazio, 1983; Fazio, 1985). The attitude change problem was slower to be addressed, however. In 1977, Muzifer Sherif asked "What is the yield in the way of established principles in regard to attitude change?" He answered that there was a "reigning confusion in the area" and a "scanty yield in spite of (a) tremendously thriving output" (p. 370). In a review that generally heralded the arrival of a new optimism in the attitudes field, Eagly and Himmelfarb (1978) noted that "ambiguities and unknowns still abound" (p. 544; see Cialdini, Petty, & Cacioppo, 1981; Cooper & Croyle, 1984, for more recent reviews).

As we noted above, the major problem facing persuasion researchers was that after accumulating a vast quantity of data and an impressive number of

theories—perhaps more data and theory than on any other single topic in the social sciences (see McGuire, 1985)—there was surprisingly little agreement concerning if, when, and how the traditional source, message, recipient, and channel variables (cf. Hovland, Janis, & Kelley, 1953; McGuire, 1969; Smith, Lasswell, & Casey, 1946) affected attitude change. Existing literature supported the view that nearly every independent variable studied increased persuasion in some situations, had no effect in others, and decreased persuasion in still other contexts. This diversity of results was apparent even for variables that on the surface, at least, would appear to be quite simple. For example, although it might seem reasonable to propose that by associating a message with an expert source agreement could be increased (e.g., see Aristotle's *Rhetoric*), the accumulated contemporary research literature suggested that expertise effects were considerably more complicated than this (Eagly & Himmelfarb, 1974; Hass, 1981). Sometimes expert sources had the expected effects (e.g., Kelman & Hovland, 1953), sometimes no effects were obtained (e.g., Rhine & Severance, 1970), and sometimes reverse effects were noted (e.g., Sternthal, Dholakia, & Leavitt, 1978). Unfortunately, the conditions under which each of these effects could be obtained and the processes involved in producing these effects were not at all apparent.

Our primary goal in this article is to outline a general theory of attitude change, called the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1981a), which we believe provides a fairly general framework for organizing, categorizing, and understanding the basic processes underlying the effectiveness of persuasive communications. Importantly, the ELM attempts to integrate the many seemingly conflicting research findings and theoretical orientations under one conceptual umbrella. The ELM began with our attempts to account for the differential persistence of communication-induced attitude change. After reviewing the literature on attitude persistence, we concluded that the many different empirical findings and theories in the field might profitably be viewed as emphasizing one of just two relatively distinct routes to persuasion (Petty, 1977; Petty & Cacioppo, 1978). The first type of persuasion was that which likely resulted from a person's careful and thoughtful consideration of the true merits of the information presented in support of an advocacy (central route). The other type of persuasion, however, was that which more likely occurred as a result of some simple cue in the persuasion context (e.g., an attractive source) that induced change without necessitating scrutiny of the true merits of the information presented (peripheral route). In the accumulated literature, the first kind of persuasion appeared to be more enduring than the latter (see Fig. 1; see Cook & Flay, 1978, and Petty, 1977, for reviews).

Following our initial speculation about the two routes to persuasion and the implications for attitudinal persistence (Petty, 1977; Petty & Cacioppo, 1978), we have developed, researched, and refined a more general theory of persuasion,

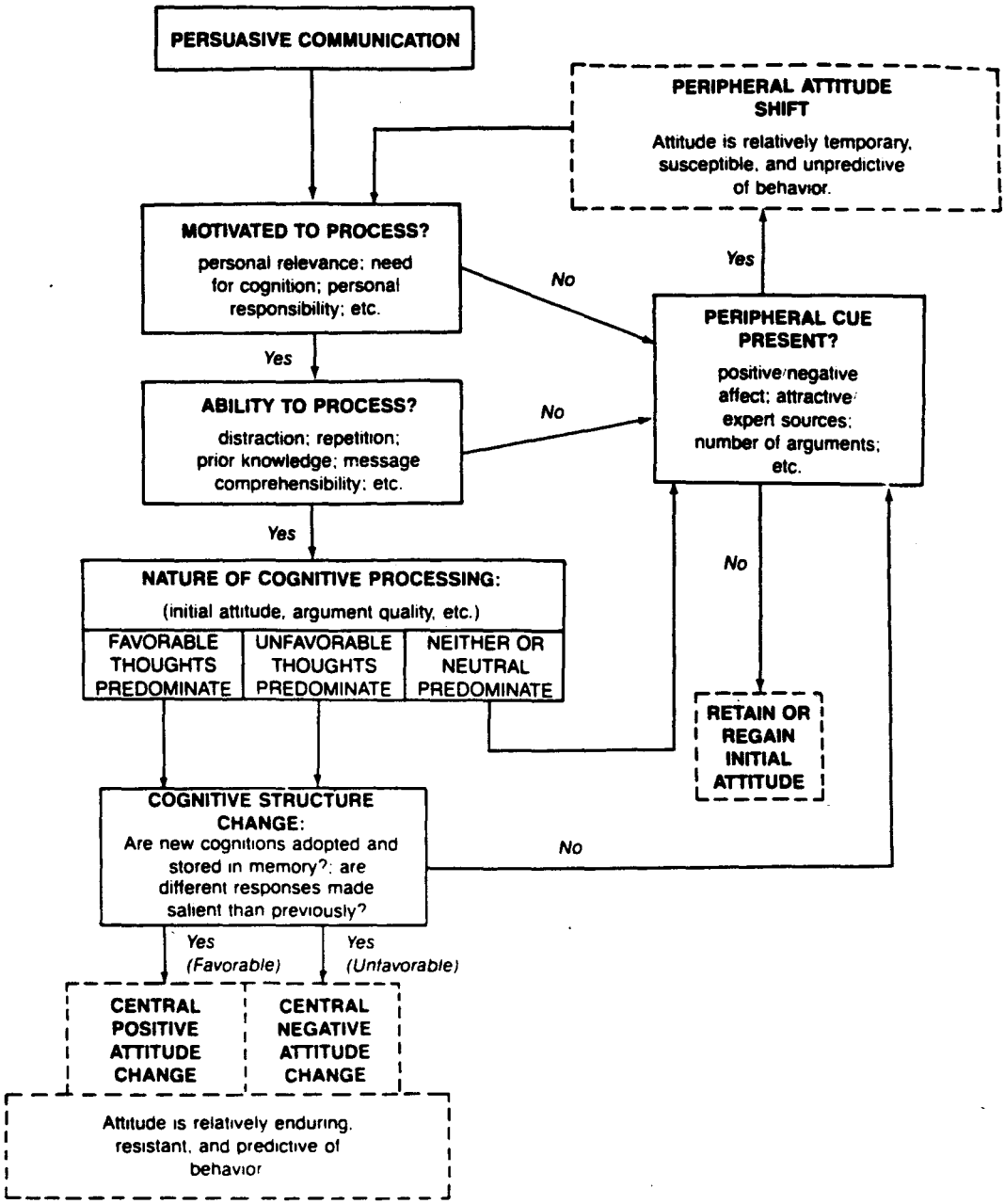

Fig. 1. Central and peripheral routes to persuasion. This figure depicts the two anchoring endpoints on the elaboration likelihood continuum (adapted from Petty, 1977; Petty & Cacioppo, 1978, 1981a).

the ELM, which is based on these two routes (Petty & Cacioppo, 1981a). In addition, we have addressed the various applications of this model to fields such as psychotherapy and counseling (Cacioppo, Petty, & Stoltenberg, 1985; Petty, Cacioppo, & Heesacker, 1984) and mass media advertising and selling (Caciop-

po & Petty, 1985; Petty & Cacioppo, 1983a, 1984b; Petty, Cacioppo, & Schumann, 1984). In the remainder of this article we will outline the ELM as a series of postulates that make explicit the guiding assumptions and principles of the model. We will also provide a methodology for testing the major processes outlined by the ELM and we will review research which provides evidence relevant to the framework.

Before outlining our model of attitude change, however, it is important to define our use of the term *attitude*. Consistent with the positions of other attitude theorists (e.g., Thurstone, 1928), we regard attitudes as general evaluations people hold in regard to themselves, other people, objects, and issues. These general evaluations can be based on a variety of behavioral, affective, and cognitive experiences, and are capable of influencing or guiding behavioral, affective, and cognitive processes. Thus, a person may come to like a new political candidate because she just donated $100 to the campaign (behavior-initiated change), because the theme music in a recently heard commercial induced a general pleasantness (affect-initiated change), or because the person was impressed with the candidate's issue positions (cognitive initiated change). Similarly, if a person already likes a political candidate he may agree to donate money to the campaign (behavioral influence), may feel happiness upon meeting the candidate (affective influence), and may selectively encode the candidate's issue positions (cognitive influence).

II. Postulate 1: Seeking Correctness

Our first postulate and an important guiding principle in the ELM agrees with Festinger's (1950) statement that:

> People are motivated to hold correct attitudes.

Incorrect attitudes are generally maladaptive and can have deleterious behavioral, affective, and cognitive consequences. If a person believes that certain objects, people, or issues are "good" when they are in fact "bad," a number of incorrect behavioral decisions and subsequent disappointments may follow. As Festinger (1954) noted, the implication of such a drive is that "we would expect to observe behavior on the part of persons which enables them to ascertain whether or not their opinions are correct" (p. 118). In his influential theory of social comparison processes, Festinger (1954) focused on how people evaluated the correctness of their opinions by comparing them to the opinions of others. In Section IX,B we address how the ELM accounts for attitude changes induced by exposure to the opinions of varying numbers of other people. But first we need to outline our other postulates.

III. Postulate 2: Variations in Elaboration

Postulate 2 states that:

> Although people want to hold correct attitudes, the amount and nature of issue-relevant elaboration in which people are willing or able to engage to evaluate a message vary with individual and situational factors.

By *elaboration* in a persuasion context, we mean the extent to which a person thinks about the issue-relevant arguments contained in a message. When conditions foster people's motivation and ability to engage in issue-relevant thinking, the "elaboration likelihood" is said to be high. This means that people are likely to attend to the appeal; attempt to access relevant associations, images, and experiences from memory; scrutinize and elaborate upon the externally provided message arguments in light of the associations available from memory; draw inferences about the merits of the arguments for a recommendation based upon their analyses; and consequently derive an overall evaluation of, or attitude toward, the recommendation. This conceptualization suggests that when the elaboration likelihood is high, there should be evidence for the allocation of considerable cognitive resources to the advocacy. Issue-relevant elaboration will typically result in the new arguments, or one's personal translations of them, being integrated into the underlying belief structure (schema) for the attitude object (Cacioppo & Petty, 1984a). As we will note shortly, sometimes this issue-relevant elaboration proceeds in a relatively objective manner and is governed mostly by the strength of the issue-relevant arguments presented, but at other times this elaboration is more biased and may be guided mostly by the person's initial attitude.

Of course, people are not motivated nor are they able to scrutinize carefully every message that they receive (cf. McGuire's, 1969, "lazy organism"), and it would not be adaptive for them to do so. As Miller, Maruyama, Beaber, and Valone (1976) noted, "It may be irrational to scrutinize the plethora of counterattitudinal messages received daily. To the extent that one possesses only a limited amount of information processing time and capacity, such scrutiny would disengage the thought processes from the exigencies of daily life" (p. 623). Current research in cognitive and social psychology provides strong support for the view that at times people engage in "controlled," "deep," "systematic," and/or "effortful" analyses of stimuli, and at other times the analyses are better characterized as "automatic," "shallow," "heuristic," and/or "mindless" (for further discussion, see Craik, 1979; Eagly & Chaiken, 1984; Kahneman, Slovic, & Tversky, 1982; Langer, 1978; and Schneider & Shiffrin, 1977).[1]

[1]See Petty and Cacioppo (1986) for discussion of the relationship between these distinctions and the central/peripheral distinction of the ELM.

A. THE ELABORATION CONTINUUM

One can view the extent of elaboration received by a message as a continuum going from no thought about the issue-relevant information presented to complete elaboration of every argument, and complete integration of these elaborations into the person's attitude schema. The likelihood of elaboration will be determined by a person's motivation and ability to evaluate the communication presented (see Fig. 1). In an earlier review of the attitude change literature (Petty & Cacioppo, 1981a), we suggested that the many theories of attitude change could be roughly placed along this elaboration continuum. At the high end of this continuum are theoretical orientations such as inoculation theory (McGuire, 1964), cognitive response theory (Greenwald, 1968; Petty, Ostrom, & Brock, 1981), information integration theory (Anderson, 1981), and the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein, 1980), which all assume that people typically attempt to carefully evaluate (though not always successfully) the information presented in a message, and integrate this information into a coherent position. Researchers within this tradition have emphasized the need to examine what kinds of arguments are persuasive and how variables affect the comprehension, elaboration, learning, integration, and retention of issue-relevant information (McGuire, 1985).

Other persuasion theories do not place much credence on the arguments in a message or issue-relevant thinking. Instead, they focus on how simple affective processes influence attitudes or on how people can employ various rules or inferences to judge their own attitudes or the acceptability of an attitudinal position. Although in most laboratory studies of attitude change subjects will have some motivation and/or ability to form at least a reasonable opinion either by scrutinizing arguments or making an inference about the acceptibility of the recommendation based on cues in the context, there are circumstances in which neither arguments nor acceptance cues are present. For example, when subjects are exposed to nonsense syllables (Staats & Staats, 1957) or polygons (Kunst-Wilson & Zajonc, 1980), no elaboration of arguments is possible because no arguments are presented, and validity cues may be irrelevant because there is no explicit "advocacy" to judge. Theories such as classical conditioning (Staats & Staats, 1958) and mere exposure (Zajonc, 1968, 1980), which describe evaluations of objects changing as a result of rather primitive affective and associational processes, are especially relevant under these circumstances. Although these theories have been tested and applied primarily in situations where no explicit "advocacy" is presented, they also should be applicable to situations in which an issue position is advocated, but people have virtually no ability and/or motivation to consider it. In these situations, attitudes may still be changed if the attitude object is associated with a relatively strong positive or negative affective cue, or a weaker cue is continually paired with the attitude object.

If no strong affective cues are presented, it is still possible for people to form a "reasonable" attitude without relying on scrutiny of the issue-relevant arguments presented by relying on various persuasion rules or inferences that may be either rather simple or relatively complex. For example, according to self-perception theory (Bem, 1972), people may come to like or dislike an object as a result of a simple inference based on their own behavior (e.g., if I bought it, I must like it). According to the heuristic model of persuasion (Chaiken, 1980; Eagly & Chaiken, 1984), people may evaluate messages by employing various rules that they have learned on the basis of past experience (e.g., people agree with people they like). Social judgment theory (Sherif & Sherif, 1967) proposes that people evaluate messages mostly on the basis of their perceived position—messages are contrasted and rejected if they appear too discrepant (fall in the latitude of rejection), but are assimilated and accepted if they appear closer to one's initial position (fall in the latitude of acceptance; Pallak, Mueller, Dollar, & Pallak, 1972).

In addition to the relatively simple acceptance/rejection rules proposed by the preceding models, attitude change may be affected by more complex reasoning processes, such as those based on balance theory (Heider, 1946; Insko, 1984) or certain attributional principles (e.g., Kelley, 1967; Eagly, Wood, & Chaiken, 1978). Importantly, even reliance on more complex inferences obviates the need for careful scrutiny of the issue-relevant arguments in a message. In other words, each of these processes (e.g., self-perception, assimilation, balance) is postulated to be sufficient to account for attitude change without requiring a personal evaluation of the issue-relevant arguments.[2] In sum, we have proposed that when either motivation or ability to process issue-relevant arguments is low, attitudes may be changed by associating an issue position with various affective cues, or people may attempt to form a reasonable opinion position by making an inference about the likely correctness or desirability of a particular attitude position based on cues such as message discrepancy, one's own behavior, and the characteristics of the message source.

B. DEVELOPMENTAL TRENDS IN ELABORATION

Interestingly, the attitude change processes that we have just described form an elaboration continuum which likely coincides with the manner in which attitude change processes develop through adulthood. Specifically, the very young child probably has relatively little motivation to think about the true merits of people, objects, and issues, and even less ability to do so. Thus, attitudes may

[2]Insko (1981) extended balance theory to include a person's consideration of issue-relevant arguments. This more general balance formulation therefore broadens the theory beyond peripheral processing.

be affected primarily by what feels good or bad. As children mature, they become more motivated to express correct opinions on certain issues, but their ability to scrutinize issue-relevant arguments may still be poor due to lack of knowledge. Therefore, they may be particularly reliant on certain cognitive rules based on personal experience such as, "My mother knows what's right," or "If I play with it, I must like it." Consistent with this reasoning, children have been shown to be more susceptible to appeals based on behavioral cues and self-perceptions than issue-relevant argumentation (e.g., Miller, Brickman, & Bolen, 1975).

Finally, as people move into adulthood, interests become more focused and the consequences of holding correct opinions on certain issues increase. In addition, as people's acquired knowledge and cognitive skills grow, this renders them more able to critically analyze issue-relevant information on certain topics and makes them less reliant than children on certain primitive heuristics (cf. Ross, 1981). As we noted earlier, of course, although people may have the requisite ability and motivation to scrutinize certain attitude issues, they will lack motivation and ability on others. Thus, simple inferences and affective cues may still produce attitude change in adults.

In sum, one's initial evaluations are likely to be largely hedonistic since, lacking the motivation and/or ability to consider issue-relevant arguments, attitudes will be based primarily on positive and negative affective cues associated with the attitude object. As development proceeds, some attitudes may be formed on the basis of simple inferences, decision rules, and social attachments. Finally, the formation and change of some attitudes become very thoughtful processes in which issue-relevant information is carefully scrutinized and evaluated in terms of existing knowledge. Importantly, our sequence of the developmental stages of influence is consistent with other developmental models of judgment. For example, in discussing the development of moral standards, Kohlberg (1963) identifies three developmental levels. At the first level (preconventional), moral evaluations are based primarily on the affective consequences of an act. At level 2 (conventional), evaluations of acts are based primarily on socially accepted rules and laws. Finally, at level 3 (postconventional), an evaluation of an act is based on a person's idiosyncratic but well-articulated moral code. The parallels to our stages of influence are obvious.

Although we have argued that there is a continuum of message elaboration ranging from none to complete, and that different attitude change processes may operate along the continuum, it is also important to note that these different theoretical processes can be viewed as specifying just two qualitatively distinct routes to persuasion. The first route, which we have called the "central route," occurs when motivation and ability to scrutinize issue-relevant arguments are relatively high. The second, or "peripheral route," occurs when motivation and/or ability are relatively low and attitudes are determined by positive or negative cues in the persuasion context which either become directly associated

with the message position or permit a simple inference as to the validity of the message. In short, even though one can view message elaboration as a continuum, we can distinguish persuasion that is primarily a result of issue-relevant argumentation from persuasion that is primarily a result of some cue in the persuasion context that permits attitude change without argument scrutiny. In fact, we will find it useful elsewhere in this article to talk about the elaboration likelihood continuum by referring to the prototypical processes operative at each extreme.

IV. Postulate 3: Arguments, Cues, and Elaboration

Much of our discussion so far is summarized in the next postulate.

> Variables can affect the amount and direction of attitude change by: (A) serving as persuasive arguments, (B) serving as peripheral cues, and/or (C) affecting the extent or direction of issue and argument elaboration.

In subsequent sections we discuss how many of the typical source, message, recipient, channel, and context variables manipulated in the accumulated persuasion research can be understood in terms of the three-part categorization above, but first we need to define and operationalize the constructs.

A. ARGUMENT/MESSAGE QUALITY

One of the least researched and understood questions in the psychology of persuasion is "What makes an argument persuasive?" As we noted earlier, literally thousands of studies and scores of theories have addressed the question of how some extramessage factor (e.g., source credibility, repetition) affects the acceptance of a particular argument, but little is known about what makes a particular argument (or message) persuasive in isolation. In fact, the typical persuasion experiment employs only one message and examines how some extramessage factor affects acceptance of the message conclusion. Furthermore, studies that do include more than one message often do so for purposes of generalizability across topics, not because the messages are proposed to differ in some theoretically meaningful way (e.g., Hovland & Weiss, 1951). There are, of course, notable exceptions to our generalization. For example, a few studies have manipulated the comprehensibility or complexity of a message (e.g., Eagly, 1974; Eagly & Warren, 1976; Regan & Cheng, 1973), mostly to test McGuire's (1968) information processing model, but even these studies were not aimed at uncovering the underlying characteristics of persuasive arguments. Perhaps the most relevant research to date is that in which subjects are asked to rate arguments along various dimensions (e.g., validity, novelty) in order to determine what qualities make an argument persuasive (see Vinokur & Burn-

stein, 1974), but this kind of research is rare and in its infancy. After over 40 years of work on persuasion in experimental social psychology, Fishbein and Ajzen (1981) could accurately state that "the general neglect of the information contained in a message...is probably the most serious problem in communication and persuasion research" (p. 359).[3]

In the ELM, arguments are viewed as bits of information contained in a communication that are relevant to a person's subjective determination of the true merits of an advocated position. Because people hold attitudes for many different reasons (Katz, 1960), people will invariably differ in the kinds of information they feel are central to the merits of any position (Snyder & DeBono, 1985). Nevertheless, for purposes of testing the ELM, it is necessary to specify arguments that the vast majority of a specifiable population finds compelling rather than specious. In our research on the ELM, we have postponed the question of what specific qualities make arguments persuasive by defining argument quality in an empirical manner. In developing arguments for a topic, we begin by generating a large number of arguments, both intuitively compelling and specious ones, in favor of some issue (e.g., raising tuition). Then, members of the appropriate subject population are given these arguments to rate for persuasiveness. Based on these scores we select arguments with high and low ratings to comprise at least one "strong" and one "weak" message. Subsequently, other subjects are given one of these messages and are told to think about and evaluate it carefully. Following examination of the message, subjects complete a "thought-listing measure" (Brock, 1967; Greenwald, 1968), in which they are instructed to record the thoughts elicited by the message. These thoughts are then coded as to whether they are favorable, unfavorable, or neutral toward the position advocated (see Cacioppo & Petty, 1981c; Cacioppo, Harkins, & Petty, 1981, for further discussion of the thought-listing procedure). We define a "strong message" as one containing arguments (e.g., we should raise tuition so that more books can be purchased for the library) such that when subjects are *instructed* to think about the message, the thoughts that they generate are predominantly favorable. Importantly, for positive attitude change to occur, the thoughts should be more favorable than those available prior to message exposure. On the other hand, we define a "weak message" as one containing arguments (e.g., we should raise tuition so that more trees and shrubs can be planted on campus) such that when subjects are instructed to think about them, the thoughts that they generate are predominantly unfavorable. For negative change (boomerang) to occur, the thoughts should be more unfavorable than those available prior to message exposure.

[3]Notably, Fishbein and Ajzen (1975) and other expectancy value theorists (e.g., Rosenberg, 1956) have examined argument or attribute persuasiveness from a phenomenological perspective. However, the question of *why* a particular argument or attribute is seen as more positive or negative than others is still not addressed.

Once the messages meet the criterion of eliciting the appropriate profile of thoughts, they are checked for other characteristics. First, a panel of subjects rates the messages for overall believability. Our goal is to develop arguments that are strong and weak, but that do not strain credulity. (This is not to say that our arguments are necessarily veridical—just reasonably plausible to our subjects.) Next, people from the relevant subject pool rate the messages for comprehensibility, complexity, and familiarity. Again, our goal is to develop strong and weak messages that are roughly equivalent in their novelty and in our subjects' ability to understand them. The top panel of Fig. 2 depicts the results of a hypothetical study in which some extramessage "treatment" has no effect on persuasion. In this study, only the quality of the message arguments determined the extent of attitude change. We will compare this simple result with the other possibilities depicted in Fig. 2 in the remainder of this article.

B. PERIPHERAL CUES

According to the Elaboration Likelihood Model, one way to influence attitudes is by varying the quality of the arguments in a persuasive message. Another possibility, however, is that a simple cue in the persuasion context affects attitudes in the absence of argument processing. As we noted earlier, some cues will do this because they trigger relatively primative affective states that become associated with the attitude object. Various reinforcing (e.g., food; Janis, Kaye, & Kirschner, 1965) and punishing (e.g., electric shock; Zanna, Kiesler, & Pilkonis, 1970) stimuli have proved effective in this regard. Other cues work, however, because they invoke guiding rules (e.g., balance; Heider, 1946) or inferences (e.g., self-perception; Bem, 1972).

Since cues are postulated to affect attitude change without affecting argument processing, it is possible to test manipulations as potential cues by presenting them to subjects with the advocated position only (i.e., without accompanying persuasive arguments), as in prestige suggestion (see Asch, 1948). If the manipulation is a potential cue, it should have the ability to affect attitudes in the absence of any arguments. Alternatively, one could present an incomprehensible message (e.g., in a foreign language) on some topic along with the potential cue (e.g., speed of speech; Miller *et al.*, 1976). Subjects could be asked to rate, for example, how likely it is that the speaker is convincing Again, if the cue is operative, it should be capable of affecting judgments even if there are no arguments to process. Finally, a simple procedure might involve merely describing various potential cues to subjects (e.g., a message with 1 vs. 10 arguments; a message from an attractive vs. an unattractive source) and asking them which would more likely be acceptable and/or persuasive. These procedures would not, of course, indicate *why* a cue was effective (e.g., were the judgments due to affective association or the invocation of a simple decision rule?), nor would they

eliminate the possibility that more thoughtful processes were involved (e.g., subjects might attempt to generate arguments consistent with the position; cf., Burnstein, Vinokur, & Trope, 1973). However, these procedures would indicate whether or not a manipulation has the *potential* to serve as a peripheral cue.

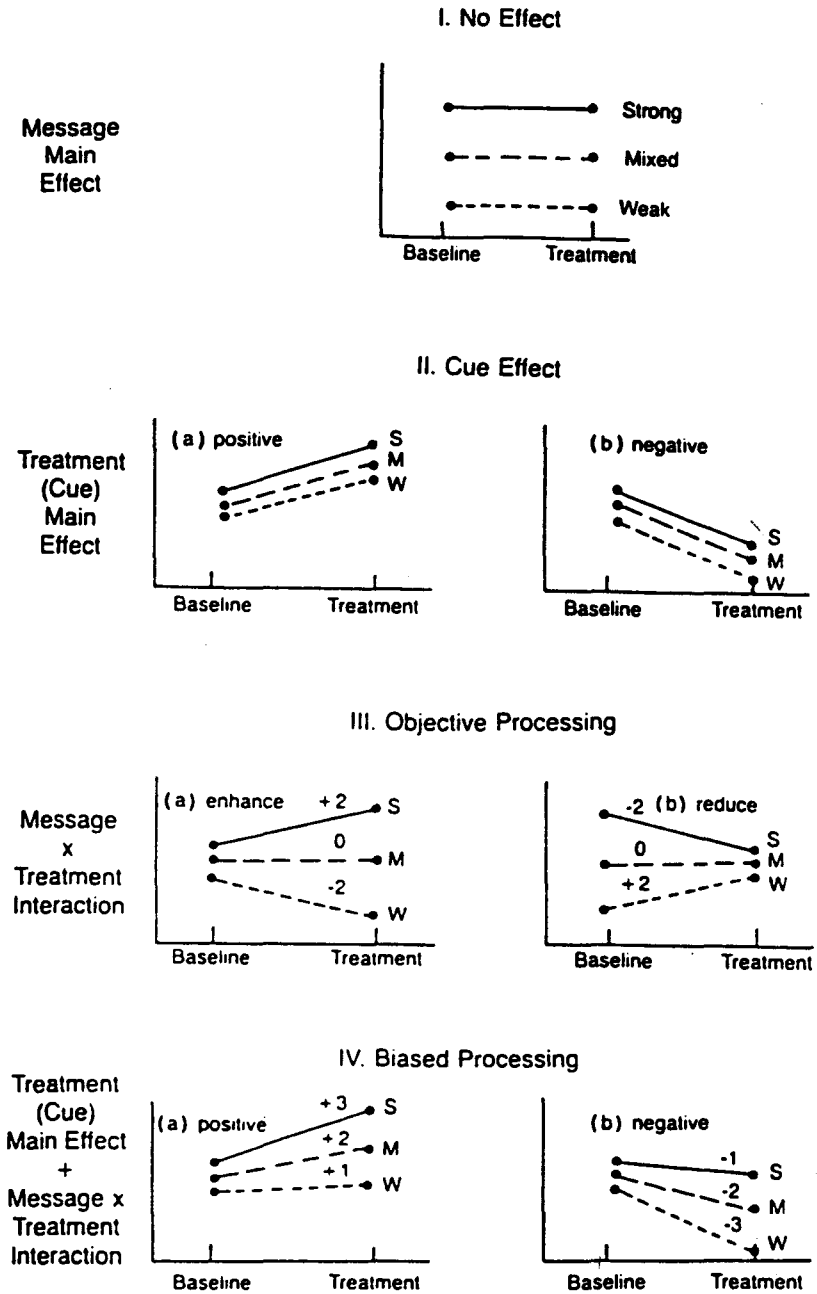

Fig. 2. Impact of variables on attitude change according to the ELM. Under conditions of high elaboration likelihood, attitudes are affected mostly by argument quality (I). Under conditions of low elaboration likelihood, attitudes are affected mostly by peripheral cues (II). Under conditions of moderate elaboration likelihood, varibles may enhance or reduce message processing in either a relatively objective (III) or relatively biased (IV) manner (adapted from Petty & Cacioppo, 1984c).

Panel II in Fig. 2 presents the results of a hypothetical study in which strong, weak, and mixed argument messages were presented along with a treatment that served as a peripheral cue. Note that in the pure case of cue processing, the cue affects all three kinds of messages equally. Since cues are most likely to operate when subjects are either unmotivated or unable to process issue-relevant arguments (as depicted in Fig. 1), the data show a strong effect for the cue treatment, but little effect for argument quality. In the left half of Panel 2 the cue is positive, and in the right half the cue is negative.

C. AFFECTING ELABORATION

We have now defined two of the key constructs in the Elaboration Likelihood Model: argument quality and peripheral cues. The third way in which a variable can affect persuasion is by determining the extent or direction of message processing. Variables can affect argument processing in a relatively objective or a relatively biased manner (Petty & Cacioppo, 1981a). In relatively *objective* processing, some treatment variable either motivates or enables subjects to see the strengths of cogent arguments and the flaws in specious ones, or inhibits them from doing so. In relatively *biased* processing some treatment variable either motivates or enables subjects to generate a particular kind of thought in response to a message, or inhibits a particular kind of thought. Relatively objective elaboration has much in common with "bottom-up" processing since the elaboration is relatively impartial and data driven. Relatively biased elaboration has more in common with "top-down" processing since the elaboration, for example, may be governed by a relevant attitude schema which guides processing in a manner leading to the maintenance or strengthening of the schema (cf. Bobrow & Norman, 1975; Landman & Manis, 1983). Postulate 4 deals further with the nature of relatively objective processing, and Postulate 6 deals further with the nature of relatively biased processing.

Of course, in order to test the ELM, it is important to assess how much message processing subjects are engaged in (i.e., how much cognitive activity or effort is devoted to issue-relevant thinking), and what variables affect elaboration. We have used four different procedures to assess the extent of thinking. The first procedure is the simplest and involves directly asking people how much effort they expended in processing the message, or how much thinking they were doing about the advocacy. Although we have found this method to prove sensitive in some studies (e.g., Cacioppo, Petty, & Morris, 1983; Petty, Harkins, & Williams, 1980), in others it has not produced differences even though there were other indications of differential processing (e.g., Harkins & Petty, 1981a, 1982). The problem, of course, is that although people may sometimes be aware of how much cognitive effort they are expending, people do not always have

access to their cognitive processes (Nisbett & Wilson, 1977).

A second procedure involves using the thought-listing technique developed by Brock (1967) and Greenwald (1968). In this procedure, subjects list their thoughts either in anticipation of, during, or after message exposure, and the thoughts are subsequently categorized into theoretically meaningful units (e.g., counterarguments; source-related thoughts) by the subjects or independent judges. The thought-listing technique has proved to be an important supplemental tool in tracking the amount and type of cognitive activity involved in persuasion and resistance (see Cacioppo *et al.*, 1981; Cacioppo & Petty, 1981c; for reviews of thought-listing methodology and results). Although statistical procedures have been used to show that cognitive activity mediates attitude effects in some instances (e.g., Cacioppo & Petty, 1979b; Insko, Turnbull, & Yandell, 1974; Petty & Cacioppo, 1977), thought listings do not provide definitive evidence for cognitive mediation because the evidence is basically correlational (cf. Miller & Colman, 1981).

A third procedure that we have used to assess the extent and affectivity of information processing activity involves the use of psychophysiological measures. For example, we have shown that facial electromyographic (EMG) activity is capable of distinguishing positive from negative reactions to stimuli (e.g., Cacioppo & Petty, 1979a) and that perioral (e.g., lip) EMG activity is capable of distinguishing cognitively effortful from less taxing mental work (e.g., Cacioppo & Petty, 1981b). The physiological procedures have several potential advantages over self-reports of cognitive activity and thought listings. For example, these measures can track psychological processes over time, and may be less susceptible to artifacts (e.g., demand characteristics) and subjects' inability to recall the process or content of their thoughts. Although work on psychophysiological assessments of attitudinal processes is in its early stages, these measures hold considerable promise for tracking and marking the underlying mediation of persuasion and resistance (see Cacioppo & Petty, 1981a, 1986; Petty & Cacioppo, 1983; for reviews).

The fourth procedure for assessing the extent of cognitive processing, and the one highlighted in this article, is based on our manipulation of message argument quality. This procedure is discussed in the next section.

V. Postulate 4: Objective Elaboration

Postulate 3 noted that variables could serve as arguments, cues, or affect processing. We further noted that processing could proceed in a relatively objective or biased manner. Postulate 4 deals with objective processing. Specifically:

Variables affecting motivation and/or ability to process a message in a relatively objective manner can do so by either enhancing or reducing argument scrutiny.

As we hinted above, our empirical method of defining argument quality allows us to assess the extent to which a variable affects argument processing and the extent to which this processing is relatively objective or biased. We shall consider first the expected consequences of variables affecting relatively objective processing.

Assume for the moment that we have created a control condition in which motivation or ability to process issue-relevant arguments is rather low. Subjects should show relatively little differentiation of strong from weak arguments in this condition. However, if a manipulation enhances argument processing in a relatively objective manner, then subjects should show greater differentiation of strong from weak arguments. More specifically, a message with strong arguments should produce more agreement when it is scrutinized carefully than when scrutiny is low, but a message with weak arguments should produce less overall agreement when scrutiny is high rather than low. This pattern of results is depicted in the left half of Panel III in Fig. 2. In a similar fashion, we can assess the extent to which a variable disrupts processing in a relatively objective manner. Consider a situation in which subjects are processing the message arguments quite diligently. These subjects should show considerable differentiation of strong from weak arguments. However, if argument processing is disrupted, due either to reduced motivation or ability, argument quality should be a less important determinant of persuasion. More specifically, a strong message should induce less agreement when processing is disrupted than when it is not, but a weak message should produce more agreement when processing is disrupted than when it is not. The right half of Panel III in Fig. 2 depicts this pattern. In addition to subjects' attitudes being more differentiated to weak and strong messages when argument processing is high rather than low, the profile of subjects' thoughts also should show greater differentiation of arguments when processing is high rather than low.

In sum, by manipulating argument quality along with some other variable, it is possible to tell whether that variable enhances or reduces argument processing in a relatively objective manner. If the variable enhances argument processing, subjects' thoughts and attitudes should be more polarized when the variable is present rather than absent, but if the variable reduces argument processing, subjects' thoughts and attitudes should be less polarized when the variable is present rather than absent. Before moving on to our postulates concerning peripheral cues and biased processing, we review some evidence that variables can affect persuasion by affecting the extent of argument processing in a relatively objective manner.

A. DISTRACTION

Research on distraction's effect on persuasion can be traced to an intriguing study by Allyn and Festinger (1961), in which high school students were presented with a speech which argued that teenage drivers are dangerous. The students were either forewarned of the opinion topic and told that their opinions would be assessed (opinion orientation) or were told simply that they were to assess the personality of the speaker (personality orientation). Although these two conditions did not differ in the average opinion change they induced, when analyses were conducted on the most involved subjects (those with extreme opinions or those who said the issue was important), a significant difference was found such that there was more persuasion in the personality than in the opinion orientation condition. Two possible explanations for this effect were offered. The initial explanation favored by Allyn and Festinger was that the "forewarning" in the opinion orientation condition stimulated the involved students to counterargue and/or derrogate the source (see also Freedman & Sears, 1965). A second explanation, proposed initially by Festinger and Maccoby (1964), was that the involved subjects in the personality orientation condition were distracted from the counterarguing and/or source derrogating in which they normally would have engaged.

In the years since the Allyn and Festinger experiment, a considerable number of studies have accumulated on both "forewarning" and "distraction," and it is now clear that both effects are viable. In this section we apply the ELM framework to "distraction" and discuss how this variable works by affecting information processing in a relatively *objective* manner. In section VII,B we apply the ELM to "forewarning" and address how this variable also works by affecting information processing, but in a relatively *biased* manner.

In 1973, Baron, Baron, & Miller reviewed the accumulated research on "distraction" and concluded that although many individual studies were susceptible to a wide variety of mediational interpretations, there were just two theoretical explanations that could account for the existing data parsimoniously. One explanation was the disruption of counterarguing interpretation favored by Festinger and Maccoby. Another interpretation offered by Baron *et al.*, however, was based, ironically, on Festinger's (1957) theory of cognitive dissonance. Baron *et al.* argued that distraction manipulations require subjects to exert more effort than usual in order to understand the message. Furthermore, "since choosing to hear a counterattitudinal message can be viewed as attitude-discrepant behavior, the effort required to comprehend a counterattitudinal message will directly determine the amount of dissonance created by the choice" (p. 317). One way for subjects to reduce this dissonance, of course, is for them to justify their effort by overvaluing the communication.

At the time of the review by Baron *et al.*, the available experiments did not allow a distinction between the two alternative theories because evidence that appeared to support either the counterargument or the dissonance position also could be seen as consistent with the other account. Importantly, even research using the thought-listing technique, which showed that with increasing distraction the number of counterarguments listed decreased (Keating & Brock, 1974; Osterhouse & Brock, 1970), was open to multiple interpretations. Was a reduction in negative thoughts obtained with distraction because distraction disrupted counterarguing, or was it because distraction induced attitude change via dissonance (or some other process) which was subsequently justified in the thought listings (Miller & Baron, 1973)?

Our initial use of the manipulation of strong and weak arguments (see section IV,A) came in an experiment that attempted to distinguish the dissonance from the counterargument disruption interpretations of distraction (Petty, Wells, & Brock, 1976, Experiment 1). A second aim of our experiment was to test a more general distraction formulation than "counterargument disruption." Specifically, we reasoned that if the predominant thoughts to a message without distraction were unfavorable, then distraction should disrupt these unfavorable thoughts and lead to increased agreement. However, if the predominant thoughts to a message without distraction were favorable, then distraction should disrupt these favorable thoughts resulting in decreased agreement. Our manipulation of argument quality provides a means of assessing this general "thought disruption" hypothesis as well as testing it against the predicted results from dissonance theory.

The thought disruption interpretation holds that distraction should enhance persuasion for a message containing weak arguments (since unfavorable thoughts should dominate under no distraction and would therefore be disrupted), but that distraction should *reduce* persuasion for a message containing strong arguments (since favorable thoughts should dominate under no distraction and would therefore be disrupted). The predictions from dissonance theory are quite different, however. Research on selective exposure and attention indicates that people prefer to hear weak rather than strong arguments against their own position (Kleinhesselink & Edwards, 1975; Lowin, 1967), suggesting that exerting effort to hear strong counterattitudinal arguments would induce more dissonance than exerting effort to hear weak ones. Because of this, dissonance theory predicts that for counterattitudinal messages, distraction should enhance persuasion more for strong arguments than for weak ones.

Two discrepant messages were prepared for our study. Both messages argued that tuition at the students' university should be increased by 20%, but the messages differed in the presentation of five key arguments. As explained previously, the strong arguments were selected so that they elicited primarily favorable thoughts when subjects were instructed to think about them, and the weak

arguments were selected so that they elicited primarily negative thoughts. The distraction task required subjects to record on a monitoring sheet the quadrant in which Xs flashed on a screen in front of them. Subjects were either told that "no Xs would flash for now" (no distraction), or the Xs appeared on the screen at 15- (low distraction), 5- (medium distraction), or 3- (high distraction) sec intervals during the message. After hearing one of the messages over headphones, subjects completed attitude measures, were given 2.5 min to list their thoughts, and responded to ancillary questions. The attitude results are presented in Fig. 3, Box 1. Consistent with the general thought disruption hypothesis, a significant message quality × distraction interaction was obtained: increasing distraction was associated with more favorable attitudes when the message was weak, but increasing distraction was associated with less favorable attitudes when the message was strong. Analyses of the postmessage thoughts listed indicated that overall the messages differed in the number of counterarguments they elicited. In addition, high distraction reduced counterargument production for the weak, but not the strong message. Finally, high distraction tended to reduce the number of favorable thoughts elicited by the strong, but not the weak message.[4]

Several conceptual replications of our results have been reported. In one study, we exposed subjects to a strong or weak proattitudinal message under conditions of either low or medium distraction (Petty *et al.*, 1976, Experiment 2). As in our initial study, a significant message quality × distraction interaction was obtained: distraction was associated with increased agreement when the message was weak, but with decreased agreement when the message was strong (see Box 2, Fig. 3). In another study, Tsal (1984) prepared print ads containing strong or weak arguments for a variety of consumer products. As subjects were exposed to the ads via slides, they were either not distracted or were required to count the number of random "clicks" presented on tape. Again, distraction was associated with more favorable attitudes toward the products when the arguments were weak, but with less favorable attitudes when the arguments were strong (see also, Lammers & Becker, 1980).

In sum, the accumulated literature is very consistent with the view that distraction is one variable that affects a person's ability to process a message in a relatively objective manner. Specifically, distraction disrupts the thoughts that would normally be elicited by a message. Distraction should be especially important as a thought disrupter when people are highly motivated and able to process the message. If motivation and/or ability to process the message are low, distraction should have little effect (see Petty & Brock, 1981, for further discussion).

[4]Since the thought-listing data parallel the attitude data in nearly all of the studies that we report here, detailed results on this measure will not be described for the remaining studies that we review. Readers are referred to the original reports.

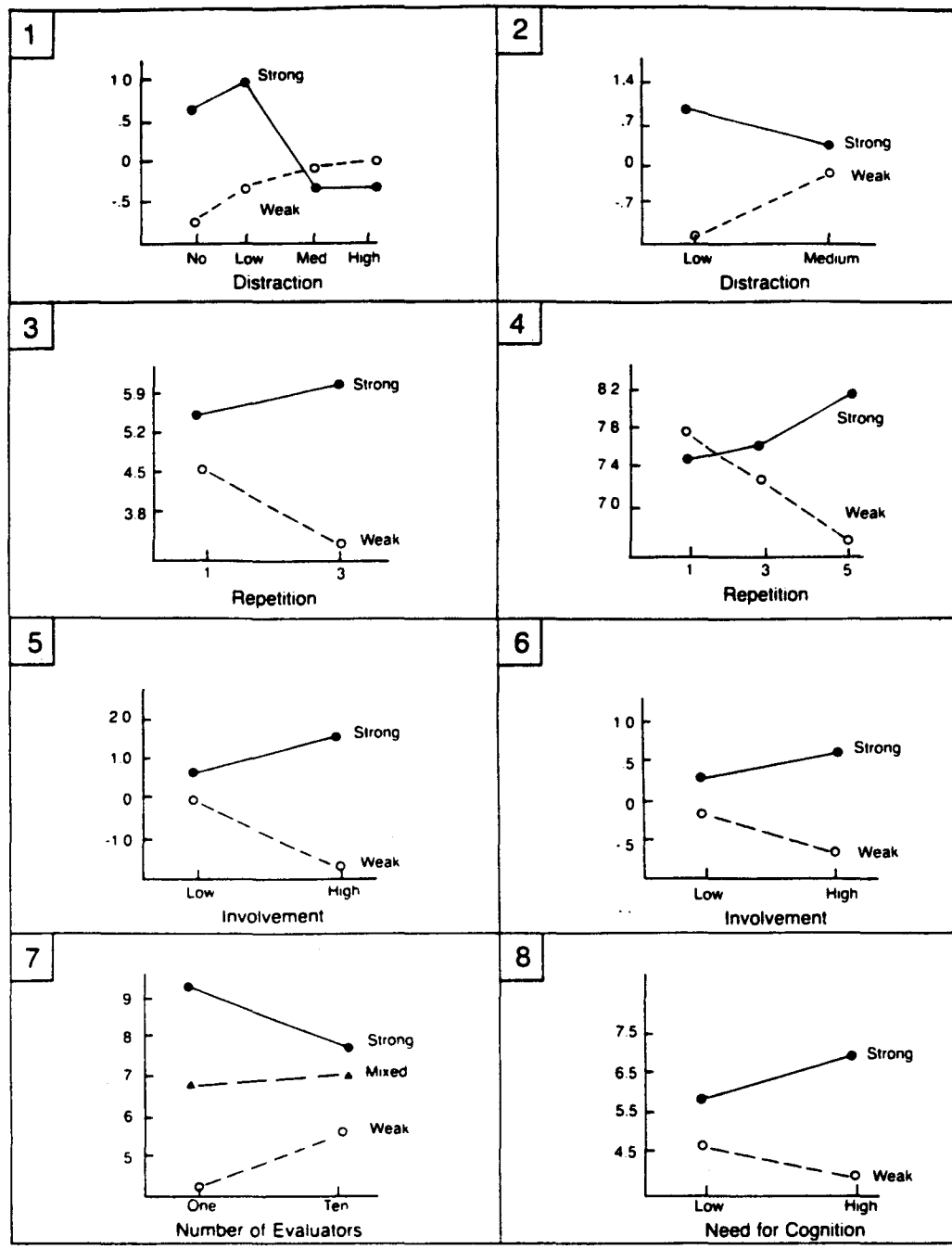

Fig. 3. Variables that may enhance or reduce elaboration in a relatively objective manner. (1) Effects of distraction on attitudes following strong and weak counterattitudinal messages (data from Petty, Wells, & Brock, 1976; Experiment 1). (2) Effects of distraction on attitudes following strong and weak proattitudinal messages (data from Petty, Wells, & Brock, 1976; Experiment 2). (3) Effects of message repetition on initial attitudes following strong and weak messages (data from Cacioppo & Petty, 1985). (4) Effects of message repetition on delayed attitudes following strong and weak messages (data from Cacioppo & Petty, 1980a, Experiment 2). (5) Effects of personal relevance on

B. REPETITION

Repetition of stimuli has been shown to increase liking (e.g., Zajonc, 1968), decrease liking (e.g., Cantor, 1968) and have no effect on attitudes (e.g., Belch, 1982). The most common finding in the persuasion literature, however, is that repeating a persuasive communication tends to first increase and then decrease agreement (e.g., Cacioppo & Petty, 1979b; Calder & Sternthal, 1980; Gorn & Goldberg, 1980). A variety of theoretical accounts has been proposed for the effects of repeated exposure, including message learning, response competition, and others (see reviews by Harrison, 1977; Sawyer, 1981).

Based on the accumulated research, we proposed that message repetition guides a sequence of psychological reactions to a persuasive communication best conceptualized as a two-stage attitude-modification process (Cacioppo & Petty, 1979b). In the first stage, repeated presentations of a message provide recipients with a greater opportunity to consider the implications of the content of the message in a relatively objective manner. Thus, just as distraction can disrupt information processing, repetition can enhance a person's ability to process the message arguments. The benefit of repetition should be most apparent when additional opportunities are needed to process a message, such as when ability to process the full implications of the message with only one exposure is low (e.g., the message is complex), or when motivation to process with one exposure is low. Once a person has considered the implications of the message, however, the second stage of information processing commences. In this second stage, the relatively objective processing of the first stage ceases as tedium and/or reactance are elicited by the excessive exposures. Both tedium and reactance will tend to result in decreased message acceptance either by serving as simple negative affective cues or by biasing the nature of information processing in a negative direction (see Section VII,C). In this section we explore the consequences of the first (objective) stage of information processing.

In order to provide a test of our view that moderate repetition can affect persuasion by increasing the opportunity to scrutinize arguments in a relatively objective manner, we conducted a study in which students were exposed to a message advocating that seniors at their university be required to take a comprehensive exam in their major area as a requirement for graduation (see Cacioppo

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attitudes following pro- (strong) and counterattitudinal (weak) messages (data from Petty & Cacioppo, 1979b; Experiment 1). (6) Effects of personal relevance on attitudes following strong and weak counterattitudinal messages (data from Petty & Cacioppo, 1979b; Experiment 2). (7) Effects of personal responsibility on attitudes following strong, weak, and mixed messages (data from Petty, Harkins, & Williams, 1980; Experiment 2). (8) Effects of need for cognition on attitudes following strong and weak messages (data from Cacioppo, Petty, & Morris, 1983; Experiment 2).

& Petty, 1985, for details). As in our work on distraction, half of the subjects heard a message containing strong arguments and half heard a message containing weak arguments. In addition, half of the subjects heard the message once, and half heard the message three times in succession. An analysis of subjects' postmessage attitudes toward the senior comprehensive exam issue revealed a message quality × repetition interaction (see Box 3, Fig. 3). Subjects showed greater attitudinal differentiation of strong from weak arguments when the message was presented three times rather than just once.

In another study (Cacioppo & Petty, 1980a, Experiment 2), we provided a conceptual replication and in addition examined the delayed impact of message repetition. In this study, students were exposed to a strong or weak message in favor of raising the price of their local newspaper. The message was presented to subjects as an audiotape of a telephone interview with a local resident. The strong message emphasized the benefits subscribers would receive from the price increase, whereas the weak message emphasized the benefits to management. Subjects were instructed to evaluate the sound quality of the tapes, and the message was played either one, three, or five times in succession. Immediately following exposure, subjects listed their thoughts about the tapes and rated the sound quality. From 8 to 14 days later, individuals were contacted by an interviewer who appeared unrelated to the initial experimenter. The second experimenter, who was blind to the respondents' initial experimental conditions, inquired about a number of community issues including attitudes toward increasing the price of the local paper. Consistent with the previous study, a message quality × repetition interaction was obtained (see Box 4, Fig. 3). Again, subjects showed greater attitudinal differentiation of strong from weak arguments as repetition increased.[5]

C. PERSONAL RELEVANCE/INVOLVEMENT

We have now discussed two of the major variables that can affect a person's *ability* to scrutinize issue-relevant arguments in a relatively objective manner. Motivational variables are also important in affecting the likelihood of message elaboration. Perhaps the most important variable in this regard is the personal relevance of the message. Previous social psychological analyses of personal

[5]For exploratory purposes, a third group of subjects received a message containing novel arguments that were weak but "subtly contradictory." Subjects exposed to this message showed an inverted-U attitude pattern with repetition. It is also important to note in considering the effects of repetition that the number of repetitions required to enhance argument processing but not induce tedium or reactance will depend on a number of factors. For example, the more complex, the more lengthy, or the more rapidly presented is the message, the more repetitions that may be necessary for the full implications of the arguments to be realized. Thus, what is "moderate" and what is "excessive" repetition will depend on a number of factors (see Cacioppo & Petty, 1985).

relevance have labeled this construct (or variations of it) "ego-involvement" (Rhine & Severance, 1970; Sherif, Sherif, & Nebergall, 1965), "issue involvement" (Kiesler, Collins, & Miller, 1969), "personal involvement" (e.g., Apsler & Sears, 1968; Sherif, Kelly, Rodgers, Sarup, & Tittler, 1973), "vested interest" (Sivacek & Crano, 1982), and others. In brief, consistent with prevailing definitions, we regard personal relevance as the extent to which an advocacy has "intrinsic importance" (Sherif & Hovland, 1961) or "personal meaning" (Sherif *et al.*, 1973). Personal relevance occurs when people expect the issue "to have significant consequences for their own lives" (Apsler & Sears, 1968) . Of course, relevance can be judged in terms of a variety of dimensions, such as the number of personal consequences of an issue, the magnitude of the consequences, and the duration of the consequences. For example, some advocacies may remain high in personal relevance for many people over a long period of time (e.g., changing the United States income tax structure), other advocacies may have personal relevance for a more circumscribed period and/or audience (e.g., raising college tuition), and still other advocacies may have personal relevance only under certain very transient conditions (e.g., refrigerator ads have higher relevance when a person is in the market for this appliance).[6]

Most of the early research on the personal relevance of an issue indicated that increasing personal involvement was associated with resistance to persuasion (Miller, 1965; Sherif & Hovland, 1961), and the most prominently mentioned explanation for this finding was derived from social judgment theory (Sherif *et al.*, 1965). Involvement was believed to be associated with a greater probability of message rejection because people were postulated to hold expanded "latitudes of rejection" as personal involvement increased, and incoming messages would therefore be more likely to fall within the unacceptable range of a person's implicit attitude continuum (Eagly & Manis, 1966). To account for the fact that increasing relevance was associated with increased resistance mostly for counterattitudinal and not proattitudinal issues (e.g., Eagly, 1967), Pallak *et al.* (1972) proposed that increasing involvement (or commitment) increased the probability of rejecting counterattitudinal messages because these messages were *contrasted* (seen as further away from one's own position

[6]This kind of "issue relevance" can be contrasted with another kind of self-relevance referred to as "response involvement" (Zimbardo, 1960) or "task involvement" (Sherif & Hovland, 1961). In this second kind of involvement, the attitudinal issue per se is not particularly important or relevant to the person, but adopting a position that will maximize the immediate situational rewards is (cf. Zanna & Pack, 1975). For example, the issue of raising taxes in the United States has personal implications for most United States taxpayers (high issue involvement) whereas the issue of raising taxes in England does not. However, one's expressed attitude on the latter topic may become important while entertaining one's British boss for dinner (high response involvement). In some cases, response involvement should lead to increased influence (Zimbardo, 1960) and in other cases to decreased influence (e.g., Freedman, 1964), depending upon which enhances self-presentation.

than they really were and therefore more objectionable), but proattitudinal messages were *assimilated* (seen as closer to one's own position and therefore more acceptable).

Importantly, explanations of involvement based on social judgment theory did not consider the nature of the issue-relevant arguments presented in the communication. Instead, as involvement increased, a message was thought to induce increased assimilation (and acceptance) or increased contrast (and rejection) based on the particular position that it was judged to espouse. The ELM suggests an alternative analysis of the effects of personal involvement or relevance (Petty & Cacioppo, 1979b). Specifically, we suggested that as personal relevance increases, people become more motivated to process the issue-relevant arguments presented. As the personal consequences of an advocacy increase, it becomes more important for people to form a veridical opinion because the consequences of being incorrect are greater. Because of the greater personal implications people should be more motivated to engage in the cognitive work necessary to evaluate the true merits of the proposal.

Much of the early work on issue involvement was conducted by finding existing groups that differed in the extent to which an issue was important (as assessed by membership in issue-relevant groups), and thus was correlational in nature (e.g., Hovland, Harvey, & Sherif, 1957). More recent investigators have chosen to study issue relevance by varying the issue and message between subjects (e.g., Lastovicka & Gardner, 1979). For example, some undergraduate students would receive a message on a highly involving issue (e.g., increasing tuition), whereas others would receive a message on an issue of low relevance (e.g., increasing park acreage in a distant city; Rhine & Severance, 1970). Although this research is interesting in that these involvement classifications probably capture the personal relevance concept as it often occurs in the "real world," several interpretive problems are introduced. Specifically, distinctions based on different kinds of people or different issues may confound personal relevance with other factors (see discussion by Kiesler *et al.*, 1969). One particularly likely confound is that people in the high relevance groups or who receive the high relevance issues may be more familiar with the issue and may have more topic-relevant knowledge. Thus, in addition to possessing greater motivation to process the messages, it is likely that these subjects also have greater ability to do so. Thus, when a message contains information that is inconsistent with subjects' initial opinions, high relevance subjects should be more motivated and generally more able to generate counterarguments to the arguments presented. However, when a message contains information that is consistent with the subjects' initial attitudes, high relevance subjects should be more motivated and generally more able to elaborate the strengths of the arguments. In sum, it is possible that differences in message-relevant elaboration between high and low relevance subjects (rather than assimilation/contrast effects) may account for the different

effects obtained for pro- and counterattitudinal issues in previous research on personal involvement.

In order to test our formulation, we first sought to replicate previous research using a manipulation of personal relevance that did not include differences in familiarity with the issue and arguments as a component. Employing a procedure introduced by Apsler and Sears (1968), we had subjects in both high and low relevance groups receive the same message on the same topic, but high involvement subjects were led to believe that the advocacy would affect them personally, whereas low involvement subjects were led to believe that the advocacy would have no personally relevant implications.

In our initial experiment (Petty & Cacioppo, 1979b, Experiment 1), undergraduate students received either a proattitudinal message extolling the virtues of more lenient coed visitation hours on college campuses, or a counterattitudinal message contending that colleges should be more strict in their coed visitation policies. The message arguments were pretested so that the counterattitudinal message arguments were weak and elicited predominantly unfavorable thoughts, and the proattitudinal message arguments were strong and elicited predominantly favorable thoughts when subjects were instructed to think about them. To manipulate personal relevance, half of the subjects was told that the speaker was advocating that the change in visitation hours be implemented at their own university (Notre Dame), whereas the other half was told that the speaker advocated the change for a distant college (Juanita Junior College). As depicted in Box 5 of Fig. 3, a message direction/quality × relevance interaction was obtained on the measure of subjects' attitudes toward the change in visitation policy. When the message was counterattitudinal (and weak), increased relevance was associated with decreased acceptance, but when the message was proattitudinal (and strong), increased relevance was associated with greater acceptance.

Although this study provides evidence consistent with our view that increasing personal relevance enhances motivation to scrutinize message content, it is still possible that attitude change was mediated by assimilation/contrast effects since the strong arguments advocated a proattitudinal position and the weak arguments advocated a counterattitudinal one. To provide a stricter test of the Elaboration Likelihood Model, we conducted a second experiment (Petty & Cacioppo, 1979b, Experiment 2) in which all subjects were exposed to a counterattitudinal message advocating that college seniors should be required to pass a comprehensive exam in their major area as a requirement for graduation. For half of the subjects, the arguments in the message were strong and compelling, and for the other half, the arguments were weak and specious. Finally, for half of the subjects the speaker advocated that the exam policy be instituted at their own university (University of Missouri), and for half the speaker advocated implementation at a distant school (North Carolina State). The results were identical to

those in the preceding study (see Box 6, Fig. 3). A message quality × relevance interaction indicated that as relevance increased, subjects' attitudes and thoughts showed greater discrimination of strong from weak arguments. More specifically, when the message was strong, increasing relevance produced a significant increase in attitudes, but when the message was weak, increasing relevance produced a significant decrease in attitudes.

In the context of examining the effects of other variables, we have replicated the interaction of personal relevance and argument quality several times (e.g., Petty, Cacioppo, & Heesacker, 1981; Petty & Cacioppo, 1984a). Subsequent studies have also supported the view that as personal relevance increases, information processing increases in intensity and/or complexity (e.g., Harkness, DeBono, & Borgida, 1985; see Burnkrant & Sawyer, 1983). Although this research is consistent with the idea that people become more likely to undertake the cognitive work of evaluating issue-relevant arguments as personal relevance increases, several caveats are in order concerning possible limitations on this effect. First, we suspect that there are some circumstances where personal interests are so intense, as when an issue is intimately associated with central values (e.g., Ostrom & Brock, 1968), that processing will either terminate in the interest of self-protection or will become biased in the service of one's own ego (e.g., Greenwald, 1980, 1981).

A second factor to consider, however, is that, as we noted above, in the "real world" there is likely to be a natural confounding between the personal relevance of an issue and the amount of prior thinking a person has done about the pool of issue-relevant arguments. There are at least two potentially important consequences of this prior thinking. First, because of the prior consideration, people may have a greater ability or may be more practiced in defending their beliefs. This would reduce susceptibility to counterattitudinal appeals. Second, if a person has considered an issue many times in the past, it may be more difficult to motivate the person to think about another message on the same topic because the person may feel that all arguments have been evaluated (and rejected) already. This would make it less likely that new compelling arguments would be processed.

A final factor to consider is the empirically derived nature of the strong and weak arguments used in our research. This empirical derivation is an important methodological tool in that it allows us to test the extent of argument processing induced by different variables. However, in the "real world," where persuaders are often confined to posing arguments that are veridical (rather than plausible), it may generally be difficult to generate arguments on some issues that elicit primarily favorable thoughts when people scrutinize them. Importantly, even if all of these factors combine to make it generally more difficult to obtain increased persuasion with increased personal relevance in the real world, the ELM accounts for this resistance by tracking the extent to which enhancing relevance affects the elaboration of the issue-relevant arguments presented.

D. PERSONAL RESPONSIBILITY

We have argued and provided evidence for the view that personal relevance enhances motivation to process issue-relevant arguments. There is also reason to believe that personal responsibility produces similar effects. Ever since Ringelmann, a German researcher, found that group productivity on a rope-pulling task failed to reach the levels predicted based on individual performance (see Steiner, 1972), several contemporary social psychologists have replicated this effect and pursued its underlying cause. Recent research has documented that at least part of the reduced performance in groups (called "social loafing" by Latané, Williams, & Harkins, 1979) results from loss of motivation rather than ability (Ingham, Levinger, Graves, & Peckham, 1974; Latané *et al.*, 1979).

Although most of the research following Ringelmann has focused on tasks requiring physical exertion (e.g., Harkins, Latané, & Williams, 1980; Kerr & Bruun, 1981), in an exploratory study we examined the possibility that people who shared responsibility for a *cognitive* task would exert less *mental* effort than people who were individually responsible. In this study (Petty, Harkins, Williams, & Latané, 1977) we asked undergraduates to judge a poem and an editorial ostensibly written by fellow students. Our subjects were led to believe that they were the only one, 1 of 4, or 1 of 16 evaluators. All of them actually read the same two communications, and after exposure to each stimulus they were asked three questions designed to measure their perceived cognitive involvement in the task (e.g., to what extent were you trying hard to evaluate the communication?). Students who were solely responsible for the evaluation reported putting more effort into their evaluations than those who shared responsibility. Although no measures of actual cognitive effort or work were obtained in our initial study, subsequent research has obtained relevant evidence. For example, Harkins and Petty (1982) employed a brainstorming task in which students were asked to generate uses for objects. The students were either told that "you alone are responsible for listing uses" or that "you share the responsibility for listing uses for this object with nine other persons whose uses will be combined with yours." When confronted with objects for which it was relatively easy to generate uses (i.e., knife, box), solely responsible subjects generated significantly more uses than subjects who shared the responsibility (when the task was more difficult and challenging, no loafing was obtained).

In three studies, Brickner, Harkins, and Ostrom (1985) asked subjects to list their thoughts about the implementation of senior comprehensive exams (no messages were presented). Subjects were either told that they were the only person listing thoughts or that they shared the responsibility with a partner. In addition, the personal relevance of the exam proposal was varied by telling subjects either that the exam proposal was being considered for next year at their own university or that it was being considered either for a future date or for another university. When the issue was low in personal relevance, subjects who

shared responsibility generated significantly fewer thoughts than those who were individually responsible. As might be expected if personal relevance motivates issue-relevant thinking (Petty & Cacioppo, 1979b), less loafing occurred in groups when the issue had high personal relevance.

The implications of this research for persuasion are straightforward: the greater the personal responsibility for evaluating an issue, the more people should be willing to exert the cognitive effort necessary to evaluate the issue-relevant arguments presented. To test this hypothesis, we asked undergraduates to provide peer feedback on editorial messages ostensibly written by journalism students (Petty, Harkins, & Williams, 1980, Experiment 2). Subjects were led to believe that they were either the only person responsible for evaluating an editorial or 1 of 10 people who shared the responsibility. Subjects received one of three versions of a message arguing that seniors should be required to pass a comprehensive exam in their major as a requirement for graduation. One message contained strong arguments, another contained weak arguments, and a third contained a mixture of arguments (and elicited a mixture of favorable and unfavorable thoughts). After reading the appropriate message, subjects provided an evaluation and listed their thoughts. The attitude results, graphed in Box 7 of Fig. 3, revealed a message quality × responsibility interaction. As personal responsibility for evaluation decreased, the quality of the arguments in the message became a less important determinant of the evaluations. More specifically, group evaluators were significantly more favorable toward the weak message, but were significantly less favorable toward the strong message than individual evaluators. As expected, evaluations of the mixed message were unaffected by the extent of responsibility.

E. NEED FOR COGNITION

Just as there are situational factors that influence the likelihood that individuals will think about and elaborate upon the arguments provided in a message, so too must there be individual factors governing message processing, and, indirectly, persuasion. Cohen, Stotland, and Wolfe (1955) introduced an individual difference called the "need for cognition," which they described as "a need to structure relevant situations in meaningful, integrated ways. It is a need to understand and make reasonable the experiential world" (p. 291). Early research on this construct suggested that people high in need for cognition made more discriminating judgments and were more motivated to think about persuasive communications (e.g., Cohen, 1957). Unfortunately, the objective tests used to gauge individual differences in need for cognition were never described in detail or published, and are apparently no longer available. Because of the great relevance of individual differences in motivation to think to the ELM and to

cognitive social psychology more generally, we developed and validated a new assessment instrument (Cacioppo & Petty, 1982; Cacioppo, Petty, & Kao, 1984). Specifically, in an initial study, we generated a pool of statements concerning a person's reactions to engaging in effortful thinking in a variety of situations (e.g., "I really enjoy a task that involves coming up with new solutions to problems") and tested them on two groups of people presumed to differ substantially in their tendencies to engage in and enjoy effortful cognitive endeavors (i.e., university faculty vs. assembly line workers). Thus, the need for cognition scale (NCS) was designed to distinguish individuals who dispositionally tend to engage in and enjoy effortful analytic activity from those who do not (see Cacioppo & Petty, 1982, 1984b, for further information about scale construction and validation).

The results of several studies indicate that individuals high in need for cognition do indeed enjoy relatively effortful cognitive tasks, even in the absence of feedback about performance. For example, in one study (Cacioppo & Petty, 1982; Experiment 4), subjects were given either simple or complex rules to use in performing a boring number circling task. Afterward, subjects were asked to express their attitudes about the task. Results revealed that subjects generally disliked the task, but a significant interaction revealed that individuals high in need for cognition tended to prefer the complex to the simple task whereas individuals low in need for cognition tended to prefer the simple to the complex task. In another study, subjects who were low in need for cognition "loafed" on a brainstorming task when they were part of a group that was responsible for generating uses for an object, but subjects who were high in need for cognition did not loaf on this cognitive task (i.e., they generated the same high number of uses whether they were solely or jointly responsible; Petty, Cacioppo, & Kasmer, 1985).

Again, the implications for responses to persuasive communications are straightforward. If people high in need for cognition tend to engage in and enjoy effortful cognitive activity, they should be particularly likely to evaluate a message by scrutinizing and elaborating the issue-relevant arguments presented. In order to test this hypothesis, we exposed high and low need for cognition subjects to a set of strong or weak arguments for a counterattitudinal position (raising tuition at their university; Cacioppo *et al.*, 1983, Experiment 2). After message exposure, subjects were asked to provide an overall evaluation of the message arguments and their personal opinion about the issue. Both measures indicated that subjects high in need for cognition scrutinized the message more carefully than subjects low in need for cognition. Specifically, the strong and weak messages induced more polarized evaluations and attitudes for high than low need for cognition subjects (attitude results are graphed in Box 8, Fig. 3). In addition, we reasoned that if subjects high in need for cognition were more likely to derive their attitudes through a considered evaluation of the arguments central

to the recommendation, then there should be a stronger association between message evaluations and attitudes for subjects high than low in need for cognition. Separate correlations within each group provided support for this hypothesis. As expected, the correlation between argument evaluation and personal opinion was significantly larger in the high ($r = .70$) than the low ($r = .22$) need for cognition group.

VI. Postulate 5: Elaboration versus Cues

It is now clear that a wide variety of variables can affect a person's motivation and/or ability to consider issue-relevant arguments in a relatively objective manner. The implications of this are that when the arguments in a message are "strong," persuasion can be increased by enhancing message scrutiny but reduced by inhibiting scrutiny. However, when the arguments are weak, persuasion can be increased by reducing scrutiny, but can be decreased by enhancing scrutiny. In detailing these processes (depicted in Panel III, Fig. 2), Postulate 4 brings under one conceptual umbrella the operation of a seemingly diverse list of variables such as distraction, repetition, personal relevance, and others, whose effects had been explained previously with a variety of different theories (e.g., dissonance, social judgment). In Section IX we discuss additional variables that affect objective processing.

Although it is now apparent that argument quality will be an important determinant of persuasion when motivation and ability to process message arguments are high, what happens when motivation and/or ability are low? Postulate 5 addresses this issue:

> As motivation and/or ability to process arguments is decreased, peripheral cues become relatively more important determinants of persuasion. Conversely, as argument scrutiny is increased, peripheral cues become relatively less important determinants of persuasion.

In the remainder of this section we examine this postulate in regard to variables affecting processing in a relatively objective manner (e.g., personal relevance). In Section VII, we apply this same postulate to variables affecting processing in a relatively biased manner.

A. PERSONAL RELEVANCE/INVOLVEMENT AND THE OPERATION OF CUES

Testing Postulate 5 requires establishing two kinds of persuasion contexts: one in which the likelihood of message-relevant elaboration is high, and one in

which the elaboration likelihood is low. In discussing Postulate 4 we noted several candidates for varying the elaboration likelihood (e.g., distraction, repetition), but most research pertaining to this postulate has varied the personal relevance of the communication. In this section we discuss our own work and other studies in which peripheral cues were tested under different personal relevance conditions. We focus first on source cues, and then on message cues.

1. Source Cue Studies

In our initial investigation of source cues, we asked college students to listen to a message over headphones that advocated that seniors be required to pass a comprehensive exam in their major as a requirement for graduation (Petty, Cacioppo, & Goldman, 1981). Three variables were manipulated in the study: personal relevance, argument quality, and source expertise. In the high relevance conditions, the speaker advocated that the exam policy be instituted at the students' own university next year, thereby affecting all current students. In the low relevance conditions, the speaker advocated that the policy begin in 10 years, thereby affecting no current students. Half of the students heard eight cogent arguments in favor of the recommendation and half heard eight weak arguments. Finally, half of the students were told that the tape they would hear was based on a report prepared by a local high school class, and half were told that the tape was based on a report prepared by the Carnegie Commission on Higher Education, which was chaired by a Princeton University Professor. The expertise of the message source, of course, provides a peripheral cue that permits an assessment of the advocacy without any need to think about the issue-relevant arguments.

Following message exposure, subjects rated their attitudes concerning comprehensive exams. In addition to significant main effects for source and arguments (more favorable evaluations with strong than weak arguments, and expert than inexpert source), two significant interactions provided support for Postulate 5. First, a relevance × message quality interaction replicated our previous finding that argument quality was a more important determinant of persuasion for high than low relevance subjects (Petty & Cacioppo, 1979b). In addition, however, a relevance × source expertise interaction indicated that the source cue was a more important determinant of attitudes for low than high relevance subjects. The results for all cells of this study are graphed in the left half of Fig. 4. In the top panel it can be seen that under low relevance conditions, increasing source expertise enhanced attitudes regardless of message quality (a cue effect as depicted in the left side of Panel II in Fig. 2). However, in the bottom left panel of Fig. 4, it can be seen that under high relevance conditions, source expertise had no impact on attitudes; only argument quality was important.

In a conceptual replication of this study we employed a different manipulation of relevance, a different issue and arguments, a different cue, and a different

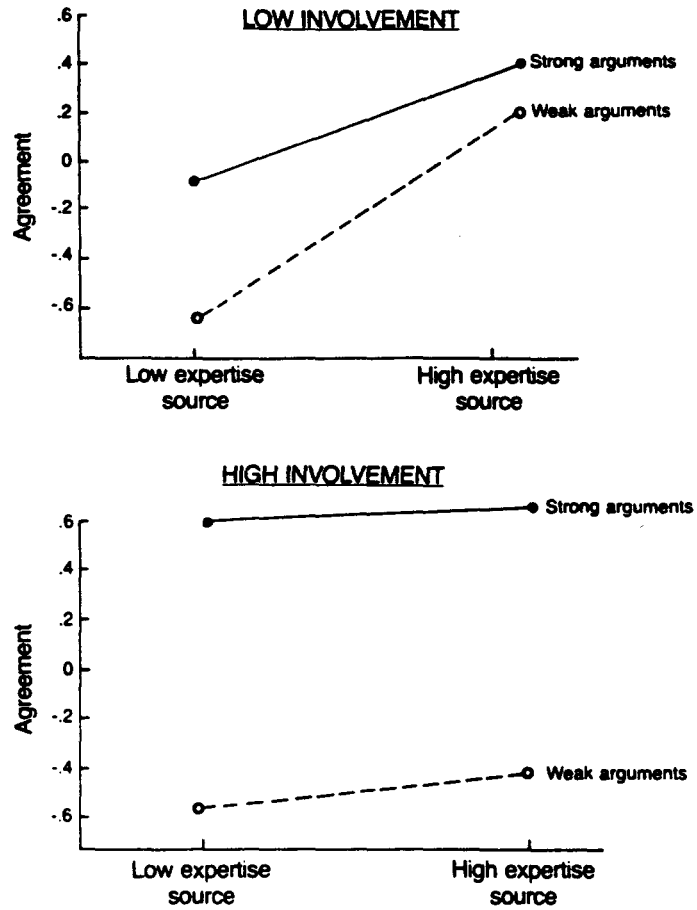

Fig. 4. Source factors under high and low relevance. (Left) Source expertise serves as a peripheral cue under low relevance conditions (top), but only argument quality affects attitudes under high relevance (bottom) (data from Petty, Cacioppo, & Goldman, 1981). (Right) Famous product endorsers serve as a peripheral cue under low relevance conditions (top), but only product quality information affects attitudes under high relevance (bottom) (data from Petty, Cacioppo, & Schumann, 1983).

method of message presentation. In this study (Petty, Cacioppo, & Schumann, 1983), undergraduates were asked to examine a booklet containing 12 magazine advertisements. Each of the ads was preceded by a brief description of the purpose of the ad. A variety of both familiar and unfamiliar ads appeared in the booklet, but the crucial ad was for a fictitious new product, "Edge disposable razors." Two things were done to either enhance or reduce the personal relevance of the ad for this product. In the high relevance groups, the ad was preceded by a description indicating that the product would be test marketed soon in the subjects' community. In the low relevance groups, the crucial ad was preceded by a description indicating that the product would be test marketed soon in several distant cities. In addition, all subjects were told before examining any

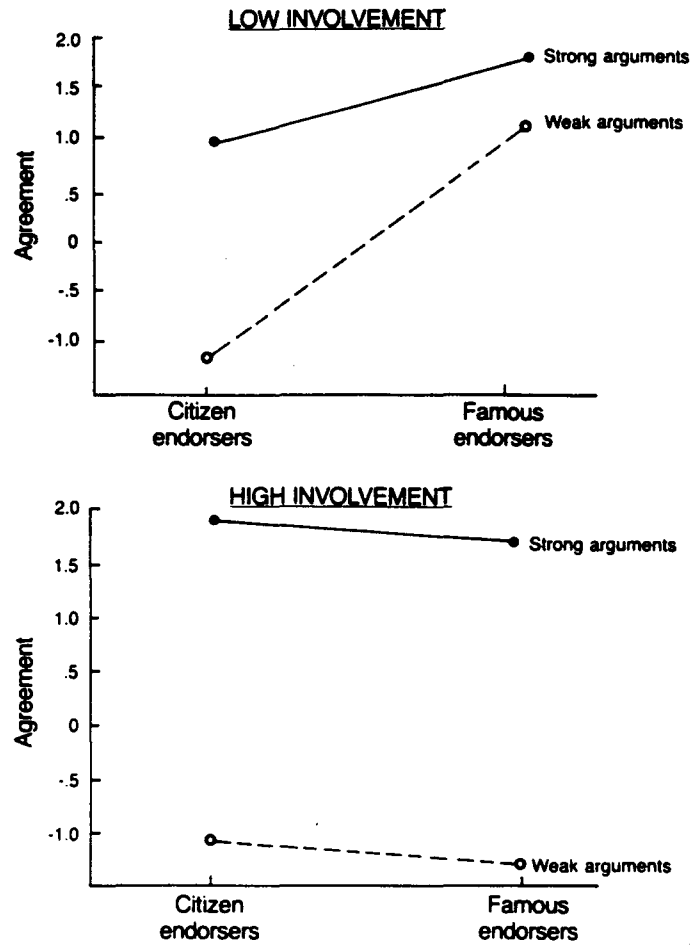

Fig. 4. (*continued*).

ads that at the end of the experiment they would be given a free gift for their participation. In the high relevance groups, they were told that they would be allowed to choose among several brands of disposable razors. In the low relevance groups, they were told that they would be selecting among brands of toothpaste (an ad for toothpaste appeared in the ad booklet). In sum, the high relevance subjects were not only led to believe that the crucial product would be available in their local area soon, but they also believed that they would make a decision about the product class. In contrast, the low relevance subjects believed that the product would not be available in their local area in the forseeable future and did not expect to make a decision about that product class.

Four different versions of the razor ad were constructed. Two featured photographs of two well-known and -liked sports celebrities, and two featured middle-aged citizens described as Californians. The product endorsers served as the manipulation of the peripheral cue. Finally, two of the ads contained six

persuasive statements about the product (e.g., handle is tapered and ribbed to prevent slipping) and two ads contained six specious or vague statements (e.g., designed with the bathroom in mind).

Following examination of the ad booklet, subjects indicated their attitudes about the products depicted, including of course, Edge razors. In addition to main effects for argument quality and relevance (more favorable attitudes with strong than weak arguments and low than high relevance), two significant interactions paralleled the results of our previous study (Petty, Cacioppo, & Goldman, 1981). A relevance × message quality interaction revealed that the arguments in the ad were a more important determinant of product attitudes for high than low relevance subjects, but a relevance × endorser interaction revealed that the status of the product endorsers was a more important determinant of attitudes for low than high relevance subjects. The results of this study are graphed in the right half of Fig. 4. In the top panel it can be seen that the endorsers served as a simple cue under low relevance conditions (enhancing the effectiveness of both messages). The bottom panel indicates that only argument quality affected attitudes in the high relevance conditions.

Other studies have also provided support for Postulate 5 by showing that simple source cues are more important determinants of persuasion when personal relevance is low rather than high. For example, in one of the earliest experimental studies on source expertise, Hovland and Weiss (1951) had subjects read a message and then told them about the source. The source was either highly credible or lacked credibility. Four different topics (with appropriate sources) were used in the experiment. Although Hovland and Weiss in collapsing their data across the four topics concluded that the high credibility sources produced more change than the sources of low credibility, an analysis of the credibility effect for individual topics indicates that the credibility effect was reasonably strong for the two topics with the lowest direct relevance and prior knowledge (e.g., "Can a practical atomic powered submarine be built in the present time?"), but was weak and insignificant for the two most relevant topics (e.g., "As a result of TV, will there be a decrease in the number of movie theaters in operation by 1955?").

In a more recent study, Chaiken (1980; Experiment 2) manipulated the personal relevance of an issue by telling students that their university was considering switching from a semester to a trimester system either next year or after they graduated. Subjects either read a message from a likable source who presented one strong argument or from a dislikable source who presented five strong arguments. When the issue was of little relevance, the likable source was significantly more persuasive than the dislikable source (i.e., the source cue was effective). When the issue was of high relevance, however, subjects tended to be more persuaded by the message with five strong arguments than one even though the source was dislikable (see also Rhine & Severance, 1970).

2. *Message Cue Studies*

Distinctions between attitude changes based on source factors versus changes based on message factors have a long history in social psychology (e.g., Kelman & Hovland, 1953). In fact, the studies of source cues just described may appear to provide evidence consistent with the distinctions others have made between source and message orientations (e.g., Kelman & Eagly, 1965; McDavid, 1959; Harvey, Hunt, & Schroder, 1961). However, the central/peripheral distinction of the ELM is not equivalent to a source/message dichotomy. Importantly, the ELM holds that both source and message factors may serve as peripheral cues (and both source and message factors may affect information processing; see Section IX,B). Consider a person who is not motivated or able to think about the actual merits of the arguments in a message. For this person, it might be reasonable to assume that the more arguments contained in the message, the more meritorious it is. Although the literature on persuasion clearly indicates that increasing the number of arguments in a message is often an effective way to increase persuasion (e.g., Eagly & Warren, 1976; Insko, Lind, & LaTour, 1976; Maddux & Rogers, 1980), most have argued that this is because with more arguments, people generate and/or integrate more favorable issue-relevant beliefs (e.g., Calder, Insko, & Yandell, 1974; Chaiken, 1980). According to the ELM, it would be possible for the number of arguments in a message to affect issue-relevant thinking in some circumstances, but to affect persuasion by serving as a simple cue in other situations.

To test this hypothesis we conducted two studies (Petty & Cacioppo, 1984a). In one experiment, undergraduates received a written message on the topic of instituting senior comprehensive exams. For some subjects, the message had high personal relevance (it advocated that the exam policy begin at their university next year), and for others the relevance was very low (it advocated that the exam policy be instituted in 10 years). Subjects received one of four messages in favor of the exam proposal. One message contained nine strong arguments, one contained three strong arguments (randomly selected from the nine), one contained nine weak arguments, and one contained three weak ones (randomly selected from the nine). Following exposure, subjects gave their attitudes on the exam proposal. A main effect for message quality was obtained as were two significant interactions. A relevance × message length interaction revealed that the number of arguments in the message was a more important determinant of persuasion under low than high relevance. However, a relevance × message quality interaction revealed that the cogency of the arguments presented was a more important determinant of persuasion under high than low relevance conditions. The top half of Fig. 5 graphs the results. In the left panel it can be seen that under low relevance, the number of arguments serves as a simple cue, increasing agreement regardless of argument quality. In the right panel, it can be seen that under high relevance, the number of arguments acts to enhance argument pro-

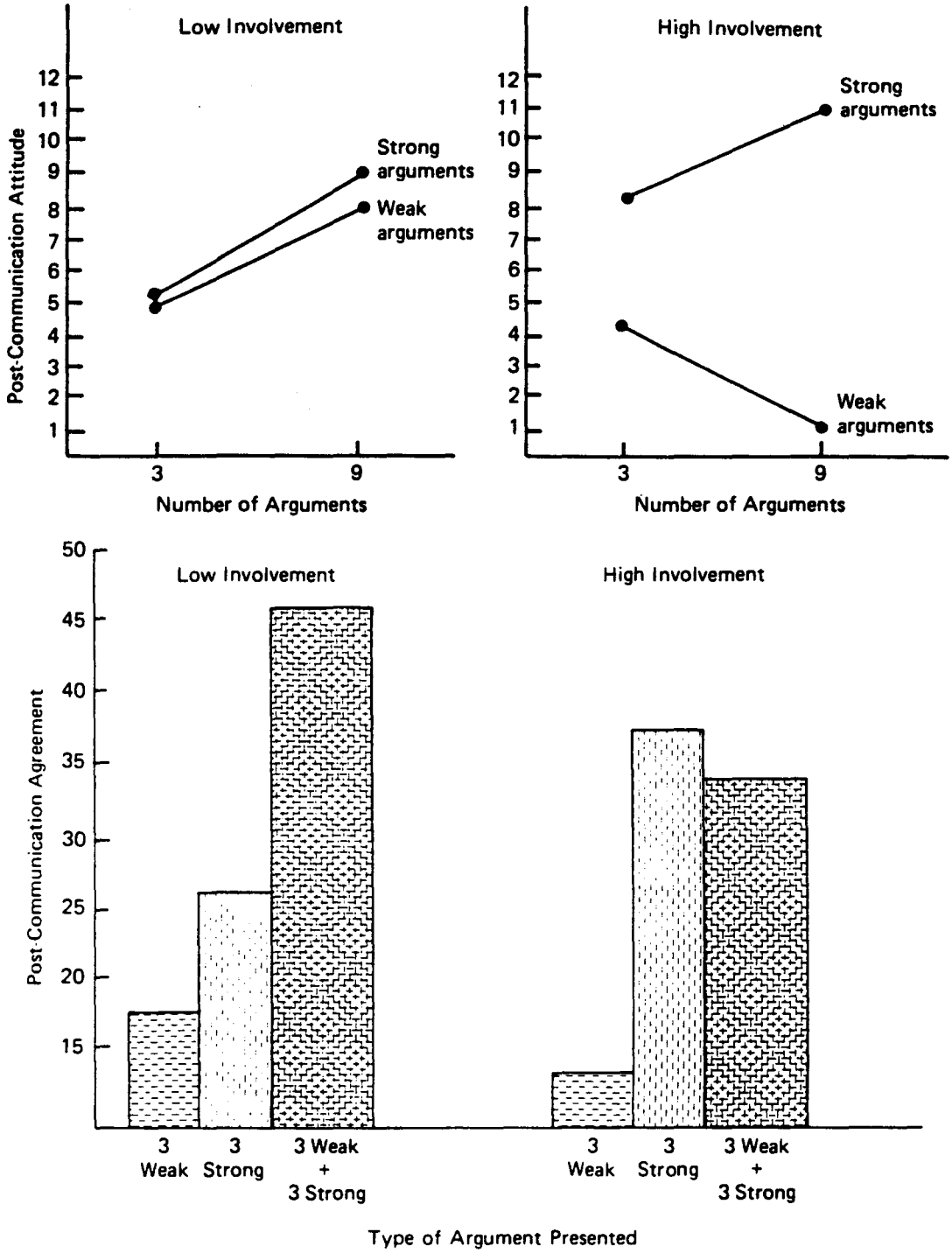

Fig. 5. Message factors under high and low relevance. (Top) Number of message arguments serves as a peripheral cue under low relevance conditions (left) but affects information processing under high relevance (right) (data from Petty & Cacioppo, 1984a; Experiment 2). (Bottom) Number of message arguments serves as a peripheral cue under low relevance (left) but affects information processing under high relevance (right) (data from Petty & Cacioppo, 1984a; Experiment 1).

cessing: when the arguments are strong increasing their number enhances persuasion, but when their quality is weak, increasing their number reduces persuasion.

In our second study, undergraduates were asked to read one of three messages. All of the messages concerned a faculty proposal to increase tuition, but in the high relevance conditions the proposal was for the students' own university, whereas in the low relevance conditions the proposal was for a distant but comparable university. The message that subjects read contained either three cogent arguments, three weak arguments or six arguments (three strong and three weak). After reading the assigned message, subjects indicated their attitudes toward the idea of raising tuition. Statistical comparison of the messages processed under high and low relevance conditions revealed the following (see bottom half of Fig. 5). When the issue was of low relevance, three strong arguments did not elicit more agreement than three weak arguments, but the message with six arguments (three strong and weak) elicited more agreement than either of the three-argument messages. When the message was highly relevant, however, three strong arguments did elicit more agreement than three weak arguments, but the six-argument message did not enhance persuasion over presenting three strong arguments. Again, argument quantity served as a cue under low relevance, but argument quality was more important under high relevance.

Langer, Blank, and Chanowitz (1978) explored the importance of the perception of arguments in a field study of compliance. All subjects in this study were standing in line to make copies when a confederate approached them with a request to make either 5 (low personal consequences) or 20 (high consequences) copies. The request was accompanied by either a valid reason ("I'm in a rush"), a "placebic" reason ("I have to make copies"), or no reason. Both kinds of reasons were more successful than no reason when the personal consequences were low (i.e., argument quality was unimportant), but the valid reason was significantly more potent than the placebic reason when the personal consequences were high. Folkes (1985) provided a partial replication of this effect. In two field studies using the inconsequential request (making five copies), respondents were equally willing to comply whether the request contained the valid or the placebic reason. In a third study, however, subjects were asked to guess how they would respond to the requests and to "think carefully before answering." When instructed to think before responding, the valid reason produced significantly more anticipation of compliance than the placebic reason.[7] In sum,

[7]Although providing a partial replication of Langer *et al.* (1978), Folkes takes issue with Langer's assertion that the placebic information is processed "mindlessly." Folkes argues that if the reasons are processed automatically under low consequences conditions, then a poor reason should be as effective as a valid one. However, she found that a poor reason (e.g., "because I don't want to wait") was significantly less effective than a valid or placebic one under low consequences conditions. The ELM would predict that the validity of a reason would become even *more* important when the personal consequences are high. This was untested in Folkes' study.

as personal relevance or thoughtfulness increases, the quality of issue-relevant arguments becomes more important than the quantity of arguments provided.

3. *Additional Cue Studies*

In addition to the research on source and message cues noted above, other studies have provided support for Postulate 5 by showing that simple cues are more important determinants of evaluations when personal relevance is low rather than high. For example, in one study, Gorn (1982) manipulated the personal relevance of a product (pen) and exposed subjects to ads for two different brands. One ad was attribute oriented and provided product-relevant information (e.g., "never smudges"), whereas the other ad featured pleasant music rather than information. Of the subjects in the high relevance condition, 71% chose the pen advertised with information, but in the low relevance condition, 63% chose the pen advertised with the pleasant music ($p < .001$; see Batra & Ray, 1984, 1985, for further discussion on how affectively oriented ads have greater impact under conditions of low than high involvement).

In two pertinent studies, Borgida and Howard-Pitney (1983) varied the visual prominence of discussants in a videotaped two-person conversation along with the personal relevance of the discussion topic. Previous research had shown that observers' evaluative judgments and attributions of causality tended to be more extreme for visually salient than nonsalient actors, a phenomenon called "top of the head" processing by Taylor and Fiske (1978). Based on the research we reviewed previously showing that personal relevance enhances message processing and reduces cue potency, Borgida and Howard-Pitney reasoned that perceivers' judgments of the discussion should become less influenced by the seemingly trivial visual salience cue (and presumably more by the content of the discussion) as the topic increased in personal importance. Their results supported this reasoning.

In sum, the accumulated research on personal relevance has provided strong support for Postulate 5 (see also, Taylor, 1975). Some studies have shown that various simple cues in the situation (i.e., source credibility/likability, mere number of arguments, pleasant music, visual salience) exert a more powerful effect on judgments when personal relevance is low rather than high. Other studies have shown that the quality of issue-relevant arguments exerts a more powerful effect on judgments when personal relevance is high rather than low. Still other studies have demonstrated both of these effects within the same experiment (e.g., Petty, Cacioppo, & Goldman, 1981).[8]

[8]Chaiken (1980) argued that just as issue relevance can determine the route to persuasion (Petty & Cacioppo, 1979b), so too can manipulations of response involvement, such as varying whether or not a person expects to be interviewed on an issue (see footnote 5). We suspect that this is true mostly when issue relevance is also reasonably high (as it was in Chaiken's study; Experiment 1). If issue

B. OTHER MODERATORS OF CUE EFFECTIVENESS

The research that we have just reviewed clearly indicates that the personal relevance of a message is an important determinant of the route to persuasion. According to the Elaboration Likelihood Model, however, other variables should also determine the route to persuasion by affecting a person's motivation and/or ability to process the arguments in a message. In discussing Postulate 4, we identified five variables that affect motivation and/or ability to process a message in a relatively objective manner. Each of these variables should be capable of moderating the route to persuasion.

For example, in an early study we showed how distraction disrupted argument processing resulting in more agreement when the arguments were weak but less agreement when the arguments were strong (Petty *et al.*, 1976). Just as arguments become less important determinants of persuasion as distraction is increased, simple cues should become *more* important determinants of persuasion as distraction is increased. Although this hypothesis has not been tested directly, available research is consistent with this idea. In one study, Kiesler and Mathog (1968) exposed undergraduates to a variety of relatively involving messages (e.g., requiring dormitory bed checks) under conditions of either distraction (copying lists of two-digit numbers) or no distraction. In addition, the credibility of the message advocacy was manipulated. The study resulted in a distraction × credibility interaction showing that distraction enhanced persuasion only when the source was highly credible. Consistent with previous theories of distraction (see Section V,A), this interaction has been accounted for by arguing that distraction enhances persuasion only when the source is credible because more credible sources induce more dissonance, or because more credible sources induce more counterarguing (Baron *et al.*, 1973; Kiesler & Mathog, 1968; Petty & Brock, 1981). The ELM provides a different yet equally plausible account for this effect. Rather than emphasizing the finding that distraction enhances persuasion when source credibility is high, the ELM views the interaction as showing that credibility enhances persuasion when distraction is high (Petty & Cacioppo, 1984c). In other words, when people are disrupted from processing the issue-relevant arguments by distraction, simple cues in the persuasion context become more powerful determinants of influence.

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relevance is low, but response involvement is high, impression management motives (rather than concerns about adopting a veridical position based on examination of issue-relevant arguments) may determine the attitude expressed (see Cialdini, Levy, Herman, Kozlowski, & Petty, 1976). Although it is possible for impression management concerns to lead to extensive issue-relevant cognitive activity in some situations (e.g., a student assigned to argue in a public debate may carefully research the position in order to make a favorable impression), more typically, impression management concerns may not necessitate a careful evaluation of issue-relevant arguments (Cialdini & Petty, 1981; Moscovici, 1980).

In addition to personal relevance and distraction, the other variables discussed under Postulate 4 should also be moderators of the route to persuasion. For example, we have already noted that argument quality becomes a more important determinant of persuasion as people feel more personal responsibility for message evaluation (Petty *et al.*, 1980), and for individuals high rather than low in need for cognition (Cacioppo *et al.*, 1983). Although it has not yet been tested, the ELM expects that peripheral cues in the persuasion context should generally be more important for group than individually responsible message evaluators, and for individuals low rather than high in need for cognition. Before concluding this section, we note two additional variables that appear to moderate the route to persuasion.

One previously unmentioned variable that appears to affect the extent of issue-relevant thinking is the modality of message presentation. In general, audio and video presentations compared to print give people less opportunity to process issue-relevant arguments because exposure is forced rather than self-paced. Thus, presenting messages in written form should be especially important when the arguments are complex and difficult to process rapidly (Chaiken & Eagly, 1976). On the other hand, if it is generally more difficult to process issue-relevant arguments when exposure is forced rather than self-paced, simple cues in the persuasion context should be more powerful determinants of persuasion in the former than in the latter modality. Studies which have manipulated medium of presentation and source cues have supported this proposition. Thus, both source credibility (Andreoli & Worchel, 1978) and likability (Chaiken & Eagly, 1983) have had a greater impact on attitudes when a message was presented on video or audio tape rather than in written form.

Interestingly, the nature of the message itself has also been implicated as a determinant of whether a person processes mostly issue-relevant arguments, or searches for simple cues to determine message acceptability. For example, research suggests that messages that are either overly vague (Pallak *et al.*, 1983), or overly quantified (Yalch & Elmore-Yalch, 1984), may induce reliance on peripheral cues. The ELM would expect this to occur to the extent that these messages reduce either subjects' ability (vague message) or motivation (overly quantified message) to process issue-relevant arguments (Witt, 1976).

VII. Postulate 6: Biased Elaboration

We have now seen that a wide variety of variables can moderate the route to persuasion by increasing or decreasing the extent to which a person is motivated or able to process the issue-relevant arguments in a relatively objective manner. As we noted in discussing Postulate 3, however, variables can also affect persua-