The Elaboration Likelihood Model: Current Status and Controversies

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It has now been over 20 years since the notion of "two routes to persuasion" was introduced (see Petty, 1977; Petty & Cacioppo, 1981), and over a decade since the elaboration likelihood model (ELM) was translated into a series of formal postulates (Petty & Cacioppo, 1986a, 1986b). The model has garnered some praise (e.g., Ajzen, 1987; Pratkanis, 1989; Sears, 1988), and has guided a large number of basic and applied studies (see Petty & Wegener, 1998, for a recent review), but it has also been misunderstood and criticized on occasion (e.g., Stiff, 1986; Hamilton, Hunter, & Boster, 1993). The goals of this chapter are to provide a brief overview of the model; to discuss some of the major conceptual questions and confusions that have arisen; and to examine the current status of the ELM as a theory of persuasion in particular and of social judgment more generally.

When the idea of two routes to persuasion was first proposed (Petty, 1977), the literature on attitude change was in a state of disarray, to say the least. Seemingly simple variables such as the credibility of the message source or a person's affective state, which were predicted to have relatively straightforward effects on attitude change according to the persuasion theories of the time, instead produced a mystifying diversity of findings. For instance, expert sources, though usually good for persuasion (e.g., Kelman & Hovland, 1953) were not invariably favorable (e.g., Sterntahl, Dholakia, & Leavitt, 1978). Similarly, inducing a negative affect, though often bad for attitude change (e.g., Zanna, Kiesler, & Pilkonis, 1970), was sometimes associated with more positive influence (e.g., Leventhal, 1970).

The extraordinary complexity of research findings caused some reviewers of the attitude change literature in the late 1970s, both in the United States and abroad, to be quite pessimistic. For example, Jaspers (1978, p. 295) noted that "the most disturbing aspect of these results is their inconsistency." Sherif (1977, p. 370) described the "reigning confusion in the area," and Kiesler and Munson (1975, p. 443) concluded that "attitude change is not the thriving field it once was." Fishbein and Ajzen (1981) characterized the literature as "an accumulation of largely contradictory and inconsistent findings with few (if any) generalizable principles of effective communication" (p. 340). They argued that "a rather serious reconsideration of basic assumptions and thoughtful theoretical reanalyses of problems confronting the
that differ primarily in quantitative ways from central-route processes, but other peripheral-route changes result from processes that are both less effortful and more qualitatively different (Petty, 1997). These low-effort mechanisms are lumped together under the peripheral-route label because of the similarity in the consequences they are postulated to induce (Petty, Wheeler, & Bizer, in press).4

Perhaps the most critical construct in the ELM is the elaboration continuum. Points along the elaboration continuum are determined by how motivated and able people are to assess and elaborate upon the central merits of a person, issue, or a position (i.e., the attitude object). As discussed in regard to Postulate 1 shortly, when a person is making an evaluative judgment, the “default” goal is to determine how good or bad the object “really” is; but when a person is judging likelihood, for example, the goal is to determine how likely or unlikely the event “really” is. The more motivated and able people are to assess the central merits of the attitude object (i.e., to determine how good or bad it really is), the more likely they are to effortfully scrutinize all available object-relevant information. This is because effortful scrutiny is usually perceived to be the best way to achieve this goal. Thus, at the high end of the elaboration continuum, people assess object-relevant information in relation to knowledge that they already possess, and arrive at a reasoned (though not necessarily unbiased) attitude that is well articulated and bolstered by supporting information (the “central route” to judgment). At the low end of the elaboration continuum, information scrutiny is reduced. Nevertheless, attitude change can still result from a low-effort scrutiny of the information available (e.g., examining less information than when elaboration is high or examining the same information less carefully); or attitude change can result from a number of less resource-demanding processes, such as classical conditioning (Staats & Staats, 1958), self-perception (Bem, 1972), or the use of heuristics (Chaiken, 1987). Attitudes that are changed with minimal object-relevant thought are postulated to be weaker than attitudes that are changed to the same extent as a result of high object-relevant thought.

The ELM hypothesis of an elaboration continuum comes from recognizing that it is neither adaptive nor possible for people to exert considerable mental effort in thinking about all of the messages and attitude objects to which they are exposed. In other words, in life, people must sometimes act as “cognitive misers” (Taylor, 1981), but at other times it is more adaptive for them to be generous with their cognitive resources. In the remainder of this chapter, we reexamine the formal ELM postulates first presented by Petty and Cacioppo (1986a, 1986b), and address some issues, confusions, and misunder-

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**FIGURE 3.1.** The elaboration likelihood model of persuasion.
standings that have been raised since their introduction. We conclude with some discussions of similar dual-process and multiprocess theories that have been developed outside the persuasion domain.

**POSTULATE 1: THE CORRECTNESS POSTULATE**

People are motivated to hold correct attitudes.

The ELM assumes that at least at a conscious level, people want to hold opinions (and come to judgments) that are correct. That is, in the absence of other competing motives, the correctness motive is presumed to be the default goal. Of course, as Festinger (1954) noted, attitudes cannot be correct in any absolute sense. Rather, the correctness of an attitude is a subjective assessment and can be based on a wide variety of evidence. Festinger emphasized the extent to which people look to the opinions of others as a means of judging the correctness of their own attitudes. This social comparison process is a relatively simple and easy way of judging correctness. As we will see shortly, the ELM holds open a number of other ways in which a person can achieve a feeling of subjective correctness. For example, people can ignore the opinions of others and effortlessly seek out and evaluate all of the relevant information on their own. Or people can consider both the opinions of others and the implications of their personal scrutiny of the object's merits. Or different strategies can be used on different occasions. For example, people who do not enjoy thinking can simply accept what expert and trustworthy sources say, and can thus conserve their cognitive resources. However, if an expert source is untrustworthy, then people who prefer not to think might need to evaluate the message on their own in order to achieve the same feeling of correctness (Priester & Petty, 1995). Finally, the opinions of others might influence the extent or direction of the person's own scrutiny. For example, the greater the number of people who endorse an issue, the more an individual might choose to think about that issue (Burnstein & Vinokur, 1975; Burnstein, Vinokur, & Trope, 1973; Harkins & Petty, 1987). Whatever strategy is used, however, the ELM assumes that the default goal is to come to a judgment that is subjectively correct.2

The assumption that the default motive is to be correct does not imply that people cannot be influenced by their assessment of evidence, however (see discussion of Postulate 5). The first postulate of the ELM merely assumes that people are rarely explicitly motivated to be biased. Thus, in situations where people openly acknowledge and rely on a prejudice, they will often think that there is some merit or legitimacy to their view (e.g., a person might be openly biased against women police officers because he or she believes that men can do a better job). That is, people can believe that their bias helps them to be correct! As this implies, sometimes increasing the motive to be correct can actually enhance biased processing. For example, consider a person who is absolutely certain of the validity of a current attitude. In such a situation, the largest threat to correctness comes from the possibility that the person will succumb to influence. Thus, this person's goal will be to defend the attitude from attack, because defending the existing attitude may be the best way of maintaining a subjective sense of correctness. Of course, if a possible bias is made being held by people who are not legitimate, consistent with Postulate 1, people will often engage in some corrective action (Wegener & Petty, 1997). Additional discussion of bias is postponed until our discussion of Postulate 5.

**POSTULATE 2: THE ELABORATION CONTINUUM POSTULATE**

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

Postulate 2 recognizes that even though people want to be correct, this does not mean that the amount of effort devoted to thinking will be constant across all people and situations. First, consider that the motive to be correct, like other psychological states, can vary with individual and situational factors. That is, some people probably have a greater desire to be correct than others, and some situations elicit a greater motivation to be correct than others. For example, important issues could elicit a greater desire to be correct than unimportant issues. Therefore, if people think that the best way to form a correct opinion is to exert effort processing all of the information provided, then subjectively important issues should elicit more diligent information-processing activity than subjectively unimportant ones (Petty & Cacioppo, 1979, 1990). A desire to be correct can also motivate consideration of the likelihood that thinking will lead to a correct response. Specifically, although most people presumably believe that the best way to be correct is to carefully examine all of the information, there may be some people for whom and some situations in which the opposite is the case. For example, if a person knows absolutely nothing about an issue, or has very low confidence in his or her analytic capabilities, the person may feel that the best way to be correct is to use their effortless thinking and rely on knowledgeable others. For such a person, this tendency should be exacerbated when issue importance (and the need to be correct) is increased (cf. Sorrentino, Bobocel, Gitta, & Zanna, 1988). On the other hand, if people who have high confidence in their processing abilities are made to feel that they are capable of effortless analysis, then processing motivation should generally be increased (Bohner, Rank, Reinhard, Einnwiller, & Erb, 1998; Evans & Petty, 1994).

Although the desire to be correct and the perception of one's ability to be correct by engaging in effortful thinking are important determinants of the extent of information-processing activity, Postulate 2 explicitly recognizes that consideration of "correctness" is not the only factor at work in determining the extent of thinking. For example, the hedonic (and other) consequences of thinking can also be important. Thus, putting people in a positive mood gets them to think more about pleasant new effortful information—although positive moods or pleasant messages increase the desire to be correct (or the need to have greater confidence in one's opinion; Chaiken, Liberman, & Eagly, 1989), but because thinking about a pleasant message is hedonically rewarding, and people in positive moods are especially attentive to the hedonic consequences of their actions (Wegener & Petty, 1994; Wegener, Petty, & Smith, 1993; cf. Bless & Schwarz, Chapter 21, this volume). In a similar vein, some individuals generally take greater pleasure in thinking than others and thus these individuals (i.e., those high in need for cognition; Cacioppo & Petty, 1982) tend to engage in effortful thought because of its intrinsic enjoyment, without regard to the importance of the issue or the need to be correct (see Cacioppo, Petty, Feinstein, & Jarvis, 1996, for a review).

Importantly, Postulate 2 recognizes that motivation variables are not the only factors that influence the extent of thinking. Ability is important as well. Just as motivational variables can stem from the person or the situation, so too can ability. That is, some people are more able to think about issues because of their intelligence or knowledge, but some situations facilitate or impair thinking in most people (e.g., the presence of distraction hinders most people from processing a communication; Petty, Wells, & Brock, 1976). When both motivation and ability are high, people will probably engage in considerable cognitive effort, and when both are low, effort will be low. If ability is high but motivation is low, people will not engage in much thinking until such time as motivation changes (e.g., following a message, people may learn of its personal relevance). Similarly, if motivation is high but ability is low, people will not process much until such time as they are able. If people continue to be interrupted before they are satisfied that they have achieved a correct opinion (or whatever their salient processing goal is), this can lead to resentment about the object (see Petty, Jarvis, & Evans, 1996, for additional discussion).

Two aspects of Postulate 2 have been misunderstood. The first is that the elaboration likelihood is incorrectly thought to refer to two discrete points rather than a continuum of "elaboration". This confusion probably stems from the depiction of high- and low-elaboration endpoints along the continuum in schematic presentations of the ELM such as that in Figure 3.1, or perhaps from discussion of the two "routes to change" (although such references are meant to describe prototypical points along the continuum. There are a number of important features to
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this continuum; the most obvious of these is the hypothesis that sometimes attitude change occurs as a result of considerable thinking about and elaboration of the information provided, and at other times attitude change is associated with minimal thinking about and elaboration of the information provided. That is, the elaboration model does not consider information to be one degradation of a "qualitative effect"; see Petty, 1997).

As an example of this qualitative effect, consider a person who is exposed to a message containing eight strong arguments. A high-elaboration processor might think of three or four favorable implications of each of the arguments, whereas a low-elaboration processor might think of only one or two favorable implications (because he or she is not thinking as much). The effect of this is that the high-elaboration processor will probably have more favorable attitudes toward the issue than the low-elaboration processor, because he or she will have generated more favorable implications of the strong arguments presented. An alternative way to bring about this effect is if the low-elaboration processor thinks diligently, but about fewer arguments (e.g., the first three or four favorable thoughts to the first few arguments, but doesn't think at all about the remaining arguments). This is also likely to leave this person with a less favorable attitude than that of the person who has thought carefully about all of the arguments.

The second low-elaboration process—thinking about fewer arguments—can lead to some interesting effects. For example, what if a message contains four strong arguments followed by four weak arguments? A high-elaboration processor who thinks about all of the information in a relatively objective manner is likely to have a moderate opinion about the issue, because the arguments are mixed (Friedrich, Fetherstonhaugh, Casey, & Gallagher, 1996; Petty & Cacioppo, 1984a). However, an individual who considers only the early arguments is likely to have a more favorable opinion, because only the strong arguments are given careful consideration. If the message has four weak arguments followed by four strong ones, then the low-elaboration processor will have a less favorable opinion than the high-elaboration processor who considers all of the arguments objectively. In addition to these quantitative effects, however, the ELM holds that low-elaboration attitude change can be produced by processes that are substantively different from the argument consideration described (that is, a "qualitative effect"); Petty, 1997). Qualitative effects are addressed in more detail later.

A second confusion about the elaboration continuum concerns the nature of the thinking rather than the amount. The term "elaboration" is used to suggest that people add something of their own to the specific information provided in the communication. That is, when elaborating, they go beyond mere verbatim encoding (or learning) of the information provided. As Postulate 2 indicates, the ELM emphasizes issue-relevant elaboration (i.e., elaboration of information relevant to the attitude object or advocacy). This issue-relevant (or object-relevant) elaboration is often provoked by message arguments, but can also be sparked if no message is provided. This can be facilitated by nonmessage factors even when a message is presented. As noted by Petty and Cacioppo (1984b), as people approach the high end of the elaboration continuum, they are more likely to add all available information in the immediate persuasion context... in an attempt to evaluate the true merits of the arguments and position advocated" (p. 671; emphasis added). Thus, a high elaboration individual might consider factors such as whether the message arguments presented are really cogent and compelling, but might also attempt to evaluate the merits of the position advocated by considering the information value of the source of the message (i.e., "is the source legitimate to consider and helpful in judging the true merits of the object?"); how her own previously experienced internal feelings (i.e., "are my feelings legitimate to consider and helpful in judging the true merits of the object?"); and all other factors relevant to judging the merits of the position advocated. Although some reviewers (e.g., see Kruglanski & Thompson, in press; Spiegler, Thompson, & Kruglanski, 1996) have considered attitudes as a result of the Elaboration Likelihood Model of persuasion, it is not the case. In the ELM, content (e.g., source message variables) and process (e.g., effortful scrutiny, classical conditioning effect, use of heuristics, etc.) are orthogonal. That is, one can engage in effortful or automatic process for merit of source and message factors, and these features of the persuasion context can also be the source of heuristics and other peripheral processes. Although some ELM research has manipulated source versus message variables to operationalize high- versus low-elaboration attitude change (e.g., Petty, Cacioppo, & Goldman, 1981), other ELM research has explicitly manipulated only message factors to show how their role as peripheral cues in low-elaboration attitude change (e.g., Petty & Cacioppo, 1984a), and some research has manipulated source factors and pointed to their role as arguments in high-elaboration attitude change (Petty & Cacioppo, 1984b).

Research guided by the ELM has shown that just as various message factors (e.g., the mere number of arguments used) can serve as simple cues and can affect judgments when the extent of elaboration is low, various source factors can be relevant to judging the central merits of an object when the extent of elaboration is high. For example, Petty and Cacioppo (1986a) noted that "for teenage smokers... the major reason why they smoke is to relate to the image of the particular brand. ... [Teens]... the presentation of [various] images might provide support for product-relevant information" (p. 17). Similarly, high self-monitors are concerned with the image they project to others (Snyder, 1979), and thus these individuals are likely to think carefully about the image a message source conveys in high-elaboration situations.

There are a number of unexplored implications of the notion that at the extreme high end of the elaboration continuum, people scrutinize information relevant to judging the position advocated. This means, for example, that people will subject source and message information to more scrutiny under high- than under low-elaboration conditions. Under low-elaboration conditions, people are looking for a simple, quick, and easy way to judge the merits of the position, rather than examining all of the information carefully. Thus, according to the ELM, under these conditions people might base their judgment on

the first arguments processed, or on the mere number of arguments presented, or on a cursory analysis of the source (e.g., whether the source seems attractive, likable, expert). However, when people are motivated and able to engage in greater scrutiny, their quick impression of the source will be confirmed. That is, later arguments can undermine the implications of early ones, or the large number of arguments may turn out to be spurious, or a source who seemed expert on a first glance may turn out to be a fraud upon more careful analysis. Furthermore, as people think more about the information more, they may decide that it is inappropriate to use some of the information that they were all too willing to use when they were not thinking very much. For example, when thinking carefully and motivated to be accurate, people might become aware that their mood could be biasing their judgment, and might actively attempt to correct for this influence (see Ottati & Isbell, 1996; Wegener & Petty, 1997). On the other hand, it is possible that with increased scrutiny, people might become more confused by the utility of some factor and give it more weight. For example, under high scrutiny people might become more convinced of the expertise, knowledge, and/or informational relevance of the likely to be effective and thus might weight this information even more strongly when they are not thinking carefully (e.g., Kirmani & Shiv, 1998).

The point is that when a person's goal in scrutinizing all of the information is to determine the true merits of a given proposal, the person will use whatever information seems useful in reaching that goal. Thus, if providing a message recipient with extensive information about the credibility of the source convinces the person more of the validity of the position when the source is more or less scrutinized, the impact of credibility can be even higher under high- than under low-elaboration conditions. Conversely, if providing extensive information about the attractiveness of the source (e.g., the attractiveness of a beauty pageant won, etc.) does not convince the person of the validity of this information when the person scrutinized (e.g., if this information is viewed as irrelevant to the advocate), the impact of the attractiveness manipulation can be lower under high- than under low-elaboration conditions. Treating the same information differ-
ently under different levels of elaboration is at the heart of the next ELM postulate.

**POSTULATE 3: THE MULTIPLE-ROLES 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.

Postulate 3 is perhaps the most misunderstood of all the ELM postulates. This postulate does a number of things, but we focus on two here. First, it makes a distinction between the processes by which variables have an impact on persuasion. Second, it suggests that any one variable can have an impact on attitude change by more than one mechanism. We discuss each of these notions in turn.

**Central versus Peripheral Processes of Attitude Change**

One of the important things that Postulate 3 is intended to do is to make a distinction between treating information as an "argument" or as a "cue." Postulate 2 introduced the elaboration continuum, and we have seen that a number of interesting effects can be predicted simply by considering the extent to which people process each of the items of information presented as arguments. That is, the items of information available in the persuasion situation (whether stemming from the source, the message, the context, or one's own mind or body) can be subjected to scrutiny and examined for relevance in determining the merit of the position advocated. As noted in discussing Postulate 2, this scrutiny of the information as arguments falls along a continuum and thus can be maximal, moderate, or minimal. In addition to this quantitative variation in the treatment of information as arguments, however, Postulate 3 notes that some information can be treated as a peripheral cue. The aim here is to make a qualitative distinction, to complement the quantitative variation encompassed by the elaboration continuum outlined in Postulate 2. If the only differences involved in persuasion were quantitative ones, then one might simply speak of one persuasion process that operated in varying degrees. In fact, some social psychologists have argued that there is just one persuasion process. Fishbein and Middlestadt (1995), for example, explicitly reject current multiprocess models such as the ELM and the heuristic-systematic model (HSM; Chaiken et al., 1989), arguing that all attitude change is "cognitive" and can be captured by changes in the composite created by combining the perceived desirability of an object's attributes and the perceived likelihood of the object possessing those attributes. Similarly, Kruglanski's lay epistemic theory (LET; see Kruglanski, 1989; Kruglanski, Thompson, & Spiegel, Chapter 14, this volume) rejects the need for multiprocess frameworks, preferring to lump all proposed mechanisms of persuasion into one process of "hypothesis testing." Or course, if one process were sufficient to account for persuasion, then the LET and other one-process models would be more parsimonious than and thus superior to multiprocess models.

While acknowledging the importance of quantitative variations in the extent of elaboration in Postulate 2, the ELM holds that no single process or mechanism is sufficient to account for the complexity of judgment phenomena. Rather, the ELM holds that various peripheral mechanisms of attitude change, which do not involve much (if any) thought about the substantive merits of the information presented, occur when the elaboration likelihood is low. For example, when presented with a lengthy list of arguments, the low-elaboration processor might not just process the first few arguments and quit (quantitative effect), but might instead simply count the arguments and reason that "if there are 20 of them, I'll favor it, but won't be swayed very much" (see Petty & Cacioppo, 1984a). Note that this process of attitude change, on some dimensions at least, is qualitatively different from the argument elaboration process: This mechanism does not involve consideration of the merits of any of the arguments, but instead involves reliance on a rule of thumb or heuristic that the person generates or retrieves from memory (see Chaiken, 1987, and Chen & Chaiken, Chapter 4, this volume, for more on heuristic processing). Other relatively low-effort mechanisms that are capable of producing attitude change without processing the substantive merits of the information presented include classical conditioning (Staats & Staats, 1958; Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992), identification with the source of the message (Kelman, 1958), misattribution of affect to the message (Petty & Cacioppo, 1983; Schwarz & Clore, 1983), and mere exposure effects (Bornstein, 1989; Zajonc, 1968). When one of these peripheral processes has a substantial influence on attitudes, this typically indicates that either motivation or ability is rather low in that persuasion setting and that the resulting attitudes are likely to be rather weak. We discuss the consequences of different attitude change processes further in connection with Postulate 7.

**Distinguishing Qualitative from Quantitative Effects along the Elaboration Continuum**

At the conceptual level, it is relatively easy (we think) to distinguish between qualitatively different argument (central) and cue (peripheral) processes of persuasion. At the empirical level, however, it might sometimes be difficult to discern whether an observed low-elaboration effect differs from a high-elaboration effect, because of the qualitative or the quantitative mechanism specified by the ELM. For example, consider a study reported by Petty and Cacioppo (1984b) in which the attractiveness of the message source in an advertisement for a beauty product was manipulated. In this study, the attractiveness of the source had an impact under both high- and low-involvement conditions (designed to manipulate the elaboration likelihood), but the manipulation of the quality of the verbal arguments had an impact only under high-involvement conditions. Stated differently, only source attractiveness had an impact under low-involvement (low-elaboration) conditions, but both source attractiveness and argument quality had an impact under high-involvement (high-elaboration) conditions. A clear conclusion from this study, consistent with the ELM, is that low-involvement participants engaged in less effortful information processing activity than high-involvement individuals because they considered a smaller quantity of information than high-involvement participants. But is this explanation, based on the ELM prediction of quantitative variation along the elaboration continuum, sufficient to account for the results? Or did the processing of low-involvement individuals differ from that of high-involvement individuals in its quality as well as its quantity? Petty and Cacioppo (1984b) argued that the high-involvement individuals considered all information—including source attractiveness—and determined that the attractiveness of a person using a beauty product is a relevant consideration in judging the merit of the product; thus source attractiveness, when presented as an argument, added to the impact of the other (verbal) arguments presented for the product. Petty and Cacioppo further argued that in the low-involvement conditions, however, source attractiveness had an impact because of its function as a peripheral cue.

To summarize, one account for the different effects under high- and low-involvement conditions is simply a quantitative one. That is, low-involvement individuals could have processed the source attractiveness information in the same way as high-involvement individuals (i.e., they could have judged its relevance for the merit of the product), but they did not process the other information because the verbal arguments were less salient, more difficult to process, were introduced by the source, and so forth. Thus, this interpretation of the study, consistent with the ELM, says that involvement induced differences in the extent of information-processing activity, with high-involvement individuals engaging in greater information processing than low-involvement individuals (i.e., they processed more information as arguments). However, the ELM allows for another interpretation as well. Specifically, the low-involvement participants might have processed the source information in a qualitatively different way than high-involvement participants. For example, the attractive source could have produced positive affect that generalized to the product, as specified by classical conditioning models of attitude change (Staats & Staats, 1958). Or the positive regard for the attractive source could have led people to evaluate the product by means of a retrieval heuristic (e.g., "I agree with people I like"); Chaiken (1987). In this study it was not possible to determine
whether a quantitative or a qualitative difference along the elaboration continuum was responsible for the differences observed under conditions of high and low involvement. However, it is possible to design a study that could tease these apart. For example, one could vary the relevance of the product to source attractiveness.

Consider a study that varies the elaboration likelihood (via involvement, distraction, etc.), the quality of the verbal arguments in the message, and the relevance of source attractiveness for the attitude object. Thus, some people might receive an ad for a beauty product as in the Petty and Cacioppo (1984b) study (high relevance of attractiveness), but others would receive an ad for a roofing contractor (low relevance of attractiveness). Both the quantitative and qualitative interpretations would suggest that the manipulation of verbal argument quality would have a greater impact under high- than under low-elaboration conditions. However, the quantitative and qualitative interpretations make different predictions for the low-relevance (low-elaboration) conditions.

Both frameworks agree that under high-elaboration conditions, people would process the source attractiveness information as an argument, leading to increased attractiveness in the ad for the roofing contractor but acceptance of it for the beauty product. Because processing the argument value of the source would lead to rejection of the source for the roofing ad (i.e., little or no impact of the attractive source), the quantitative explanation suggests that the attractive source would also have no effect for the roofing contractor under low-elaboration conditions (for the same reason that it would have no effect under high-elaboration conditions). However, the qualitative explanation suggests that the attractive source could have an impact for both the beauty product and the roofing ads under low-elaboration conditions, because the information could presumably be having an impact on judgment rather than a different mechanism (e.g., classical conditioning, inoculation of a heuristic, etc.) that would be applicable regardless of the relevance of attractiveness to the product.

As we have just noted, both the quantitative and qualitative possibilities are consistent with the ELM, so perhaps the key question is whether the qualitative feature of the ELM is ever needed to account for results. If all results can be accommodated by the quantitative aspect of the ELM, then there would be no need to postulate a separate category of peripheral attitude change mechanisms (classical conditioning, use of heuristics, etc.). In our view, the empirical evidence indicates that qualitative variations in elaboration alone are insufficient to account for the obtained results.

For example, in one recent study, Minard, Bhatia, Lord, Dickson, and Unnava (1987) varied motivation to think about an advertisement, and whether the advertisements were relevant to judging the merits of the featured product or not (e.g., a picture of a fluffy kitten could suggest "softness" for a facial tissue, but a picture of an equally positive sunset would be irrelevant for this product). Minard et al. found that the relevance of a picture to the product did not matter under low-elaboration conditions. That is, as long as the picture was rated positively, equally favorable attitudes would be formed toward the same (otherwise) identical image under high-elaboration conditions, however, the relevance of the picture was consequential. Specifically, the high-relevance picture was associated with more liking of the product than was the equally positive low-relevance picture. The authors also reversed the idea that the pictures were processed in a qualitatively different manner under high- and low-elaboration conditions (i.e., as arguments and as peripheral cues, respectively).

Another study, mentioned earlier, Petty and Cacioppo (1984a) noted that the quality of verbal arguments, and the number of verbal arguments in a message. Under high-involvement conditions, people reported disagreeing with the message more when it contained more arguments regardless of whether the arguments were cogent or specious. In contrast, under high-involvement conditions, more arguments led to more persuasion when the arguments were compelling, but to less persuasion when the arguments were specious (i.e., uncertainty about a person, or the mere number of arguments). It is not clear how a framework allowing only quantitative variations in processing could account for this pattern of results. That is, counting arguments seems to be a qualitatively different mechanism for producing attitude change than evaluating arguments for merit.

In sum, although a number of interesting predictions can be made from consideration of the amount of elaboration alone (quantitative variation), additional interesting and unique predictions can be made from consideration of qualitatively different peripheral-route processes. As just noted, these qualitative predictions have been supported in some research, suggesting that one-process models may be overly limited (for discussions of unimodal versus multimode models of persuasion, see Eagly, 1987; Priester & Füllmich, 1997; Schwartz, 1997; Wegener & Clapp, in press).

Multiple Roles for Variables along the Elaboration Continuum

A second important feature of Postulate 3 is that it introduces the notion of multiple roles for persuasion variables. That is, the ELM notes that a variable can influence attitudes in four ways: (1) by serving as an argument, (2) by serving as a cue, (3) by determining the extent of elaboration, and (4) by producing a bias in elaboration. Importantly, the postulate is meant to suggest that variables (such as source attractiveness) need not serve in only one of the roles specified. At the time the postulate was originally presented, no research had been conducted demonstrating that any one variable could serve in all of the postulated roles, though Petty and Cacioppo (1986a) reviewed some studies showing that any one variable could serve in at least two different roles in different situations, and provided speculation about when and how any one variable could serve in all of the roles (see pp. 204–215).

In essence, the multiple-roles notion is that any given variable can influence attitudes by different processes, and Petty and Cacioppo (1986a, 1986b) noted that variables can take different roles at different points along the elaboration continuum. In brief, variables serve as cues (or work via peripheral mechanisms) at the low end of the elaboration continuum. Variables serve as arguments at the high end of the elaboration continuum. Variables are most likely to affect the amount of thinking when the elaboration likelihood is not constrained by other variables to be high or low (e.g., at about the middle of the continuum). The fact that variables can take on different roles at different points along the elaboration continuum implies that the impact of any given variable that serves as a peripheral cue under low-elaboration conditions can be enhanced, can be reduced, can be reversed, or can be the same as the elaboration likelihood is increased (Petty, the beautiful scenery might have a positive impact because of its mere association with the target location, much as it might have a similar positive impact on evaluations of a new car that is located in the scenery. However, as the elaboration likelihood is increased and the scenery is processed for its merits with respect to the product, then the impact of the scenery on attitudes might be increased in the ad for the vacation location because of its perceived relevance and merit (or a perceived increased impact but for a different reason than under low elaboration), but might show decreased impact in the ad for the car because of its perceived irrelevancy for this product when processed against the argument. The positive impact of the beautiful scenery on the ad for the vacation location may seem more interesting (and thus people think about the ad more) when the ad contains only weak arguments for the vacation location.

As noted previously, one misunderstanding of the ELM is the mistaken belief that the model holds that source (and other nonmessage) variables are peripheral but message variables are central. Because of this misunderstanding, some have interpreted the ELM to say that some variable must invariably decrease in impact as the elaboration likelihood is increased (e.g., Kruglanski & Thompson, in press; Spiegel et al., 1996). Yet, as we have explained, there are multiple ways in which the source (and other nonmessage) variables can increase in impact, and any person moves up the elaboration continuum. For example, as the source information is scrutinized more carefully along with all other information, confidence in the validity of the message, the position might be increased (i.e., when the source is processed as an argument).
show no change). Second, the source impact can increase because the source biases information-processing activity. Thus, an expert source might bias processing of the verbal arguments presented (Chaiken & Maheswaran, 1994), or might lead to the self-generation of arguments consistent with the position the source is advancing (see Burnstein & Vinokur, 1975). Of course, if a potential cue (e.g., an attractive source) is scrutinized and found lacking (e.g., "Attractiveness is not a good reason to favor this" or "It is biasing to go along just because he or she is attractive"), then the presumed cue may well be used to reduce persuasion (e.g., if an overcorrection for the perceived bias occurs; Petty, Wegener, & White, 1998). If the cue is deemed relevant and informative when scrutinized, however, then it will add to the impact of the other information. Note that in the ELM, the additive impact under high-elaboration conditions is not a result of a low-effort heuristic adding to the impact of high-effort central/systematic processing (see Maheswaran & Chaiken, 1991), but is due to the fact that the cue/heuristic is effortfully scrutinized as a potential argument supporting the advocacy of the message.

In general, misunderstanding of the multiple-roles postulate shows up whenever scholars assume that the ELM holds that variables can take on only one of the postulated roles. Thus, some critics of the model (e.g., Allen & Reynolds, 1993) have inappropriately asked for a list of what variables work via the "central route" and what variables work via the "peripheral route." In a similar vein, scholars who review the effects of certain variables have sometimes struggled to determine whether a variable is a "central" or a "peripheral" one, rather than recognizing the multiple roles for variables. For example, in reviewing the effects of group membership on persuasion, McGarty, Haslam, and Turner (1994) stated that "in the elaboration likelihood model (ELM) of Petty and Cacioppo (1986b), group memberships are persuasive by the peripheral route" (p. 269). Although this is a possibility, the multiple-roles postulate for variables outlined by Petty and Cacioppo (1986b) applies to group membership as much as it does to other variables. That is, in some circumstances persuasive influence of group membership might be a peripheral-cue effect, but at other times group membership might serve as an argument, might bias processing, or might influence how much people scrutinize arguments (see Flem- ing & Petty, in press, for additional discussion of multiple roles for group membership, in persuasion).

In addition, when some investigators find that some seemingly "peripheral" variables can affect the amount of information processing, this is seen as a surprising revelation rather than as a result consistent with the ELM. For example, when Soldat, Sinclair, and Mark (1997) found that the color of the paper on which a task was printed influenced the extent of information processing, they noted that it appears to be the case that cues that are traditionally seen as peripheral (e.g., color . . . ) can affect whether people engage in elaboration" (p. 69). As noted previously, even early research guided by the ELM multiple-roles notion showed that a variety of seemingly peripheral variables, such as source expertise (e.g., Heesacker, Petty, & Cacioppo, 1983) and source attractiveness (e.g., Puckett, Petty, Cacioppo, & Fisher, 1983), could influence the extent of information processing (see Petty & Cacioppo, 1986b, or a review, see also DeBono & Harnish, 1988).

In general, whenever researchers postulate or document just one role for a variable, the ELM multiple-roles postulate suggests that this variable might operate by different mechanisms in different situations. For example, in a recent study (Ottati, Torkildsen, & Hubbard, 1997), a speaker's facial expressions were shown to influence the extent of processing of the speaker's message (i.e., happy facial expressions elicited less elaboration than neutral expressions). The ELM suggests that a speaker's facial expressions should be capable of influencing attitudes by other mechanisms as well (e.g., by serving as a peripheral cue if the elaboration likelihood is constrained to be low).

**POSTULATE 4: THE OBJECTIVE-PROCESSING POSTULATE**

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.

Postulate 4 has been relatively uncontroversial. It simply notes that some variables influence the extent of information scrutiny in a relatively objective manner, by invoking various motivational factors (e.g., encompassing a person's intentions and goals) and ability factors (e.g., encompassing a person's capabilities and opportunities). Persuasion researchers have identified a number of ways to assess the extent to which persuasion is based on an effortful consideration of information. Perhaps the most popular procedure has followed Petty et al. (1976) and has varied the quality of the arguments contained in a message, in order to gauge the extent of message processing by the size of the argument quality effects on attitudes. Greater argument quality effects suggest greater argument scrutiny. Although the purpose of argument quality manipulation in ELM studies is sometimes misunderstood (see O'Keefe, 1980), such manipulation is simply a methodological tool for examining the impact of some other variable on thinking (for further discussion, see Petty & Cacioppo, 1986b; Petty, Wegener, Priester, Fabrigar, & Cacioppo, 1993).

Other procedures for assessing the extent of mental effort include assessment of the number and profile of issue-relevant thoughts generated (Petty, Ostrom, & Brock, 1981). High-elaboration conditions are sometimes associated with more thoughts (e.g., Bunnell & Howard, 1975), and even if the total number of thoughts does not vary, under high-elaboration conditions the thoughts better reflect the quality of the issue-relevant information presented (e.g., Harkins & Petty, 1981). For example, low elaborators might generate an average of two favorable and three unfavorable thoughts following a message, reflecting their initially unfavorable attitudes regardless of the quality of the arguments presented. However, high elaborators might generate fewer favorable and more unfavorable thoughts following the presentation of strong arguments, and one favorable and four unfavorable thoughts following the presentation of weak arguments. Note that in this example, the total number of thoughts does not vary across elaboration conditions, but the thoughts better reflect the fact that the individuals have considered the substantive message information presented. Also, correlations between message-relevant thoughts and postmessage attitudes tend to be greater when argument scrutiny is high (e.g., Petty & Cacioppo, 1979b), and high message elaboration can produce longer reading or exposure times than more cursory analyses (e.g., Mackie & Worth, 1989; see Wegener, Griskevicius, & Petty, 1995, for a discussion of measurement of message elaboration).

The ELM elaboration model suggests that variables can influence persuasion by enhancing or reducing information processing is a key hypothesis in helping to explain how the same variable can both increase and decrease persuasion. For example, because distraction reduces information processing, it inhibits whatever thoughts a person normally would be thinking in the absence of distraction. Thus, if a person would normally be generating many unfavorable thoughts because a message is highly counterattitudinal or contains specious arguments, distraction will reduce these unfavorable thoughts, and persuasion will be reduced as well (Petty et al., 1976).

Following the distraction studies (Petty et al., 1976), numerous investigations have manipulated some variable of interest (such as source expertise), along with some other variable (usually in the cogency of the message arguments) that both increase the profile of thoughts generated very favorable or very unfavorable when people think about the message. If source expertise influences thinking in a relatively objective manner, then one of the two patterns of results presented in Figure 3.2 can be expected. The conceptual panel depicts the case in which a high-expertise source produces more message processing than a low-expertise source. The bottom panel depicts the opposite result: A low-expertise source produces more message processing than a high-expertise source. Note that whatever processing outcome is produced, such results move understanding of the variable beyond the first-generation persuasion conclusion (i.e., that the variable either
enhances or reduces persuasion) to the second-generation conclusion (i.e., that the variable can both enhance and reduce persuasion because of its effect on information processing; see Petty, 1977, for additional discussion of the generations of persuasion research).

In the first wave of research examining the impact of some variable on message processing, it was typically assumed that variables either enhance or reduce information processing. Many such variables have been examined in this regard. For example, just as distraction was shown to reduce ability to process a message, repeating a message was shown to increase ability to process (Cacioppo & Petty, 1989). Also, just as some variables were shown to increase motivation to process (e.g., enhancing personal relevance; Petty & Cacioppo, 1979b, 1990), other variables were shown to decrease motivation to process (e.g., making the person part of a group responsible for evaluating the message; Petty, Harkins, & Williams, 1980). Some variables (such as distraction and repetition) were part of the persuasion context, but other variables influenced processing stemmed from the message itself (e.g., overly complex messages tend to receive less processing than simple messages; Hafer, Reynolds, & Obertynski, 1996), or the source (e.g., knowledgeable sources who were untrustworthy induce more processing than knowledgeable sources who are trustworthy; Priester & Petty, 1995), or the recipient of the message (e.g., those high in need for cognition engage in greater message processing than those low in need for cognition, Cacioppo, Petty, & Morris, 1983).

The number of variables that have been crossed with argument quality to examine the effect of the variables on information processing is now quite large; in addition to those just mentioned, these variables include mood (Worth & Mackie, 1987; Bless, Bohner, Schwarz, & Strack, 1990; see Bless & Schwarz, Chapter 21, in this volume), recipient posture (Petty, Wells, Heesacker, Brock, & Cacioppo, 1983), deprivation of control (Putnam, 1963), expectation of discussion with another (Chaiken, 1980; Leippe & Elkin, 1987), number of message sources (e.g., Harkins & Petty, 1987; Moore & Reardon, 1987), ambivalence about the message topic (Maio, Bell, & Esses, 1996), speed of speech (Smith & Shaffer, 1991), physiological arousal (Sanbonmatsu & Kardes, 1988), time pressure (e.g., Rameshwar & Chaiken, 1991), knowledge about the issue (Wood, Rhodes, & Biek, 1995), and others.

Thus, a number of studies have supported the second-generation conclusion that many variables can increase or decrease persuasion by increasing or decreasing information processing. More recently, however, a number of studies have addressed the third-generation possibility that the same variable can increase processing in some situations, but decrease it in others. The first such study examined the effect of rhetorical questions on persuasion and found that summarizing arguments as rhetorical questions (e.g., "Wouldn’t increasing tuition lead to an improvement in the library?") rather than as statements (e.g., "Increasing tuition would lead to an improvement in the library") led to increased message processing when the issue was of low personal relevance and people ordinarily would not be thinking about the message, but to reduced message processing when the issue was of high personal relevance and people ordinarily would be thinking about the message (Petty, Cacioppo, & Heesacker, 1981). The latter effect presumably occurred because people who were already engaged in thinking about the message were distracted from their natural chain of thoughts by the rhetorical questions.

Since the rhetorical-questions study, several variables have been shown both to increase and to decrease message processing in different situations. For example, endorsement of an advocacy by a majority of one's peers leads to more message processing than minority endorsement when the issue is counterattitudinal, but majority endorsement leads to less message processing than majority endorsement when the message topic is proattitudinal (Baker & Petty, 1994).

Framing the message arguments in a positive way (e.g., "If you stop smoking you will live longer") leads to more processing than nega-

FIGURE 3.2. Two patterns of results that can be expected if source expertise influences thinking in a relatively objective manner: (Top) A high-expertise source leads to greater differentiation of strong from weak arguments. (Bottom) A low-expertise source leads to greater differentiation of strong from weak arguments.
and the research on positive–negative framing can be understood by the simple principle that "surprise leads to more message processing" (e.g., it is surprising for people to find that a majority disagrees with them or a minority agrees). Similarly, the motivational results can be understood through application of mood management motives (i.e., people in a positive mood process the pleasant message more because they are more sensitive to the hedonic consequences of their actions; Wegener & Petty, 1994). We suspect that a relatively small number of processing principles will ultimately integrate these third-generation studies.

**POSTULATE 5: THE BIASED-PROCESSING POSTULATE**

Variables affecting message processing in a relatively biased manner can produce either a positive (favorable) or negative (unfavorable) motivational and/or ability bias to the issue-relevant thoughts attempted.

Whereas Postulate 4 notes that some variables have an impact on thinking (elaboration) by influencing thinking in a relatively objective manner, Postulate 5 recognizes that thinking can also be biased. The variables just discussed, such as distraction or need for cognition, tend to influence information-processing activity in a relatively biased manner. That is, all else being equal, distraction tends to disrupt whatever thoughts a person is thinking (Petty et al., 1976). The distraction per se does not specifically target one type of thinking (e.g., favorable or unfavorable) to impede. Similarly, individuals with high need for cognition are more motivated to think in general than are people low in need for cognition (Cacioppo et al., 1983). They are not more motivated to think certain kinds of thoughts than others. Some variables, however, are selective about their effects on thinking.

**Motivational and Ability Factors in Bias**

Just as motivational and ability factors contribute to relatively objective information processing, Postulate 5 notes that both motivational and ability factors contribute to biased processing. Regarding motivation, the ELM holds that motivation is relatively objective when no prior judgment is preferred and a person's implicit or explicit goal is to "seek the truth wherever it might lead" (Petty & Cacioppo, 1986b, p. 19). In contrast, a motivated bias can occur whenever people implicitly or explicitly prefer one judgment or conclusion over another. Petty and Cacioppo (1986b) noted that the distinction between objective and biased processing has much in common with an earlier cognitive distinction between "bottom-up" and "top-down" processing (cf. Bobrow & Norman, 1975). Whereas objective processing tends to be data-driven (i.e., drawing whatever conclusions the data imply), biased processing is directed in such a way as to favor an existing attitude schema or current goal. Biased processing also has much in common with a subsequent distinction made by Kruglanski (1990) between the need for "specific closure" and the need for "nonspecific closure.

When a person is seeking nonspecific closure, any answer will do, and thus processing can be relatively objective; however, when a person is seeking specific closure, some answers are preferred over others, and thus processing is more likely to be biased.

In the ELM, a wide variety of motivations can determine which particular judgment is preferred in any given situation. For example, if the reactance motive (Brehm, 1966) is aroused, people will prefer to hold whatever judgment is forbidden or restricted and to resist whatever opinion is pressured. If balance motives (Heider, 1958) are operating, people will prefer to adopt the position of a liked source but to distance themselves from a disliked source. If impression management motives (Techoh & Besanceney, 1967) are in ascendance, people will prefer to hold whatever position they think will be ingratiating and to avoid those that will make them look bad. If self-affirmation motives (Steele, 1978) are high, people will prefer the position that will make them feel best about themselves, and so forth. Importantly, many of these biasing motives can influence judgments by either the central or the peripheral route. That is, biasing motives can have their impact on judgments by effortful or noneffortful means. For example, invocation of reactance can lead to simple rejection of the forbidden position without much thought (i.e., based on the reactance motive alone), or the reactance motive can lead to a more effortful rejection by motivational and/or ability counterarguing of the position. Whether the motive produces a biased outcome by relatively effortful or noneffortful means will depend on other variables such as whether the person is motivated (e.g., high vs. low personal relevance) or able (e.g., high vs. low distraction) to think carefully about object-relevant information (Petty & Cacioppo, 1979; 1990). Finally, it is worth noting that if the overall elaboration likelihood is high, motivated biases will presumably lead to a biased assessment of all information in the persuasion environment. In such circumstances, people might "allow" certain peripheral cues consistent with their motivational goals to influence their judgments, whereas in the absence of these motives they might discount or correct for these cues (see "Bias Correction,") below. If the overall elaboration likelihood is low, however, then motivated biases will either have direct impact on judgment, or lead to a biased assessment of a more limited set of information (e.g., only the most salient peripheral cues).

The ELM holds that biased processing can occur even if no specific judgment is preferred (i.e., if motivational factors alone will promote relatively objective processing). This is because ability factors can also introduce a bias in the information-processing activity. For example, in some circumstances, knowledge stored in memory is simply imbalanced (and thus favors some conclusions over others). In other circumstances, variables in the persuasion setting can bias retrieval of information even if what is stored in memory is completely balanced and no motivational biases are operating (see Petty, Priester, & Wegener, 1994, for additional discussion). For example, a positive mood might increase access to positive material in memory (e.g., Bower, 1981; see Bless & Schwarz, Chapter 21, this volume). The result could be that favorable heuristics are more likely to be retrieved and used than unfavorable cues when the elaboration likelihood is low, and that favorable interpretations of arguments are generated and applied when the elaboration likelihood is high (Petty, Schumann, Richman, & Strahman, 1993). In general, biases in processing a persuasive message are fostered when the message contains information that is ambiguous or mixed rather than clearly strong or weak (Chaiken & Maheswaran, 1994).

Bias can occur because of what people choose to process, how they choose to process it, and/or how they integrate the results of their information-processing efforts. Further more, these processes can be driven by motivational factors, ability factors, or by both. Consider the well-known study by Lord, Ross, and Lepper (1979) in which people received information both favoring and opposing capital punishment information. Following the message, people reported their own side to be more compelling than the other side. This could have occurred for a number of reasons: Assume for the moment that in some objective sense, the arguments presented on both sides were equally compelling. Why would people have found their own side to be more persuasive? According to ELM, there are a number of possibilities. First, people might have engaged in relatively little processing of either side, but simply demonstrated an "ownness bias" (Perloff & Brock, 1987). Second, the message might have generated the belief that my side is better (i.e., using their initial feelings as a peripheral cue to validity; Petty, Cacioppo, & Haugtvedt, 1992). Second, the biased outcome could have come about as a result of various more effortful message-processing biases. For example, people could have engaged in greater thinking about their own side of the issue over the other side. Even if this processing was objective, this difference in amount of thought could have led them to find their own side to be more compelling. Alternatively, people could have engaged in biased processing of one or the other side—selectively arguing in favor of their own side and/or counterarguing the other side. Finally, even if people processed both sides objectively and to the same degree, generating a balanced set of thoughts, the thoughts favoring their own side (and/or opposing the other side) might have been given greater weight in forming a final judgment than the thoughts favoring the other side or opposing their own side; Anderson, 1988). It is important to note that these processes could have been mostly attributable either to ability or to motivational fac...
and the research on positive-negative framing can be understood by the simple principle that "surprise leads to more message processing" (e.g., it is surprising for people to find that a majority disagrees with them or a minority agrees). Similarly, the mood results can be understood through application of mood management motives (i.e., people in a positive mood find the pleasant message more because they are more sensitive to the hedonic consequences of their actions; Wegener & Petty, 1994). We suspect that a relatively small number of processing principles will ultimately integrate these third-generation studies.

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In the ElM, a wide variety of motivations can determine which particular judgment is preferred in any given situation. For example, if the reactance motive (Brehm, 1966) is aroused, people will prefer to hold whatever judgment is forbidden or restricted and to resist whatever opinion is pressurized. If balance motives (Heider, 1958) are operating, people will prefer to adopt the position of a liked source to distance themselves from a disliked source. If important or alternative motives (Tedeschi, Schlenker, & Bonoma, 1971) are in ascendance, people will prefer to hold whatever position they think will be ingratiating and to avoid those that will make them look bad. If self-verification motives (Steele, 1988) are high, people will prefer the position that will make them feel best about themselves, and so forth. Importantly, many of these biased motives can influence judgments by either the central or the peripheral route. That is, biased motives can have their impact on judgments by effortful or non-effortful means. For example, invocation of reactance can lead to simple rejection of the forbidden position without much thought (i.e., based on the reactance motive alone), or the reactance motive can lead to a more effortful rejection by motivating intense countering of the position. Whether the motivational bias is a biased outcome by relatively effortful or non-effortful means will depend on other variables such as whether the person is motivated (e.g., high vs. low personal relevance), or able (e.g., high vs. low distraction) to think carefully about object-relevant information (Petty & Cacioppo, 1979, 1990). Finally, it is worth noting that if the overall elaboration likelihood is high, motivated biases will presumably lead to a biased assessment of all information in the persuasion environment. In such circumstances, people might "allow" certain peripheral cues consistent with their motivational goals to influence their judgments, whereas in the absence of these motives they will discount or correct for these cues (see "Bias Correction," below). If the overall elaboration likelihood is low, however, then motivated biases will either have a direct impact on judgment, or lead to a biased assessment of a more limited set of information (e.g., only the salient peripheral cues).
and to counterargue opposing sides, but relatively balanced knowledge is less likely to con-fer this ability. The nature of one’s knowledge is considered an ability bias, be-cause even if people are trying as hard as pos-sible to be objective, it will be more diffi-cult for them to do so the more they have a biased store of previous knowledge on the topic.

However, it is also important to recog-nize that increasing knowledge about a topic, whether that knowledge is balanced or not, can have various motivational consequences as well. For example, if the message topic is a relatively unimportant one, a person might use the perceived amount of knowledge on a topic as a cue to reject the message. That is, the person might reason that he or she is likely to have more expertise than the mes-sage source, and thus that there is no need to change. In addition, however, a person’s knowledge can be used as an indication of whether or not to process the message. For example, the person might reason, “I’m unin-formed, so I need to learn more,” or “I know enough, so I don’t need to process,” or maybe that “I have some knowledge, so this must be worth thinking about.” These postulated moti-vational effects are really effects of perceived knowledge rather than actual knowledge, since, for example, a person with objectively little knowledge might still perceive himself or herself as an expert! Of course, when the mes-sage topic is also important, thinking oneself to be more expert than the source can also lead to extensive counterarguing of what the source has to say on the topic.

Bias Correction

The mere fact that some motivational or abil-ity factor encourages biased processing does not mean that a biased outcome will inevi-tably result. One reason for this is that people sometimes attempt to correct for factors they believe might unduly influence (or might have unduly influenced) their evaluations (e.g., Strack, 1992; Petty & Wegener, 1993; Wilson & Brekke, 1994). According to the flexible correction model (FCM; Wegener & Petty, 1995, 1997), corrections for bias can proceed in different directions, depending on recipi-ent’s theories of how the biasing event or stimulus (e.g., an attractive source) is likely to influence their views. The FCM posits that in order for corrections to occur, people should (1) be motivated and able to identify poten-tially biasing factors, (2) possess or generate a naive theory about the magnitude and direc-tion of the bias, and (3) be motivated and able to make a biased correction. In some cases, integrative processing of the informa-tion (e.g., Schul & Burnstein, 1985) can make it difficult for people to correct for the biasing effect of an individual piece of information that contributes to an overall evaluation. That is, even if motivated to correct, people might not have the ability to do so, or to do so accu-rately.

When people are motivated and able to correct, theory-based corrections can actually result in reversals of typical persuasion effects (e.g., if people believe that the persuasion fac tor has had a greater impact than it actually has). For example, in one study, when people were made aware of possible biases due to source likability, an overcorrection led a dis-liked source to be more persuasive than a liked source (Petty et al., 1998).

POSTULATE 6: THE TRADEOFF POSTULATE

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.

Postulate 6 says that as one moves along the elaboration continuum, the impact of periph-eral cue processes on attitudes varies. That is, at low levels of argument scrutiny, rela-tively low-elaboration judgment strategies are chosen (such as going with the early information or relying on heuristics) and low-elaboration judgment mechanisms and processes (such as identification with the source or classical condition-ing) have a greater impact on attitudes than they do at high levels of scrutiny. In es-sence, Postulate 6 articulates a tradeoff be-tween the impact of central and peripheral mechanisms on judgments along the elabora-tion likelihood continuum. That is, as the im-pact of central-route processes on judgments increases, the impact of peripheral-route mechanisms on judgments decreases. One as-sessment of this postulate that has been misunderstood is that the postulated tradeoff is not in the occurrence of central and peripheral processes, but in the impact of these pro cesses on attitudes and judgments. For exam-ple, the presence of one’s friend might invoke the heuristic "I agree with people I like" (Chaiken, 1980), but high-high and low-low elaboration conditions, because the heuristic is so well practiced that it is automatically ac-cessed. Under high-high elaboration conditions, however, when this heuristic enters cons-ciouness it will be subjected to careful scrutiny, just as the other information in the per-suasion context is subjected to scrutiny (Petty & Cacioppo, 1986a; Petty, 1994). That is, the retrieved heuristic, like all other available infor-mation in one’s consciousness, will be evalu-ated as an argument. If the heuristic is found to lack merit as an argument for supporting the advocated view, then it will have little im-pact on one’s overall judgment. On the other hand, if the heuristic is deemed cogent, then it will exert an impact. This scrutiny of the heur-isitic for merit is unlikely under low-elaboration conditions, where the mere invocation of the heuristic could be sufficient for persuasion.

It is important to note that the ELM trade-off hypothesis implies a number of things. First, at most points along the continuum, central and peripheral processes will co-occur and jointly influence judgments (Petty, Kasmer, Haugtvedt, & Cacioppo, 1987). Second, how-ev-er, movement in either direction along the continuum will tend to enhance the relative im-pact of one or the other process (e.g., effortful scrutiny for merit vs. reliance on a heuristic) on judgments. It is important to note that chang-ing the relative impact of one process over an-other on attitudes does not imply that the impact of any given variable (e.g., source expertise, mood) on judgments must increase or decrease as one moves along the continuum. This is because of the multiple-roles postulate discussed previously. Recall that the multiple-roles notion is that any given variable can influ-ence attitudes by different processes at differ-ent points along the elaboration continuum (Petty & Cacioppo, 1986a). In fact, as noted previously, the ELM holds that the impact of variables serving as cues under low-elaboration conditions can be reduced, un-
changed, enhanced, or even reversed as the elaboration likelihood is increased. In sum, the tradeoff hypothesis basically means that a variable is less likely to have its impact on attitudes via a peripheral process as the elaboration likelihood is increased.\textsuperscript{10}

Reduced-Impact Effects

The earliest research on the ELM (and HSM) focused on the reduced impact of variables serving as cues as the elaboration likelihood was increased. For example, Petty, Cacioppo, and Goldman (1981) found that a manipulation of source expertise (i.e., whether the message was presented by a Princeton University professor or a local high school student) had a smaller impact on attitudes when the personal relevance of the communication was increased (and that a manipulation of argument quality had an increased impact). Similarly, as noted previously, Petty and Cacioppo (1984a) found that the mere number of arguments in a message had a smaller impact on attitudes as the personal relevance of the message was increased (but that argument quality had a larger effect).

Petty (1997) outlined a number of possible explanations for these reduced-impact effects. For example, features of a message that serve as peripheral cues when the elaboration likelihood is low (e.g., source attractiveness, message length) might initially be effective under high-elaboration conditions as well (leading to a tentatively favorable attitude), but might subsequently be drowned out or undermined by the more substantive arguments (see also Chaiken et al., 1989). Or these features might simply be less salient than other substantive features of the message when elaboration is high, and thus might be viewed as less extreme, weighted less, or ignored. Or people might process the feature intently (i.e., as an argument), but might find that it is not useful or relevant to evaluating the central merits of the issue. People might even explicitly attempt to discount or correct for the impact of these features if they are seen as biasing.

Unchanged-, Enhanced-, and Reversed-Impact Effects

As just noted, according to the ELM, variables such as source attractiveness can have a favorable impact on attitudes for different reasons along the elaboration continuum. For example, attractiveness can influence attitudes by some peripheral mechanism under low-elaboration conditions (e.g., if people are distracted), but can serve to influence the amount of thinking if the elaboration likelihood is a bit higher (e.g., if people are unsure whether or not cognitive effort is merited). Under higher elaboration conditions, attractiveness can serve as an argument if it provides information central to the merits of the attitude object, can bias the processing of whatever issue-relevant information is presented, or both. Furthermore, as noted previously, the biased processing can result from either motivational or ability factors. For example, an attractive source, like a positive mood, might make it more likely that positive associations and ideas will come to mind. Or, to the extent that self-affirmation motives or impression management motives are present in the situation, people might wish to agree with an attractive source for purposes of enhancing esteem in their own eyes or the eyes of others. The key point here is that depending on the outcome of these different processes, a source cue can serve as a peripheral cue under low-elaboration conditions to lose the impact it had under low-elaboration conditions, can have an unchanged impact, can have an enhanced impact, or can even have a reversed impact on attitudes as the elaboration likelihood is increased.

For example, consider a study by Petty, Wegener, and White (1997, raw data; cited in Petty et al., 1998) in which a manipulation of linking for a source had an increased impact as the elaboration likelihood increased. In this study, students at Ohio State University were given a message from a person who either praised them in comparison to the students at the University of Michigan or derogated them. Part of the study was conducted prior to and part was conducted shortly after the University of Michigan football team defeated Ohio State for the second year in a row—once again ruin- ing what would have been a perfect season and a chance at a national championship. For data collected prior to the game, the typical source effect emerged (with the likable source being more persuasive than the dislikable source to a greater extent under lower than under high-processing conditions; Chaiken, 1980; Petty, Cacioppo, & Schumann, 1983). Shortly after the second loss, ending loss to Michigan, however, the reverse was observed. Following the loss, students reported that they didn't care about being highly biased against Michigan supporters. Thus, one would expect that the disliked source would lead to counterarguing when the attitude object is important. If the counterarguing of the disliked source was especially intense, it could lead to the observed result that the source manipulation had a greater impact in the high- than in the low-elaboration conditions. That is, the negative impact of counterarguing of the disliked source on attitudes could be greater than the negative impact of the disliked source's serving as a cue.

POSTULATE 7: THE ATTITUDE STRENGTH POSTULATE

Attitude changes that result mostly from processing issue-relevant arguments (central route) will show greater temporal persistence, greater prediction of behavior, and greater resistance to counterpersuasion than attitude changes that result mostly from peripheral cues.

Postulate 7 suggests that basing one's attitude on issue-relevant thinking (high elaboration) leads to stronger attitudes than basing one's attitude on little issue-relevant thinking (low elaboration), such as occurs when attitudes change by the peripheral route. As Petty and Cacioppo (1986b) explained, this postulate is based on the notion that high-effort, central-route processes generally require more cognitive effort than peripheral-route processes, and that issue-relevant cognitive effort is related to the various indicators of attitude strength (e.g., resistance to counterpersuasion). Thus, carefully processing three message arguments will lead to stronger attitudes than carefully processing just one argument (quantitative effect), and carefully processing just one argument will lead to stronger attitudes than less effortfully basing one's attitude on one salient heuristic retrieved from memory, or on one inference (e.g., self-perception) generated on-line (qualitative effect). Because the latter prediction assumes that processing one argument requires greater object-relevant cognitive effort than using one heuristic or inference, this comparison involves a qualitative and a quantitative difference.

Several features of Postulate 7 have been misunderstood. First, it is important to consider that the postulate applies to a comparison between attitudes changed to the same degree by high and low amounts of elaboration. Thus, it would not be appropriate to compare, for example, the persistence of a very small change produced by high elaboration with a very large change produced by low elaboration. At a subsequent point in time, the absolute amount of change could well be larger for the low-elaboration change than for the high-elaboration change, given the very different starting points.

Second, in generating predictions from the postulate, it is important to understand why high amounts of elaboration are thought to produce the postulated strength consequences. That is, Petty and Cacioppo (1986b) noted that several mediating mechanisms are likely to be responsible for the effects of elaboration on attitude strength. They noted, for example, that the spread of thinking about an object can render the attitude more acces- sible than low amounts of thinking, and that increased accessibility will make it more likely that the same attitude will be reported at two points in time and be more stable to guidance be- havior. Also, increased object-relevant thinking will make it more likely that the object-relevant information linked to the attitude will be more salient and thus can be used to defend one's attitude at a later point in time. Similarly, thinking might enhance confidence in one's attitude, making it more likely that one will be willing to act on the attitude (see also Petty, Hagstvedt, & Smith, 1995). It is also possible that elaboration will enhance the consistency of the attitude with one's underlying beliefs, making it easier to resist countercom- munications (see Chakken, Pomerantz, & Giner-Sorolla, 1995). In any case, it is impor- tant to consider that object-relevant elabora- tion should produce strength consequences only to the extent that it is associated with the postulated mediating mechanisms. To the ex- tent that elaboration does not result in the presumed mediating processes, it should not be associated with the strength consequences. Thus, for example, if increased thinking re- sults in greater uncertainty about one's atti-
tude rather than in greater confidence, thinking should not necessarily result in greater strength than not thinking.

Furthermore, consideration of the presumed mediating mechanisms suggests that low-effort processes can also produce one or more of the strength consequences. Petty and Cacioppo (1986a) noted, for example, that increasing the repetition of one or more peripheral cues (e.g., Johnson & Watkins, 1974; Weber, 1972) can enhance the accessibility of the attitude and the memorability of the cue(s), resulting in relatively persistent attitudes. In fact, Zanna, Fazio, and Ross (1994) reported that merely having people rehearse their attitudes (presumably enhancing accessibility without encouraging any additional thinking) was sufficient to increase attitude persistence. Similarly, increasing the memorability or accessibility of a cue, by increasing its relevance to the attitude object, can also enhance persistence (Sengupta, Goodstein, & Boninger, 1997).

Another area of confusion is whether the various postulated strength consequences in fact occur, given that each results from elaboration. The idea is that only strength consequences can be independent. For example, Petty and Cacioppo (1986a) noted that "the resistance of an attitude to attack is conceptually distinct from the temporal persistence of the attitude. Thus, some attitudes may be highly persistent, but only if they are not challenged. Likewise, it is possible for some attitudes to be very resistant to change, but only in the short term" (p. 190; see also McGuire, 1964). As one instance of independence, Petty and Cacioppo noted that repeatedly pairing peripheral cues with an attitude object can produce an accessible attitude that is relatively persistent. However, individuals with these peripheral based attitudes are still likely to be susceptible to counterarguments, because they will presumably have difficulty mounting a defense of their attitudes if they are attacked with strong arguments.

In an empirical demonstration of the independence of attitude persistence and resistance, Haugvet, Schumann, Schoeler, and Warren (1994) presented one group of participants with an advertising campaign for a consumer product in which the substantive arguments for the campaign were varied across multiple exposures of the ads. Another group of participants was presented with a campaign in which the ads were varied cosmetically (e.g., differentendorser cues in each ad), but the ads did not vary greatly in the arguments they presented. That is, the substantive variation strategy involved keeping the peripheral cues constant across exposures, but presenting different substantive information in each ad. The cosmetic-variation strategy involved keeping the substantive information the same across all exposures, but varying the positive cues contained in the advertisements. Substantive variation strategies would be expected to increase attitude formation by low-effort evaluation of the substantive arguments, but cosmetic variations would encourage attitude formation by low-effort processes, such as reliance on source heuristics (see Schumann, Petty, & Clemons, 1990).

Previous research comparing high- and low-effort attitude changes has typically involved a single exposure to a message containing multiple pieces of substantive information (arguments) but just one salient cue. Haugvet et al. (1994) noted that such research has been carried out with participants with mnemonic advantages (e.g., multiple retrieval cues) over peripheral-route participants. However, if recipients were presented with multiple peripheral cues (cosmetic-variation strategy), or if a single cue was repeated multiple times, attitude persistence might be greater than that obtained in the typical low-effort condition, in which there was just one exposure to an ad containing a peripheral cue. Consistent with this hypothesis, Haugvet et al. (1994) found that people responding to the minimally varied ads, to the cosmetically varied ads, or to a single ad showed greater (and equivalent) persistence in attitude change over a 1-week period, compared to people who received just one exposure. That is, by the persistence criterion, each of the repetition conditions produced equivalently more favorable attitudes than the single-exposure control 1 week after message presentation.

What about resistance? To assess this, after completing the delayed attitude measurement, recipients were presented with a message that weakly attacked the product presented in the critical advertisements. On the attitude measure taken after the attacking message, people who had received the substantively varied ads showed greater resistance than people in any of the other groups. Thus, even though the repetition strategies were all more effective in enhancing persistence over 1 week than the substantively varied control condition, the different repetition strategies were not all more effective in inducing resistance. Specifically, the attitudes based on exposure to substantively varied ads were more resistant in the face of attack than were the attitudes resulting from the other repetition strategy. That is, repetition and variation of peripheral cues were useful for increasing persistence, but were ineffective in increasing resistance. This can be understood by consideration of the presumed mediating mechanisms outlined above. That is, for example, both substantively and cosmetically varied ads could have increased the accessibility or memorability of the attitude to an equivalent extent, but only effortless processing of the substantive ads led people to have sufficient information to be able to defend their attitudes when attacked.

In sum, the key to Postulate 7 is understanding the impact of elaboration on the mechanisms mediating the strength consequences. Thus, if a message recipient elaborates a source factor and thinks about its relevance to validity, then the source cue should enhance attitude change over the use of the same source factor as a cue (e.g., acceptance as a result of a heuristic) if the former process results in an attitude that is more accessible, associated with greater confidence, and so forth.

What happens when a strong (e.g., relatively persistent and accessible) attitude is changed as a result of the provision of new information? Is the old attitude simply replaced with the new one? This is a question with numerous empirical and practical implications. For example, in the field of health education, people's initially strong attitudes in favor of smoking or high-fat foods can be changed by new information to be less favorable toward these behaviors. Yet, a common anecdotal occurrence is that when confronted with the attitude object (cigarettes, ice cream), the "old," highly favorable attitude can come to mind prior to the "new," less favorable one and guide behavior (Petty, Baker, and Gliceh, 1991). I suggested that this phenomenon should be especially likely when people are under some cognitive load and are therefore unable to reflect upon their new attitude and/or denominator (see also Petty, Cacioppo, and Fishbein, 1986).

THE ELM AND SOCIAL JUDGMENT

Thus far in this chapter, we have reviewed the formal postulates of the ELM, and addressed some areas of confusion that have appeared in the literature. Because most of the work on the ELM has been conducted in a persuasion context, our review and examples have fo-
phas is on preexisting evaluative heuristics that are retrieved from memory. In any case, the ELM therefore predicts that impressions formed of individuals on the basis of previously stored categories will be less strong (on some dimensions at least) than impressions formed by an effortful analysis of the traits and behaviors that the new person displays.

One potentially important difference between the Fiske model and the ELM is that the Fiske model implies a two-step process. That is, the high-effort evaluation is only postulated to occur to the extent that category processing fails. In the ELM, this two-step process provides a reasonable account of what happens in some circumstances (e.g., individuals low in need for cognition might rely on source trustworthiness cues if these are present, but if not, they might be "forced" to process the message; Priester & Petty, 1995). On the other hand, the ELM holds that there are a variety of situations in which people are highly motivated to think, and thus are not "forced" to think by a failure of peripheral cues to fit the target. In such situations, the ELM holds that people will engage in what Fiske has called "piecemeal processing," and any category accessed will be evaluated along with all of the other person-relevant information, or the category might bias processing of the other information. Of course, the ELM also incorporates a variety of additional low-effort means of evaluating a person (beyond stored assessment of the person's "category").

Attitude-Behavior Consistency

Fazio (1990) has proposed a two-route model of behavioral choice (the "motivation and opportunity as determinants" [MODE] model; see Fazio & Towles-Schwen, Chapter 5, this volume). That is, sometimes people's behavior is thought to be determined largely by the accessibility of their existing attitudes, while other times behavior is thought to be determined largely by people's effortful scrutiny of all of the available information in the behavioral context. Although the latter, more reasoned process has much in common with the high-effort, central-route process of attitude formation, the accessibility process does not necessarily map well onto the peripheral route. This is because the ELM holds that an accessible attitude (like other variables) can influence behavioral judgments (like other judgments) in both effortful and non-effortful ways. Thus, a person's highly accessible attitude might come to mind and guide behavior rather automatically without much thought (e.g., "I like you, so I'll give you money"); or an accessible attitude might increase the use of the information available in the behavioral situation in a rather objective way (see Fabrigar, Priester, Petty, & Wegener, 1998); or the attitude might bias processing of the information available (as emphasized by Fazio, 1995; e.g., liking the person makes the cause seem more worthy, leading to a greater monetary donation).

Affect and Judgment

Forgas (1992, 1995) has recently proposed a multiroute model of the impact of affect on judgment (the affect infusion model, or AIM). In the AIM, several information-processing modes are described. Two of the modes address when affect has an impact on judgment, and two address when affect does not have an impact. Specifically, Forgas notes that affect can have an impact on judgment in two ways. In what Forgas calls "heuristic processing," affect influences judgment because people use their affective reactions to influence their evaluative reactions to the target. In what he calls "substantive processing," affect influences judgment "through its selective influence on attention, encoding, retrieval, and associative processes" (Forgas, 1995, p. 40). In essence, these two processing modes map nicely onto the ELM notion that affect can influence judgment under low-elaboration conditions by serving as a peripheral cue, and under high-elaboration conditions by biasing thinking (see Petty, Schumann, et al., 1993, for evidence). Forgas further notes that affect will not have an impact on judgment if a person has a strong prior attitude that is retrieved directly "affect access"). This mode points to one primitive cue (i.e., a person's own attitude) that can be more salient than the cue effect produced by mood. The ELM argues that under low-elaboration conditions, a variety of cues might compete with mood—not just one's prior attitude. Thus, a salient dislikable message source might be used as a cue under low-elaboration conditions, rather than one's mood. That is, in the ELM, one's prior attitude is not the only cue that can form the impact of mood as a cue or can be used instead of mood. Finally, Forgas notes that affect will not have an impact under high-elaboration conditions if some strong motivational bias is at work ("motivated processing"). Stated in ELM terms, the impact can be biased by a number of motivational factors where the elaboration likelihood is high, and some of these can undermine the impact of mood. For example, if a person is placed in a positive mood, but reactance is induced by the speaker, the desire to reject the message might overwhelm any favorable impact that conditionally would be produced by the positive mood. In sum, Forgas's four strategies map well onto a 2 (high elaboration, low elaboration) × 2 (no other bias present, other bias present) matrix, where under low elaboration the other bias is supplied by nonmood variables that can serve as cues (e.g., source likability), and under high elaboration the other bias is supplied by other motivational (e.g., reactance) or ability (e.g., ELM judgment) variables that compete with the mood bias.

There are also a number of crucial differences between the ELM and the AIM. For example, Forgas (1992, 1995) posits that stored judgments of the target are only used when the target (or judgment) is unimportant to the judge, whereas when the attitude or judgment can serve in multiple roles within the ELM (see discussion of the MODE model, above). The models also diverge in their treatment of effects of mood. For example, in the AIM, both heuristic use of mood and effects of mood on information scrutiny occur only if the judgment is important (if the judgment is unimportant, direct access of a prior judgment is used); Within the ELM, heuristic and other "direct" influences of mood (e.g., classical conditioning) are more likely under low- rather than high-elaboration conditions (i.e., low rather than high importance of the attitude object or judgment), and effects of mood on amount of information scrutiny are most likely when elaboration likelihood is not constrained to be either high or low. Whereas the AIM (Forgas, 1992, 1995) hypothesizes decreased processing in happy moods, research guided by the ELM has shown that happy moods can either increase or decrease pro-
cessing of judgment-relevant information (see Wegener, Petty, & Smith, 1995). Finally, in addition to Forgas's heuristic-processing mode (based on "How do I feel about it?" heuristic; Schwarz, 1990) and substantive-processing mode, the ELM postulates that affect can serve as an argument relevant to the central merits of a judgment target. Although the AIM may influence the effect under the heuristic mode, we believe that there would be different consequences of using affect in these different ways.

Survey Responding
Krosnick (1991) has presented a conceptual analysis of people's responses to survey questions. Two strategies are distinguished: "satisficing" and "optimizing." When satisficing, people do not engage in effortful thought about the survey question, and thus give answers that are based on salient cues in the environment or on more simplistic strategies (e.g., selecting the first plausible answer, or always saying "yes"). When optimizing, people engage in effortful scrutiny of the questions and think carefully before answering. Thus, Krosnick notes that optimizing is more likely when people are both motivated and able to think about the survey questions, but that satisficing is more likely when either motivation or ability are low. Thus, consistent with the ELM, Krosnick postulates thoughtful and nonthoughtful routes to survey responding, which are moderated by motivation and ability factors. One important difference between the ELM analysis of survey responding and Krosnick's optimising-non-optimising analysis, however, is that Krosnick assumes that optimizing (i.e., high-effort processes) results in less biased judgments than satisficing (low-effort processes). In contrast, according to the ELM, bias can result from either low- or high-effort processes. For example, recall how much bias can be judgment by high-effort and low-effort processes (Petty, Schumann, et al., 1993). Thus, in the ELM, high effort is no guarantee that survey responses will be any more accurate than low-effort responses. In fact, in some cases, giving quick, highly accessible responses can result in greater accuracy than highly thoughtful but biased responses (cf. Wilson, K rift, & Dunn, 1989; see Petty & Jarvis, 1996, for more on high- and low-effort processes in survey responding).

CONCLUSIONS
Although it is sometimes misunderstood, the ELM has proven to be a useful framework for studying attitude change and persuasion. Incorporation of many ELM principles in models outside the persuasion domain suggests that the ELM might prove equally useful in a variety of related areas. Although existing non-persuasion-related models have incorporated some aspects of the ELM, we believe that many of these models have lost some of the complexities and flexibilities (e.g., the notion of multiple roles) that might make the ELM especially useful in those domains. It is our hope that the present discussion of some misunderstood aspects of the ELM will clarify aspects of the model and encourage interpretations true to the conceptualization intended.

NOTES
1. That is, as articulated shortly, the peripheral route to persuasion refers to attitude changes produced by low-effort central processes (i.e., putting minimal effort into elaborating irrelevant information) as well as central processes (e.g., use of heuristics, identification with the source) by which the mechanisms tend to produce similarly weak attitudes.

2. We refer to the elaboration likelihood continuum when assessing in advance of a message or judgment how likely it is that a person will think about it. For example, if there are many distractions in the situation, the likelihood of elaboration is low. The actual placement of an individual along the continuum, of course, cannot be known until after the message or attitude object has been processed.

3. Following Festinger (1954), the ELM talks about achieving subjective correctness; however, similar points can be made about achieving confidence in one's opinion (see Chaiken, Liberman, & Eagly, 1989), since confidence is presumably based mostly on a feeling that one's opinion is correct.

4. This effect is expected when the cognitive responses to the arguments are added or averaged, as long as the person's initial opinion (either for or against) is relatively weak or particular object or the class of objects to which this object belongs (cf. Wilson, 1989).

5. If the high-elaboration processor does not consider all of the information objectively, then the attitudinal outcomes might be the same as for the low-elaboration processor, but for different reasons. For example, if a high-elaboration processor encounters strong arguments first and becomes convinced of the merit of the position, the subsequent weak arguments might be actively rejected (i.e., belief in the position can lead to biased processing of weak arguments). That is, primary effects can occur for both effortful and noneffortful reasons (Huang & Wegener, 1994; Hawkins, Petty, & Wegener, 1996).

6. Of course, on some level, the issue of whether to lump all processes of persuasion together or to split them into two or more categories depends on the utility of the distinctions involved, as well as on how one defines what is qualitatively different from something else (Petty et al., in press). At the most general level, truly unimprovised models postulate something akin to "People think." Although true enough, such a view is relatively incapable of predicting when a given variable is likely to influence persuasion in a simple way (e.g., when mood is used as a heuristic; Petty & Cacioppo, 1983; Schwarz, 1990) as opposed to a more complex way (e.g., when mood influences interpretations of relevant information; Petty, Schumann, Richman, & Straathof, 1993; Wegener, Petty, & Klein, 1994).

7. Interestingly, what variables have the potential to serve as cues versus arguments can vary with situational and individual factors. For example, in a study conducted with Chinese students in Hong Kong (Aaker & Maheswaran, 1997), the mere number of arguments in a message became a less influential determinant of attitudes as task importance (i.e., elaboration likelihood) increased, whereas argument quality became more important, replicating the data just described for U.S. college students (Petty & Cacioppo, 1984). The cross-cultural replication suggests that Chinese students treat the mere number of arguments as a peripheral cue that is unrelated to the true merits of the advocacy, whereas U.S. students are more likely to consider the number of people who favored a product under high-elaboration conditions, whereas U.S. students were not (Maheswaran & Chaiken, 1991). The latter finding is consistent with the idea that the number of people who endorse something is viewed as more closely related to the central merits of an advocacy in a collectivist than in an individualistic culture.

8. This is not to imply that heuristics cannot be added to the model of argument processing, but rather that the same additive outcome can occur if the variable that invokes a heuristic and/or the heuristic itself, when considered for merit under high-elaboration conditions (we propose discussion the co-occurrence of central and peripheral processes until Postulate 6).

9. We do not mean to imply that all peripheral processes (such as central added to high-elaboration conditions.) Rather, people scrutinise both the external and internal information that is available. Thus, people might have conscious access to some peripheral information, such as retrieved heuristics (even if the retrieval process itself is automatic), but are not likely to have conscious access to other peripheral mechanisms, such as self-confirmation (as in classical conditioning). Because of this, the output of some peripheral mechanisms can be subjected to scrutiny, whereas the output of other peripheral mechanisms cannot. Attitudinal effects of the latter mechanisms might be detected with implicit measures.

10. Different peripheral-route processes require different minimal motivation and ability levels to have an impact on attitudes (e.g., self-perception process presumably requires that people have greater motivation and ability to evaluate a message than does classical conditioning or mere exposure). People go from extremely low levels of elaboration likely to above low levels, the output of some peripheral processes (such as self-perception and other attributional in that results in high conscientiousness). Once one past is the minimal level on the continuum necessary to invoke the process, however, moving higher along the continuum should reduce the impact of the source. That is, as the elaboration likelihood is increased further, the peripheral process should account for less variance in the overall attitude.

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