

# The Elaboration Likelihood Model

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## ABSTRACT

This chapter traces the development of the elaboration likelihood model (ELM) across three decades of research. The ELM began as a theory about the processes responsible for attitude change and the strength of the attitudes that result from those processes. It has now been applied to a wide variety of judgmental change phenomena. By focusing on the core mechanisms of change, the ELM has served to organize the many different theories, outcomes, and variables relevant to persuasion and influence. This review describes four fundamental ideas from the ELM and six phases of ELM research. A key strength of the ELM is that it provides a useful framework from which to understand the moderation and mediation of changes in attitudes as well as other judgmental outcomes from reducing prejudice to the impact of classic heuristics that influence choice and decision making.

## INTRODUCTION

The study of attitudes and persuasion has one of the longest histories in social psychology (see Briñol & Petty, in press). At one point,

the study of attitudes was considered to be the single most indispensable topic in the discipline (Allport, 1935). Empirical studies on persuasion were among the first in the field and Carl Hovland's massive program of research on attitude change during and after World War II set the core topics and provided the research agenda for decades afterwards (see McGuire, 1968). The study of attitude change became so popular that by the 1970s, there were hundreds of studies and many conceptual analyses. Indeed, so much research and so many specific theories had accumulated that this area of inquiry was in danger of collapse from the weight of competing theories and conflicting findings.

One problem was that seemingly simple variables such as the credibility of the message source that were expected to have a relatively straightforward impact on persuasion according to the persuasion theories of the time, instead produced a mystifying diversity of findings. The accumulated research results just did not support the widespread simple main effect assumptions that accepted theories had for the persuasion

outcomes of many variables (Petty, 1997). For instance, associating a message with an expert source, though usually good for persuasion, sometimes led to reduced influence. Another critical problem was that the core concept of attitudes was under attack largely because in some studies attitudes appeared to be consequential (e.g., guiding behavior) but more often, it seemed, they were not (Wicker, 1969). The surprising complexity of research findings caused most reviewers of the attitudes literature in the 1970s to be quite pessimistic about the usefulness of additional research (e.g., see Fishbein and Ajzen, 1972; Kiesler and Munson, 1975).

It was against this backdrop that the elaboration likelihood model (ELM) was born as a collaborative effort between Richard Petty and John Cacioppo while they were graduate students at Ohio State University in the mid-1970s. For his dissertation, Petty decided to tackle the problem of why some attitude changes persisted over time whereas others were very ephemeral. Drawing on the available literature and personal experience, Petty speculated that when attitude change was produced thoughtfully (such as after listening to strong arguments presented by John Cacioppo), the new judgments were relatively persistent whereas when attitude change occurred with relatively little thinking (such as when deciding you liked someone based on a first impression), the resulting judgment was more transitory. When Tim Brock, advisor for the dissertation, first learned about the planned studies on the persistence of persuasion, he challenged Petty to be more grandiose and propose a more general theory of attitude change rather than focusing on the more narrow attitude persistence hypothesis alone.

Intrigued by the challenge, Petty drew his friend and roommate, Cacioppo, into a long series of late-night (sometimes heated) conversations about the formation and change of attitudes that served as the foundation for the theory that was to come. The core two routes to persuasion idea (i.e., relatively thoughtful or not) was first presented in the

final chapter of Petty's dissertation following empirical studies focusing on memory for one's own issue-relevant thoughts as a determinant of the persistence of attitude change (see Petty, 1977). The dissertation also benefited greatly by the presence of Tony Greenwald on the Ph.D. committee. Greenwald (1968) had earlier proposed a "cognitive response" approach to attitude change which focused on a high elaboration-mechanism by which persuasion occurred or was resisted (i.e., actively generating favorable or unfavorable thoughts to the message arguments). The addition of a low thinking route to persuasion built on Greenwald's earlier approach.

The two routes to persuasion theory did not receive the *elaboration likelihood model* (ELM) name until it was first used in a textbook on persuasion that Petty and Cacioppo (1981) wrote in their first few years out of graduate school. The name was developed after John Harvey, editor of the series in which the book was to appear, advised that a formal name was *essential* if the idea was to stick. In hindsight, it was clear that he was right! The title of the theory was selected to convey the core idea that the high versus low thought processes of persuasion formed a continuum rather than a discrete pair.

Interestingly, at about the same time, Shelly Chaiken, a graduate student at the University of Massachusetts working on her dissertation with Alice Eagly, was also developing the idea that persuasion was sometimes the result of effortful thinking but was sometimes the result of a lower effort reliance on simple heuristics such as "experts are correct" (see Chaiken, 1978). Without awareness of each other's dissertation work, both Petty and Chaiken entered the job market in the same year and even competed for the same positions at several universities, probably (to the bewilderment of the audience) giving similar job talks. Over time, they became good-natured rivals and friends. Chaiken's theory was first called the heuristic model (Chaiken, 1987) to emphasize this unique low effort mechanism

of persuasion and eventually the heuristic-systematic model (HSM) in order to highlight the low versus high effort processes involved (see Chaiken et al., 1989). Although the ELM and HSM stem from different conceptual traditions (i.e., cognitive response theory versus message learning theory) and use different language and terminology, the theories have far more in common than they have points of divergence (see Petty and Wegener, 1998, 1999). Most importantly, the joint appearance of these theories and the research inspired by them did much to foster a more general interest in what became an explosion of dual process (see Chaiken and Trope, 1999) and dual system (e.g., Deutsch and Strack, 2006) approaches to judgment.

In any case, by the mid-1980s a good number of studies had emerged testing various ELM ideas and Petty and Cacioppo (1986a) summarized the accumulated research in a monograph in which the ELM was first presented as a series of seven formal postulates (see also Petty and Cacioppo, 1986b). In the years since then, as more work on the ELM was published, various new summaries of research guided by the ELM have appeared (e.g., Petty and Wegener, 1999) of which this chapter is the most current. From its inception, the ELM was developed to account for the complicated, contradictory, and even perplexing results obtained in the accumulated persuasion literature. It also aimed to provide an integrative framework from which past research findings could be understood as well as new predictions generated in the attitudes domain and beyond. In describing the development of the ELM over time, we will also highlight some of the key people who played important roles.

#### FOUR CORE ELM IDEAS

The ELM has been presented both schematically (e.g., Petty, 1977; Petty and Cacioppo, 1981, 1986a, 1986b; see Figure 11.1) and as

a series of formal propositions (Petty and Cacioppo, 1986a, 1986b; Petty and Wegener, 1999). Stripped to its bare bones, however, the ELM does four essential things. First, it highlights the fact that modifying people's attitudes or other judgments can be done with a high degree of thought or a relatively low degree of thought. That is, the "elaboration continuum" ranges from low to high.

Second, the ELM holds that there are numerous specific processes of change that operate along this continuum (e.g., classical conditioning and mere exposure require relatively little thought and operate at the low end of the continuum, but expectancy-value and cognitive response models require high degrees of thought and operate along the upper end of the continuum). When the operation of processes at the low end of the continuum determines attitudes, persuasion is said to follow the *peripheral route* whereas when the operation of processes at the high end of the continuum determines attitudes, persuasion is said to follow the *central route*. Of course, much of the time, persuasion is determined by a mixture of these processes.

The third thing the ELM does is to postulate that it matters whether persuasion occurs as the result of relatively high or low amounts of thought. This is because the degree of thought behind a judgment determines how consequential that judgment is. Specifically, the more a judgment is based on thinking about the merits of an issue, the more it tends to persist over time, resist attempts at change, and has consequences for other judgments and behavior (Petty et al., 1995).

The fourth and arguably most useful thing that the ELM does is to organize the many specific processes by which variables can affect attitudes into a finite set that operate at different points along the elaboration continuum. For example, the ELM postulates that one of the things that variables such as the attractiveness of the source of a message or the incidental emotion a person is experiencing can do is to affect how much thinking a person is doing – placing them somewhere

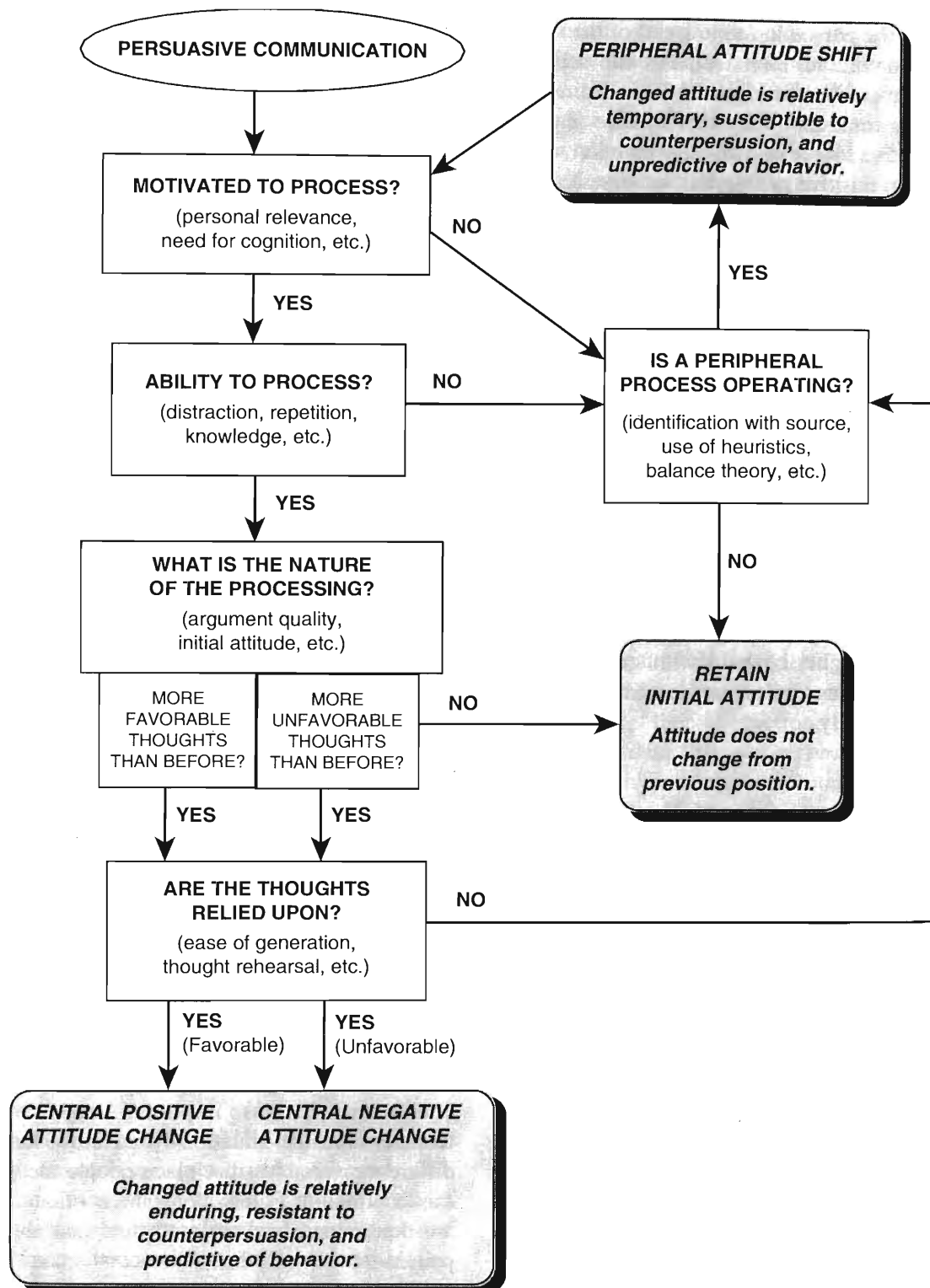


Figure 11.1 Schematic depiction of the Elaboration Likelihood Model

along the elaboration continuum. However, if circumstances have already conspired to place the person at the low end of the thinking continuum, then variables can serve as simple cues, affecting attitudes in a direction that is consistent with their valence (e.g., an attractive source or a positive emotion would lead to positive persuasion outcomes). If the person is at the high end of the elaboration continuum, then there are three other ways in which the variable can affect judgments. Specifically, the variable (1) can be examined as an argument (does the fact that the source is attractive or that the person feels good provide some relevant evidence as to the true merit of what is being advocated?), (2) can affect the valence of the thoughts that come to mind (e.g., exposure to an attractive source or being in a good mood can make positive thoughts more likely to come to mind), and/or (3) can affect a structural feature of the thoughts generated (e.g., an attractive source or feeling happy could make one's thoughts be held with greater confidence). These roles are described in more detail shortly.

## SIX PHASES OF ELM RESEARCH

Given a theory with the ambitions and complexity of the ELM, it could not, of course, be tested in a single study, or two or ten. Instead, research on the theory proceeded in a series of stages, and our review will follow these phases in a roughly chronological order. The first stages of work, conducted mostly by Petty and Cacioppo and their various peer and student collaborators, focused on the four core ideas just outlined. Thus, the first phase focused on simply establishing that there was a thinking continuum and that this continuum was consequential for persuasion. The second stage focused on providing evidence for the idea that the mechanism of persuasion could be different under high and low thinking conditions. A third phase examined the consequences of attitudes

changed by high versus low thinking conditions. A fourth phase provided evidence for the so-called "multiple roles" postulate – the idea that any one persuasion variable could affect attitudes in different ways depending on the likelihood of thinking.

Once the four core ELM ideas were supported in the first phases of the research program, a fifth phase of research focused on extending the ELM principles to other judgmental areas beyond the persuasion domain. Although work on each of these phases continues, the most active current phase of research focuses on exploration of a particular role that variables can assume in modifying attitudes or other judgments. Whereas prior research focused on primary cognition – the original association of an attitude object with some attribute – current work is examining the role of secondary cognition (i.e., metacognition). In particular, this work focuses on how and when people assess the validity of their thoughts and what the consequences of this are. We next review the six phases of research on the ELM and present a study that illustrates each.

### *Phase 1: Exploring the elaboration continuum*

In contrast to the earliest attitude change theories that focused on just one process of change (e.g., classical conditioning; Staats and Staats, 1958), the ELM allows for multiple processes that can involve different degrees of thinking. Because different processes of change occur along the thinking continuum, it was important early on to determine the situational and individual difference variables that place people along this continuum. Points along the continuum are determined by how motivated and able people are to assess the fundamental (central) merits of a person, issue, or position (i.e., the attitude object). The ELM assumes that when making an evaluative judgment, the default goal is to determine how good or bad the object truly is. That is, people want to have



attitudes that are subjectively correct. However, people neither have the desire nor the ability to attain equal confidence in every attitude. Thus, motivational and ability factors will determine how much thinking they do in any given situation. For example, it is not worthwhile to exert considerable mental effort to achieve correctness in all situations and people do not always have the requisite knowledge, time, or opportunity to thoughtfully assess the merits of a proposal.

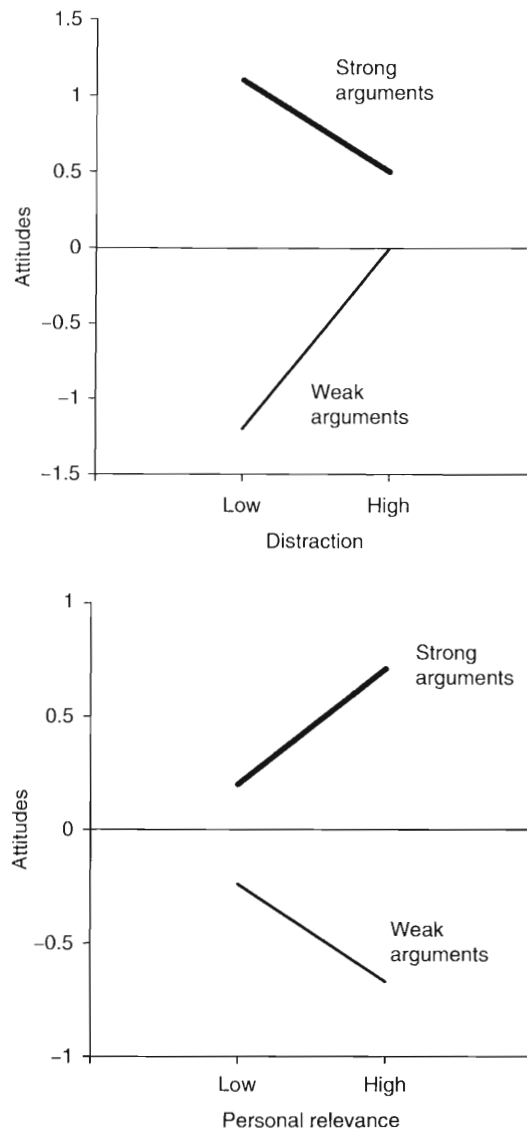
### *Amount of thinking*

In early research relevant to the ELM, it was useful to show that differences in the underlying extent of thinking (elaboration) could provide an explanation for the persuasive effects of variables that had been accounted for in different ways by prior theories.<sup>1</sup> The idea that variables could affect the extent of thinking was also important in explaining how any one variable could both increase and decrease persuasion. As an example, consider a variable like external distraction. Prior research guided by a message-learning approach (e.g., Hovland et al., 1953) suggested that distraction should be bad for persuasion because it would disrupt learning of the message arguments. Prior research guided by dissonance theory, however, suggested that distraction could be good for persuasion because people would have to justify the extra effort they put into processing the message (Baron et al., 1973). Another possibility, suggested by the elaboration continuum idea, was that distraction would affect how much thinking people did about a message.

Imagine a person who is exposed to a message containing eight cogent arguments. The high elaboration processor might think of two or three favorable implications of each of the arguments, whereas the low elaboration processor might think of only one favorable implication (because he or she is not thinking as much). The effect of this is that the high elaboration processor will likely 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 and use these thoughts as a guide to the correct attitude. Thus, if distraction reduces processing, when the message contains strong arguments, distraction will be associated with reduced persuasion because fewer favorable thoughts will be generated. This result would be consistent with both learning theory and the ELM. However, what if the message contains weak rather than strong arguments? In this case the high elaboration processor might think of many unfavorable implications of the arguments (i.e., counterarguments), whereas the low elaboration processor might think of only a few. This time the effect is that the high elaboration processor will have less favorable attitudes toward the issue than the low elaboration processor because he or she will have generated more unfavorable implications of the specious arguments presented. When this hypothesis was tested in an empirical study in which the extent of distraction and argument quality were jointly manipulated, the interaction pattern on the attitude data that was expected by the elaboration hypothesis was obtained (Petty et al., 1976, see Figure 11.2, top panel). That is, distraction reduced persuasion when the arguments were strong but increased persuasion when the arguments were weak.<sup>2</sup>

Following this study on distraction – the first to use a manipulation of argument quality to examine how a variable affects thinking – many other investigations have also used this paradigm. Today, there is a long list of variables that have been shown to affect the extent of thinking and thereby influence attitudes. These variables include message repetition, accountability, and emotion, to name just a few (see Petty and Wegener, 1998, for a review). Perhaps the most studied variable in this regard is the personal relevance of the communication. Linking the message to virtually any aspect of the self appears to increase motivation to think about it (Petty and Cacioppo, 1990). For example, in one study (Petty and



**Figure 11.2 Interactions of variables with argument quality. Top panel depicts distraction (data from Petty et al., 1976). Bottom panel depicts personal relevance (data from Petty and Cacioppo, 1979b)**

Cacioppo, 1979b), undergraduate students were told that a new comprehensive exam policy was going into effect next year or not until ten years in the future. The proposal for requiring students to pass an exam in their major area of concentration as a prerequisite to graduation was supported with either strong or weak arguments. When the policy was said to affect the students personally, argument quality effects were larger than when the policy had no personal relevance

(see bottom panel of Figure 11.2). Or viewed differently, increasing personal relevance tended to increase persuasion when the arguments were strong but to decrease persuasion when the arguments were weak.

In the previous examples, people were more motivated to be thoughtful if the message was linked to the self and they were more able to attain a thoughtful assessment of the arguments if the persuasion context was free of distraction. Although a motive to

be accurate is assumed to be the default goal and underlies the effect on elaboration of variables such as personal relevance, it is not the only motive that affects the extent of information processing. For example, putting people in a positive mood gets them to think more about pleasant messages, not because positive moods or pleasant messages increase the desire to be correct, 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 and Petty, 1994; Wegener et al., 1995). 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 and Petty, 1982) tend to engage in effortful thought because of its intrinsic enjoyment without respect to the importance of the issue or the need to be correct (see Cacioppo et al., 1996; Petty et al., 2009b for reviews). People also generally think more when something makes them feel doubt rather than certainty in their attitudes because doubt is generally less comfortable than certainty and people can try to reduce that discomfort by reassessing their attitudes (see Briñol et al., 2006).<sup>3</sup>

### *Biases in thinking*

It is important to note that just because a person is thinking intently about a message, the ELM does not assume that the thinking will be totally objective. Rather, the ELM holds that variables can affect not only how much thinking a person is doing, but also whether the thoughts are relatively objective or biased. Consider the personal relevance of the message. We have seen that the more the message connects to the self, the more thinking the message elicits. But is that thinking relatively objective or biased? As outlined by Petty and Cacioppo (1990), this depends on a number of factors. For example, does the message threaten or support one's current views? If a message is relevant (versus irrelevant) to one's outcomes, values, identities, possessions, and so forth, it will engage more

processing. If the message takes a position that is consistent and supportive of one's outcomes, values, and so forth, it will lead to positively biased processing. However, if it takes a position that is counter to or threatening to one's outcomes, values, and so forth, it will lead to negatively biased processing (see Petty et al., 1992).

A number of motivational and ability variables have been shown to bias processing (i.e., affect the valence of the thoughts that come to mind). For example, if a message induces psychological reactance (see Brehm, 1966) by placing undue pressure on an individual to change his or her mind, the person will be motivated to resist and therefore counterargue the message (see Petty and Cacioppo, 1979a). If balance motives (Heider, 1958) are operating, people would prefer to adopt the position of a liked source but distance themselves from a disliked source. If impression management motives (Tedeschi et al., 1971) are in ascendance, people would prefer to hold whatever position they think would be ingratiating and avoid those that would make them look bad. If self-affirmation motives (Steele, 1988) are high, people prefer the position that would make them feel best about themselves, and so forth. Clearly, there are a host of motives that can produce biases in information processing (see Briñol and Petty, 2005). Or, in the absence of any motivational forces, certain factors can uniquely enable positive or negative thoughts (e.g., positive emotions can make positive thoughts more accessible; Petty et al., 1993). In sum, the ELM holds that two of the ways in which a variable can affect attitudes are to (1) affect how much thinking takes place (amount of thinking), and (2) determine whether the thinking is relatively favorable or unfavorable (bias in thinking).

### ***Phase 2: Central and peripheral routes to persuasion***

Variables such as distraction and personal relevance can determine where a person falls



along the elaboration continuum. At the high end of the 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 where the focus is on assessing information central to the merits of the attitude object). When people are thinking intently, whether the thoughts are favorable or unfavorable are the key determinants of influence and there are many factors that can motivate or enable favorable or unfavorable thoughts. 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).

Furthermore, if people are generating few thoughts relevant to the merits of the issue, the ELM holds that there are additional change mechanisms that can come into play to influence attitudes. These mechanisms require relatively little in the way of cognitive resources and include processes such as classical conditioning (Staats and Staats, 1958), self-perception (Bem, 1972), and the use of heuristics (Chaiken, 1987). In one early demonstration of different persuasion mechanisms under high and low thinking conditions, Petty et al. (1981) manipulated the personal relevance of a message along with argument quality just as in the study mentioned earlier (Petty and Cacioppo, 1979b). In addition, however, the expertise of the message source was varied (i.e., whether the message on an educational issue was said to come from a Princeton University Professor or a local high school student). Under high relevance conditions, attitudes were determined by the quality of the arguments, just as in the earlier study. The expertise of the source mattered little when thinking was very high. The new result was what happened under low relevance conditions.

Here, argument quality made little difference and attitudes were only affected by source expertise with more attitude change to the high than the low expert source. This study suggested that attitudes were determined by a high thought process – evaluation of the arguments presented – when motivation to think was high, but by a low thought process – reliance on an expertise cue – when motivation to think was low.

In a critique of the ELM, the HSM, and other dual process theories more generally, Kruglanski and Thompson (1999) correctly noted that many of the early studies on dual processes of persuasion (such as the study just described) compared the impact of relatively simple cues (e.g., expertise) described briefly with more complex verbal arguments (e.g., nine consequences of adopting a recommendation each presented in a separate paragraph). This fact led them to suggest that perhaps there was only one mechanism of persuasion that operated and it only appeared as if there were two separate processes because two separate kinds of content were available to process. The problem, as they saw it, was that evidence for dual processes came from studies in which the central route (or high effort processing) resulted from the impact of complex message factors, and the peripheral route (or low effort processing) resulted from the impact of simple source and other nonmessage factors such as one's mood.

However, it is not the case that all dual process studies suffer from this confound. At the conceptual level, in the ELM, content (e.g., source versus message variables; simple versus complex presentation) and process (e.g., effortful scrutiny, reliance on cues) are orthogonal. That is, one can engage in effortful scrutiny for merit of message *and* source factors, and these features of the persuasion context can also serve as simple cues to persuasion if thinking is low. Similarly, one can process simple or complexly presented material with relatively high or low amounts of effort. Thus, although some ELM research has manipulated simple source

versus complex message variables to study high versus low effort attitude change as Kruglanski and Thompson noted (e.g., Petty et al., 1981), other ELM research has presented only complex message information to show how it could be processed differently depending on whether motivation to think was relatively high or low (e.g., Petty and Cacioppo, 1984b). Furthermore, some research has manipulated very simple to process source factors (e.g., attractiveness) and pointed to its evaluation as an argument under high thinking conditions but as a peripheral cue under low thinking conditions (Petty and Cacioppo, 1984a).

The point is that when a person's goal in scrutinizing all of the information is to determine the true merits of the proposal, the person will use whatever information seems useful in reaching that goal. Thus, if providing a message recipient with extensive information about the source convinces the person more of the validity of the position when the source information is scrutinized, the impact of the source information could be even larger under high than under low thinking conditions. Conversely, if the source information proves irrelevant to the merits of the attitude object when scrutinized (e.g., an attractive source arguing for a new tax law), then its impact will be reduced under high thinking conditions. Illustrating that different processes can be applied to the *same* information under low and high thinking conditions requires a study in which the information serving as a cue and as a substantive argument is exactly the same (i.e., there are no differences in length, complexity of information, placement, etc.). To demonstrate dual processes, all that should vary is how individuals process and use the *same* information that is presented.

In the relevant conditions of one study, Petty and Cacioppo (1984b) compared how people would respond to a message with three strong arguments versus one with three strong plus three weak arguments. If people are carefully processing the arguments, there should be no more persuasion when

three weak reasons are added to three strong ones. Indeed, the extent of persuasion could even be reduced as negative issue-relevant thoughts are combined with positive thoughts. If people are not processing the messages carefully, however, then evaluation might occur by a different, less effortful process. People might simply *count* the arguments and reason that six arguments are better than three, leading to more persuasion.

To examine whether the same information could be processed differently leading to different persuasion outcomes under conditions fostering relatively high versus low motivation to think, Petty and Cacioppo (1984b) varied the personal relevance of the message topic along with the message type. When relevance was high, adding weak arguments to strong ones did not enhance persuasion but when relevance was low, adding weak arguments to strong ones led to a significant increase in agreement. This study reveals that even though high and low self-relevance individuals were exposed to the exact same information (three strong plus three weak arguments versus three strong only), they used a different evaluation strategy (i.e., processed the information differently) under high and low relevance conditions leading to very different persuasion outcomes. Research such as this demonstrates that the same information can be processed in qualitatively different ways depending on a person's overall motivation and ability to think (see Petty and Briñol, 2006; and Petty et al., 1999, for additional discussion of multi-versus single-process models of persuasion).

### ***Phase 3: Elaboration affects attitude strength***

According to the ELM, attitudes that are changed with relatively high versus low amounts of issue-relevant thought are postulated to be stronger than attitudes that are changed to the same extent as a result of minimal object-relevant thought. By stronger,

we mean that the attitudes are more likely to persist over time, resist change, and have an impact on other judgments and behavior (see Krosnick and Petty, 1995). This is true regardless of whether the enhanced thinking taking place is relatively objective or biased. There are several reasons for this. First, as thinking increases during attitude change, people should acquire more support for their attitudes (knowledge) and their attitudes should become more accessible and internally consistent. Furthermore, as a result of thinking, people should become more confident in their views. Each of these factors would increase the likelihood that attitudes would be consequential (see Petty and Krosnick, 1995).

The available evidence supports the idea the elaboration enhances attitude strength. For example, in one set of studies, individuals who engaged in greater thinking during attitude formation showed greater persistence over time and more resistance to change when their newly formed attitudes were challenged immediately compared to individuals who formed similar initial attitudes but with less thinking (Haugtvedt and Petty, 1992). However, it is important to note that persistence over time and resistance to change can be independent such as when multiple pairings of an attitude object with positive cues lead it to persist over time, but do not help it resist attack (Haugtvedt et al., 1994). This is because pairing an attitude object with positive cues can make the favorable attitude memorable, but these cues will not help the attitude resist an attacking message that relies on argumentation (see Wegener et al., 2004, for a review).

Once a person's attitude has changed, behavior change requires that the person's new attitude rather than the old attitude or previous habits guide action. If a new attitude is based on high thought, it is likely to be highly accessible and comes to mind automatically in the presence of the attitude object. Therefore, it will be available to guide behavior even if people do not think much before acting (Fazio, 1990). However, even if

people do engage in some thought prior to action, research suggests that attitudes based on high thinking are still more likely to guide behavior because these attitudes are held with more certainty and people are more willing to act on attitudes in which they have confidence. So strong is the inferential link between thinking and confidence that people do not have to actually engage in more thinking to attain confidence – they only have to believe they have engaged in more thinking (see Barden and Petty, 2008).

#### ***Phase 4: Multiple roles for persuasion variables***

We have now seen that there is a continuum of thinking that underlies persuasion and that attitudes can be changed by both high and low thought processes with the former attitudes tending to be more consequential than the latter. In outlining these ideas, we have already highlighted several of the roles that a variable can play in producing persuasion. We have seen that variables can serve as cues or as arguments, or they can affect the extent (amount) or direction (bias) in thinking. A fifth role that variables can play when thinking is high is affecting what people think about their thoughts. Since this is the most recent role for variables that has been studied, we discuss it in more depth in a subsequent section (phase 6). But first, it is important to illustrate the ELM principle that any one variable can affect attitudes in multiple ways.

In describing the roles for variables so far, we have mostly used different variables to illustrate each role. Thus, we have seen how distraction can affect the amount of thinking or that source expertise can serve as a simple cue. However, the ELM holds that any *one* variable can serve in each of these roles depending on a number of other factors. In fact, earlier in this chapter we briefly described how an attractive source or a person's good mood could affect attitudes by different processes in different situations.

Empirical research has supported this "multiple roles" view. For example, in one study (Petty et al., 1993) placing an advertisement for a pen in the context of a comedy or bland documentary affected attitudes differently depending on whether people were motivated or not to think about the ad. When motivation to think was high, the pleasant feelings from the positive program led people to have more positive thoughts about the product and these thoughts led to more favorable attitudes. When motivation to think was low, however, the good feelings from the program induced more favorable attitudes toward the product without enhancing the favorability of the thoughts generated (i.e., good feelings served as a simple cue). The low thinking results are what would be expected from relatively low effort theories of attitude change such as classical conditioning (Staats and Staats, 1958) or the use of an 'affect heuristic' (Chaiken, 1987; Slovic et al., 2002). Under high thinking conditions, however, the indirect influence observed is what would be expected from relatively high effort theories of the use of affect such as the "affect infusion" hypothesis (Forgas, 1995) in which emotions can make retrieval and generation of affectively congruent cognitive material more likely (see Petty et al., 2003, for a review of emotions and persuasion).

According to the ELM, however, these are just two of the roles that variables can play in persuasion settings. When thinking is high, not only should emotions bias the thoughts that come to mind, but also the emotion itself can be evaluated as an argument. The "mood as input" model of emotions was designed to account for just such situations where people scrutinize their emotions as evidence (see Martin, 2000). There is one more process by which emotions can operate when thinking is high – affecting confidence in thoughts (Briñol et al., 2007), and we discuss this role in the sixth phase of ELM research.

Finally, when the likelihood of thinking is not constrained to be high or low by other variables, emotions can affect the extent of thinking. The "mood as information" theory

of emotions is one of several theories that makes this prediction. The idea is that negative emotions signal that the world is unsafe or problematic and thus information processing is needed. Positive emotions signal the opposite – that the world is safe and thus thinking is not necessary (Schwarz et al., 1991). If sadness, for instance, leads to more thinking than happiness, then people would actually be more persuaded when sad than happy if the message arguments are strong, but less persuaded when sad than happy if the arguments are weak (Bless et al., 1990).

Although different theories of emotion and judgment have developed around each of the specific roles for variables that the ELM holds to be possible, and some theories of emotions have even considered more than one role (e.g., see Forgas, 2005), no other theory incorporates all of these processes. Perhaps more importantly, unlike the specific theories of emotion, the ELM holds that these same fundamental processes can be applied to a host of other variables such as source attractiveness or recipient power that have nothing to do with emotion.

### ***Phase 5: Extending beyond the persuasion context***

As described earlier, the ELM was originally proposed as a theory of persuasion (attitude change), but Petty and Cacioppo (1986a) noted that the same principles could be applied to virtually any judgment. Over time, the ELM was used as a framework to study a diversity of persuasive messages on all sorts of topics and in a variety of domains (e.g., health communications, consumer advertisements, legal appeals). A pioneer in moving the ELM beyond persuasion studies was Duane Wegener. Petty met Wegener when the latter came to Ohio State for graduate study in the early 1990s. Wegener was notorious for keeping his advisor (Petty) at work late into the evening with "just one more idea" that he wanted to discuss. Following his PhD, Wegener became a faculty member at Yale,

then Purdue, and he ultimately returned to his alma mater as a faculty member in 2010. Although Wegener developed several influential lines of research that did not involve the ELM (e.g., see Wegener and Petty, 1997), an important ELM contribution was to show that the four core ideas of the ELM outlined above have broader applicability than in the traditional attitude change arena. For example, in the domain of stereotyping, Wegener et al. (2006) showed that a person's existing stereotypes can serve in multiple roles when forming attitudes about a particular member of the stereotyped group. Prior research on stereotyping had focused either on how stereotypes can bias information processing (a high effort process; for example, Kunda and Sherman-Williams, 1993) or on how stereotypes can serve as simple heuristics to judgment (a low effort process; for example, Bodenhausen, 1990). Wegener noted that according to the ELM, however, both roles for stereotypes should be possible depending on the likelihood of thinking.

In one study demonstrating high and low thought roles for stereotypes, Wegener and colleagues (2006) had college students watch a videotape of a child working on some intelligence test questions in which they could observe the answers the child provided. Prior to the videotape, the students learned that that child came from either a high or a low socioeconomic status (SES) background. When not under cognitive load, higher SES led the students to give higher estimates of the child's intelligence and this was mediated by the thoughts listed about the child consistent with the idea that SES could bias processing of the information observed about the child. However, when under cognitive load, the SES information was also associated with greater estimates of intelligence, but this effect was not mediated by thoughts consistent with the use of SES as a heuristic. In a second study, Wegener et al. (2006) showed differential strength consequences for these judgments. That is, the initial impressions of the child that were influenced by the SES stereotype were more resistant to

change by subsequent contradictory information when the initial impressions were formed under high rather than low thought conditions.

Although the studies just described did not use a typical persuasion paradigm, they did involve making evaluative judgments about a target's intelligence. Thus, the ELM might reasonably be expected to operate. What if the judgment requested had nothing to do with evaluation? For a second example of the applicability of ELM principles beyond the persuasion context we turn to another series of studies conducted by Wegener and colleagues, this time on numerical anchoring.

The *anchoring effect* occurs when exposure to a seemingly high (versus low) random number influences participants' numeric responses to a question (Tversky and Kahneman, 1974). For example, if participants are asked to write the last four digits of their social security number on a piece of paper before estimating the age George Washington was when he died, those with high SSNs estimate a higher age than those with low SSNs. Some theories of anchoring assume that the effect occurs by a relatively high effort process conceptually similar to biased processing (e.g., see Mussweiler and Strack, 1999). That is, the anchor biases thoughts in an anchor consistent direction. Other theories, however, assume that anchors work by a less cognitively effortful route. For example, the anchor could provide a simple hint that the answer is large or small (Schwarz, 1994) or prime a general feeling of high or low quantity which is used to infer the answer (Oppenheimer et al., 2008).

As should be clear by now, the ELM suggests that both high and low effort anchoring processes are possible but would operate at different points along the elaboration continuum. To examine this idea, in one study, Blankenship et al. (2008), asked students whether the answer to a particular question (e.g., the age of Neil Armstrong when he walked on the moon) was higher or lower than a presumably randomly generated high or low number. For some participants, during



the anchoring questions (four with high anchors and four with low anchors), they were given a secondary task to perform that would disrupt the anchor from biasing thinking. Other respondents were not distracted during the anchoring task. Finally, all participants responded to the questions both in the initial session and then one week later. At the delayed questioning, no distraction was present. The results of the study revealed that there was a similar anchoring effect initially for both individuals under high and low cognitive load. However, when asked again one week later, the individuals who had presumably used the anchor thoughtfully (low cognitive load) showed greater persistence of the anchoring bias consistent with the idea that when elaboration is involved, it can enhance the strength of any judgment. In another study, the anchoring effect was also shown to be more resistant to counter influence when it was challenged immediately. Thus, the work by Wegener and colleagues shows that the ELM strength postulate appears to hold beyond the prototypical attitude change domain.

### ***Phase 6: A new role for variables – self-validation***

As we have seen, in the original formulation of the ELM, under the central route to persuasion, much attention was paid to the number and the valence of thoughts people generated to a persuasive message. Other aspects of thoughts, though mentioned briefly in original treatments of the ELM, received scant research attention. However, in the past decade a particular aspect of thoughts has proven to be very important – the overall confidence people have in the thoughts that they generate. Thought confidence is a metacognition that refers to a sense of how valid one's thoughts seem. Thought confidence is consequential because the extent of thought confidence affects whether people use their thoughts in forming their judgments. This idea is referred to as the *self-validation*

*hypothesis* (Petty et al., 2002) and is compatible with the lay epistemic notion (Kruglanski, 1990) that people not only generate ideas, but also seek to determine their correctness.

Research on self-validation might not have occurred had Petty not met Pablo Briñol at a two-day conference on "two roads to persuasion" hosted by the University of Salamanca (Spain) in November of 1998. Briñol was a graduate student in social psychology at the Universidad Autónoma de Madrid (UAM) when he decided to attend the conference to learn more about behavioral factors in persuasion, the intended topic of his dissertation. Briñol approached Petty after his talk to ask some questions and ended up serving as translator for Petty for the remaining talks – all given in Spanish. During the session breaks, the pair planned some studies that were aimed at pinning down the mechanism by which the effects of an earlier behavioral manipulation – head nodding (Wells and Petty, 1980) – affected attitudes. When the results of the planned studies subsequently turned out in a surprising way, the self-validation hypothesis was developed.

Specifically, the research on head nodding, which became Briñol's dissertation under the supervision of Petty and Alberto Becerra, showed that head nodding (moving one's head up or down or side to side during exposure to a message) interacted with argument quality to affect attitudes. This interaction result normally would be interpreted as evidence that head nodding affected the extent of thinking about the message, but there was no evidence that this pattern resulted from differences in the number or nature of the thoughts produced. Rather, it appeared that vertical head movements validated the thoughts that people had, magnifying their impact on attitudes. The argument was that nodding (vs. shaking) one's own head served to validate one's own thoughts similar to how other people nodding (vs. shaking) their heads in response to an individual speaking would validate (or invalidate) what the individual was saying via social consensus (Festinger, 1954). When this research was



written for publication, reviewers found the explanation to be a little odd and unconvincing, so Briñol and Petty, along with a new Ohio State graduate student, Zakary Tormala, decided to conduct some more direct tests of the self-validation idea. Following his dissertation defense, Briñol joined the faculty at UAM and for every year since he has spent each fall as a visiting scholar at Ohio State. During this period, much progress on the self-validation hypothesis was made.

In the first direct test of the self-validation notion (Petty et al., 2002: Study 1), Ohio State students were asked to list their thoughts on the issue of a new campus proposal and then rate the confidence they had in their thoughts as well as their attitudes on the topic. A key result of this study was that not only were attitudes affected by the number and valence of thoughts listed (as many prior studies had shown), but also by thought confidence. People were more likely to use thoughts in forming their attitudes when confidence in those thoughts was high rather than low.<sup>4</sup>

Once it was clear that thought confidence was an important factor in translating thoughts into attitudes, it suggested that influencing thought confidence would be one more way in which variables can impact attitudes. Demonstrated ways to affect thought confidence now include head nodding (Briñol and Petty, 2003) and many other variables. As one additional example, consider the well-studied variable of source credibility. We have already noted several roles that credibility could play in producing persuasion (e.g., serving as a simple cue when thinking is low, biasing the thoughts message recipients have when thinking is high, etc.). It is now clear that under certain conditions, source credibility can also affect thought confidence.

In one study (Tormala et al., 2006), information about source credibility was presented *after* participants had processed a message containing either strong or weak arguments. The key idea was that people would reason that if the information presented by the

source was valid (or invalid as inferred from source credibility), their own thoughts in response to the message would also be valid (or invalid). Consistent with this notion, when the message presented strong arguments and thoughts were mostly favorable, increased source credibility was associated with more persuasion because people relied on their positive thoughts. However, when the message presented weak arguments and thoughts were mostly unfavorable, increased source credibility was associated with less persuasion because people relied on their negative thoughts. In other research examining source credibility effects under high thinking conditions, source credibility biased thinking when it preceded the message but affected thought confidence when it came after processing was completed (Tormala et al., 2007).

This work suggests that research on persuasion can benefit from considering the timing of the key manipulations as placement of the independent variable in the sequence of persuasion stimuli can have an impact on the mechanism by which it operates. In accord with the ELM multiple roles idea, the self-validation mechanism operates at the high end of the elaboration continuum and occurs when the sense of confidence experienced is most naturally attributed to one's own thoughts, such as when the feeling of confidence is concurrent with or follows thought generation (see Briñol and Petty, 2009, for a review of the many variables that have now been shown to influence thought confidence).

## ADVANTAGES OF THE ELM

The ELM is a multi-faceted theory. It points to different attitude change processes that operate in different circumstances. It suggests that any one variable can work in multiple ways and sometimes produce opposite outcomes (e.g., high source credibility leading to more persuasion when it serves as

a cue but to less persuasion when it enhances thinking about weak arguments). It further indicates that the same persuasion outcome can be produced by different processes (e.g., source credibility leading to more persuasion both when it serves as a cue and when it enhances thinking about strong arguments, validates one's favorable thoughts, or biases thoughts). And, it postulates that not all judgmental outcomes that look the same on the surface really are the same (e.g., the same judgments induced by high versus low thinking processes are differentially persistent over time). In the remainder of this chapter we summarize some of the key benefits of such a multifaceted theory for the field of persuasion and beyond.

### ***Coherence in the field of persuasion***

#### ***Integration of empirical outcomes***

In our view, the ELM has brought some coherence to an attitude change literature that had gotten quite messy. As noted earlier, in the 1970s, numerous scholars complained about the bewildering array of seemingly inconsistent findings in the field and bemoaned the fact that even simple variables could sometimes increase persuasion but at other times reduce it. The ELM explains how and when these different outcomes can occur. It was also confusing that sometimes changed attitudes appeared to be consequential but at other times changed attitudes were not meaningful. The ELM also explains how and when each effect is likely.

In addition to addressing these longstanding puzzles, the ELM has been useful for understanding some current controversies. As one example, consider recent research on implicit measures of attitudes. Contemporary implicit measures aim to assess evaluations that come to mind automatically with little thinking whereas deliberative measures allow some time for reflection (see Petty et al., 2009c). Although the ELM has focused on

how the extent of thinking during attitude formation affects whether attitudes are based on central or peripheral processes, it is possible to apply the elaboration continuum idea to the extent of thinking that occurs during attitude expression. Paralleling previous ELM findings, current research is consistent with the idea that simple cues that do not affect attitudes that are reported on deliberative measures often still have an impact on attitudes that are assessed with measures allowing for little thinking (see Petty and Briñol, 2010, for further review).

#### ***Integration of different theories of persuasion***

Our discussion of the ELM so far has focused on the ELM as a primary theory of judgment. However, the ELM was also intended as a metatheory (theory about theories) in that it specified what the domain of operation of different theories was. As an early example, Petty and Cacioppo (1986a) noted that the ELM could be used to understand differences between the competing dissonance (Festinger, 1957) and self-perception (Bem, 1972) theories. From the vantage point of the ELM, each of these theories attempted to account for many of the same phenomena (e.g., why people changed their attitudes more when advocating something for a small rather than a large incentive), but did so by very different mechanisms in different situations. Most importantly, self-perception theory relied on a simple inference process and thus it should be more likely to operate on the low end of the elaboration continuum, whereas dissonance theory relied on extensive cognitive activity and thus should be more likely to operate when motivation and ability to think were high. Similarly, we earlier noted how separately developed theories of the impact of emotion on judgment could be organized according to the ELM processes.

Indeed, according to the ELM framework, most of the major theories of attitude change are not necessarily competitive or contradictory, but rather operate in different circumstances. Some theories (e.g., cognitive

response, cognitive dissonance, mood as input) refer to processes that require diligent and effortful information-processing activity, whereas others (e.g., classical conditioning, self-perception, affect heuristic) postulate processes that proceed with considerably less mental effort (see Petty and Cacioppo, 1986b; Petty and Wegener, 1998). The ELM does not diminish the importance of the individual theories. Rather, these theories can be viewed as specifying in more detail the specific process involved under relatively high and low thought conditions. That is, whereas the ELM lumps all kinds of simple cue processes together and all kinds of biased processing theories together, the more specific theories are useful for fleshing out the mechanistic details.

The ELM lumps theories into broad process categories based on the common mechanisms involved, the situations in which they operate, and the consequences observed. For example, cue theories have in common that attitude change moves in the direction of the valence (positive or negative) of the cue, occurs with relatively little thinking, and results in a judgment that is less consequential than a judgment rendered with higher thought. But, the specific way in which this occurs (e.g., conditioned association, use of a heuristic) is also worthy of study. The ELM is designed to be a general approach that can explain the effects of a wide array of variables that have been examined separately under the rubric of different theories.

#### *Integration of source, message, recipient, and context variables*

Because of the ELM postulate that any one variable can produce persuasion in multiple ways, the classic source, message, recipient, and context variables that affect attitudes can be examined from a common perspective. That is, one can see how very different variables such as source credibility and a person's emotions operate to influence attitudes by the very same fundamental mechanisms. Furthermore, the ELM provides a useful framework for approaching completely novel

variables. For example, if one wondered how the color of the paper on which a message was printed would influence attitudes, one would look for simple cue effects when thinking was low (e.g., the most liked color would produce the most favorable attitudes), but would look for other effects (e.g., affecting thinking, biasing thinking, validating thoughts) as the elaboration likelihood was increased.

Furthermore, the ELM can shed new light in looking at traditional variables that the literature appears to have relegated to just one role. Consider the operation of self-relevance. Much research has shown that when the self-relevance of a message is made salient prior to a communication, it influences the amount of thinking (Petty and Cacioppo, 1979b). However, when self-relevance is induced after the message, it affects thought confidence (Petty and Briñol, 2011). Although in this case the two processes lead to a similar result (i.e., a greater argument quality effect under high vs. low self-relevance), the underlying mechanism is quite different.

#### ***Real-world applications of the ELM***

A discussion and review of the many areas of application of the ELM is well beyond the scope of this chapter. Thus, we just briefly note that although much ELM research has been conducted in the laboratory, there is considerable work that has been conducted in field settings as well (e.g., Bakker, 1999). The ELM has proven especially useful in the domains of marketing and advertising (Haugtvedt and Kasmer, 2008; Rucker et al., 2007) and health communication (Briñol and Petty, 2006; Petty et al., 2009a), though there are also applications in the legal, environmental, political, and educational fields as well. Indeed, the ELM has provided practical guidelines for developing effective communications on a wide variety of topics. Tutorials are available to illustrate the actual steps

policymakers and others might take in improving their persuasive appeals using ELM principles (e.g., Briñol and Petty, 2006; Rucker and Petty, 2006).

One of the reasons the ELM has been so widely applied is because persuasion is everywhere, playing an essential role in politics, religion, psychotherapy, education, and day-to-day social interactions. Given that people attempt to persuade others and are also the targets of persuasion, they often wonder about questions such as: are attractive people particularly persuasive? Are experts more persuasive than nonexperts in convincing a jury? Is fear a good emotional tool or is it counterproductive in order to stop people from engaging in risky behaviors? Humans have a longstanding curiosity about such questions and contemporary scholars continue to study these issues as well. The ELM provides answers based on experimental research to many of these questions or suggests ways to initiate new investigations.

We have already noted several of the benefits of focusing on the basic processes underlying effective persuasion. First, identifying the processes by which variables impact attitudes is essential for determining which outcome (increased or decreased persuasion) will occur. Second, we have seen that the process by which an attitude is formed or changed has considerable consequences for the strength of the attitude. Even though both high and low effort processes can sometimes result in the same extent of influence, the attitudes induced by low thinking mechanisms tend to be less stable and predictive of behavior than the ones produced by higher thinking mechanisms. Thus, understanding process is important because it informs us about both immediate and long-term consequences.

As a final illustration of this point, consider our recent research examining whether the principles of the ELM can be applied to the reduction of prejudiced attitudes. Consistent with the ELM, Martin et al. (2011) found that changing attitudes toward

stigmatized groups can be affected by both simple processes that require little thinking and also by traditional elaborative forms of persuasion. Importantly, even when the obtained attitude change was equivalent for processes requiring a low versus a high degree of thinking, there were important benefits of high elaboration prejudice reduction. That is, although both high and low thinking processes were associated with a reduction in the extremity of prejudiced attitudes, the reductions in prejudice produced by high thinking processes were more persistent and resistant to subsequent attacks than equivalent changes produced by less thoughtful mechanisms. As illustrated by this example, the ELM can serve as a basis for, and shed light on, a variety of phenomenon not only relevant to attitude change but also to numerous other judgments, ranging from reducing prejudice to the operation of various heuristics and biases that influence choice and decision making.

## NOTES

1 The term "elaboration" is used in the theory to connote that people thoughtfully add something to the information provided externally rather than simply mentally rehearsing the original information. In this sense, the term is more restrictive than "cognitive response" (Greenwald, 1968) which would include the former as well as mere restatements of the message.

2 The arguments are developed in pretesting so that strong arguments elicit primarily favorable thoughts when people are instructed to think about them but weak arguments elicit primarily unfavorable thoughts with the same instructions. All arguments are presented as supporting the advocacy but the strong arguments do so in a more compelling way (e.g., pointing to consequences that are more desirable and likely if the advocacy is adopted; see Petty and Cacioppo, 1986a, for an extended discussion).

3 One exception to this is when people feel certain in an ambivalent attitude. In this case, people engage in greater information processing than if they are uncertain of the ambivalent attitude (Tormala et al., 2008). Similarly, if people feel certainty in a doubted attitude, they could engage in

greater information processing than if they felt uncertainty in a doubted attitude (see Wichman et al., 2010).

4 Thought confidence also predicted attitudes above and beyond other aspects of the thoughts listed such as the likelihood and desirability of the consequences inherent in the thoughts.

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