Cognitive Processes in Attitude Change

Richard E. Petty
Joseph R. Priester
Duane T. Wegener
The Ohio State University

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THE NATURE AND PROPERTIES OF ATTITUDES AND ATTITUDE SYSTEMS

In the 1992 presidential election, public opinion polls showed large swings in people's attitudes toward the candidates over relatively short time periods. About a year before the actual election, the incumbent President George Bush was held in high esteem by about 80% of the electorate. By the time of the Democratic National Convention, his approval rating plunged to around 30%, and his
opponent, Arkansas Governor Bill Clinton, was ahead in the polls by nearly 30 points. By the end of the Republican National Convention, Clinton's lead over Bush had slipped to around 10 points. At this point, the polls finally became somewhat more stable. What psychological processes account for the various dramatic changes in attitudes that were observed prior to the election? The goal of this chapter is to explicate the various psychological processes that are responsible for attitude change.

A common definition of attitude is a general and relatively enduring evaluation of some person (including oneself), group, object, or issue (Petty & Cacioppo, 1986a). By relatively enduring, we simply mean that the evaluation associated with the attitude object is stored in long-term memory, and therefore is potentially retrievable (e.g., Fazio, 1986). By general, we mean that an attitude refers to the person's most global or overall assessment of the attitude object. Specific experiences and attributes associated with the attitude object also are stored in memory and can vary in their individual evaluations. Although psychologists typically measure attitudes on a bipolar evaluative continuum (e.g., Osgood, Suci, & Tannenbaum, 1957), this does not mean that attitudes necessarily are represented in a scalar fashion in memory (e.g., Devine & Ostrom, 1988), or that additional information about attitudes cannot be gleaned by assessing the positive and negative features of attitudes independently (e.g., Kaplan, 1972; Thompson, Zanna, & Griffin, in press). Attitudes typically are assumed to be learned over time, although it is now clear that there are at least indirect genetic contributions to attitude development as well (e.g., Eaves, Eysenck, & Martin, 1989; Tesser, 1993).

In contrast to the traditional view of attitudes as stored in long-term memory, some attitude theorists have taken the position that people's evaluations are not particularly stable entities and that attitudes might be constructed each time they are needed on the basis of whatever information is salient (see Tesser, 1978; Wilson & Hodges, 1992, Wyer & Stull, 1989). Zaller (1992) argued that many political attitudes were described best in this manner. Although some longitudinal studies found considerable stability in attitudes over many years (e.g., Marwell, Aiken, & Deseran, 1987), others found that people's attitudinal reports can be influenced by such transient factors as their current mood states (see Schwarz, 1990), their most recent behaviors (see Bern, 1972; Fazio, Herr, & Olney, 1984), and seemingly minor variations in the manner by which they are asked an attitude question (see Tourangeau & Rasinski, 1988). Our view is that evaluations are not invariably or even typically constructed anew each time an attitude object is confronted (see also Lingle & Ostrom, 1981). When people are asked about their attitudes, what happens? First, the mere mention of the attitude object or issue can make an attitude spontaneously accessible (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). In fact, recent research suggests that attitudes toward a wide variety of objects are retrieved automatically upon the mere presentation of the attitude object (Bargh, Chaiken, Govender, & Pratto, 1992). However, if no attitude is immediately accessible, the person might search memory for a stored evaluation if motivated and able to do so. If no evaluation is found, or if the person is unwilling to report the attitude retrieved (e.g., due to insufficient confidence in it), the person might construct an attitude based on accessible information from memory and in the current context.

Before turning to the various specific theories of attitude change, it is useful to review some work on the structure and function of attitudes (see also Pratkanis, Breckler, & Greenwald, 1989). To the extent that we understand what the underlying bases of attitudes are and their structure, we presumably can understand what can be targeted to change attitudes. Following this, we discuss the various processes and theories of attitude change that guide contemporary research. We conclude by outlining the consequences of these processes.

Underlying Bases of Attitudes

Beliefs, Emotions, and Behaviors as Bases of Attitudes. Although an attitude refers to a general evaluation of some object, this evaluation can be based on various beliefs (i.e., specific attributes associated with the attitude object such as "Candidate A is tall" or "favors capital punishment"), emotions (affective states and experiences such as "Candidate A makes me happy"), and/or behaviors (concrete actions such as "I put a sign for Candidate A in my yard"). Also, an attitude can influence these three categories of responses (Petty & Cacioppo, 1986b; Zanna & Rempel, 1988). That is, a person might come to favor a presidential candidate only after being induced to contribute money to the cause, after finding the planks in the party platform to be compelling, or after feeling a warm pride in response to patriotic images featured in a television commercial for the candidate. Similarly, a person who already evaluates a candidate favorably might engage in the behavior of endorsing the candidate to friends, might process the presidential debates in a biased fashion, and might feel happiness when the candidate wins the election.

Research suggests that beliefs, emotions, and behaviors all can contribute separately to people's attitudes (e.g., Abelson, Kinder, Peters, & Fiske, 1982; Breckler, in press; Stangor, Sullivan, & Ford, 1991), although in some empirical studies it is difficult to separate the variance contributed by the individual components from the procedures employed to measure them (Crites, Fabrigar, & Petty, 1993). Although an assumption of the "tripartite" model of attitudes was that attitudes tended to be composed of all three categories of responses (e.g., Rosenberg & Hovland, 1960), more recent research has emphasized the notion that attitudes can be based on just one or two of the components (e.g., Millar & Tesser, 1986b). Similarly, although earlier research tended to emphasize a strain toward consistency among the components of attitudes (especially the emotional and belief components; e.g., Rosenberg, 1960), recent research has began to emphasize the implications of inconsistency and ambivalence among the various
bases (e.g., Chaiken, Pomerantz, & Giner-Sorolla, in press; Millar & Tesser, 1992; Thompson et al., in press; Wilson, Dunn, Kraft, & Lisle, 1989). Current models of attitude structure recognize that each of the so-called components can be consistent or inconsistent with the attitude (i.e., one can examine attitude-behavior consistency, attitude-belief consistency, and attitude-emotion consistency), and that the attitudinal bases therefore can be consistent or inconsistent with each other. Resolution of inconsistency likely requires some cognitive effort so that attitudes are thought about more frequently are likely to exhibit greater component consistency (Breckler & Wiggins, 1989a).

Some theorists have proposed that the affective qualities of an attribute are more fundamental or take precedence over the cognitive bases of the evaluation. For example, Zajonc (1980) and Zajonc and Markus (1984) argued that affect typically precedes cognition in the formation of attitudes. In a similar vein, Katz and Stotland (1959) argued that an inconsistency between affect and cognition is resolved more readily by changing beliefs, rather than the emotions associated with the object. Breckler and Wiggins (1991) found that the initial affect associated with an issue was a better predictor of the thoughts generated to a message on this topic than were the initial beliefs associated with the topic. However, because so little research has addressed these issues explicitly, confident general conclusions are premature.

**Functional Bases of Attitudes.** Although the tripartite model of attitudes identifies three categories of attributes that can form the basis of an attitude, it is not clear what kinds of beliefs, emotions, or behaviors will be the most important. Katz (1960) and Smith, Bruner, and White (1956) addressed this issue in terms of the psychological needs that an attitude can serve for a person. Perhaps the most fundamental function of attitudes is the knowledge or object appraisal function. That is, virtually all attitudes assist the person in understanding and making sense of the world. Quickly retrieving evaluations that tell individuals whether objects encountered are good (safe) or bad (threatening) makes everyday life easier by minimizing the need to assess and construct these evaluations effortfully each time the attitude object is encountered (Cacioppo, Petty, & Berntson, 1991; Smith et al., 1956). Because attitudes provide a ready evaluation, they also reduce the stress of decision-making (Blascovich et al., 1993; Fazio, Blascovich, & Driscoll, 1992).

In addition to this basic appraisal function, some attitudes are thought to serve more specific motives. For example, some attitudes are postulated as protecting people from threatening truths about themselves or serving to enhance self-image (i.e., an ego-defensive function). Still other attitudes are thought to be based on the extent to which they lead to explicit rewards and/or punishments (utilitarian function) or give expression to important values (value-expressive function).

After a period of neglect, persuasion researchers are beginning to show renewed interest in functional theories. Researchers lost interest in functional approaches, because it did not appear to be possible to assess what specific functions attitudes held for people (Kiesler, Collins, & Miller, 1969). At present, several potential solutions to this problem have been suggested. One solution relies on individual differences and suggests that attitudes serve different functions for different kinds of people. For example, Snyder and DeBono (1985) hypothesized that the attitudes of low "self-monitors" (see Snyder, 1979) would serve primarily a value-expressive function, whereas the attitudes of high self-monitors would serve primarily a social adjustment function (e.g., adopting attitudes that provide rewards from valued peers). An alternative to the personality approach proposes that many issues and objects serve a common function for a wide variety of people (e.g., Abelson & Prentice, 1989; Prentice, 1987; Shavitt, 1989). For example, attitudes toward air conditioners probably serve a utilitarian function for most people. In a third approach, Herek (1987) employed the thought-listing procedure (see Cacioppo & Petty, 1981b) to analyze the functional bases of attitudes on an individual level.

Despite the promising new directions in functional theory, some pitfalls remain. For instance, the Herek (1987) procedure allows functions to be assessed post hoc, which is useful for understanding the basis of individuals' attitudes and designing individual persuasion treatments, but is amenable to a mass communication context only if the functional basis of an attitude is widespread. However, it seems unlikely that most attitude objects would serve the same function for most people (cf., Shavitt, 1989). The general personality strategy of Snyder and DeBono (1989) could be useful, but only if research evidence revealed that other personality variables are linked consistently to particular functions (e.g., for high authoritarians, attitudes serve an ego-defensive function; Snyder & DeBono, 1989).

**Changing Attitudes with Different Bases** Research indicates that some people find certain types of arguments and experiences more persuasive than others. For example, in one study, students at a university with a religious affiliation were divided into those who had a "religious" or a "legalistic" self-schema (Cacioppo, Petty, & Sidera, 1982). People with a religious self-schema were those who endorsed religious self-descriptions more quickly than legalistic ones (and vice versa for the legalistic subjects; see Markus, 1977). When these individuals were presented with persuasive arguments on the topic of capital punishment that made either a religious or a legalistic appeal, they found the arguments that matched their self-schemas to be more persuasive. In another study, rather than relying on chronically important dimensions of judgment, particular dimensions were primed (Sherman, Mackie, & Driscoll, 1990). For example, subjects were asked to evaluate political candidates who had positive attributes on one dimension (e.g.,
cate that the object is linked negatively to social adjustment concerns. In addition to the strength of the arguments available, the strength of the attitude under attack also could be an important consideration (e.g., is the attitude well established or newly formed? See Olson & Zanna, 1993). For example, a person's initial attitude might be based on whatever information is available at the time a judgment is required if information central to the merits of the object is unavailable. Such incidental attitudes might be changed easily by subsequently providing information on more fundamental dimensions, mismatching the original basis of the attitude. On the other hand, if the original attitude is based on more central information, a matching strategy might be required.

Attitude and Belief Structure

Current models of attitudes suggest that an attitude is linked in memory to various beliefs, emotions, and/or behaviors, and that the attitude and the information supporting it serve certain functions (e.g., allowing the person to understand the world, feel good about oneself, etc.). In addition to the very general structural idea that individual attitudes are linked to beliefs, emotions, and behaviors, some theorists have addressed more particular structural notions, especially as they relate to the structure of the beliefs that comprise individual attitudes. We describe three such models next.

Probabiliological Model. Some theorists have conceptualized attitudes as the end result of a syllogistic network of beliefs (Bem, 1970; McGuire, 1960a; Wyer, 1970, 1974). For example, at a minimum, an attitude can be based on two premises that lead to a conclusion: Premise 1 = Candidate A favors gun control; Premise 2 = Gun control is good for the country; Conclusion = Candidate A is good for the country. The conclusions of attitudinal syllogisms such as this can vary in the extent to which they have an extensive horizontal and vertical structure. This syllogism would have an extensive vertical structure to the extent that its premises were derived from many other logical syllogisms. The syllogism would have an extensive horizontal structure to the extent that its conclusion could be derived from many other logical syllogisms (McGuire, 1981).

McGuire (1960a, 1960b) and Wyer (1970, 1974) developed mathematical models of belief syllogisms. For example, assume that you think that it is highly likely \( p = .9 \) that any candidate who favors gun control would be good for the country, but you are unsure of whether Candidate A is in favor of gun control \( p = .5 \). How confident would you be that Candidate A is good for the country? Consider the following reworking of the earlier syllogism:

Premise 1: If Candidate A favors gun control, then Candidate A is good for the country \([p(B/A)] = .9\)
Premise 2: Candidate A favors gun control \([p(A)] = .5\)
Conclusion: Candidate A is good for the country \([p(B)] = ?\)

DeBono and Hamish (1988) also employed a functional analysis to predict which sources would affect information processing for high and low self-monitors. Specifically, they proposed and found evidence for the view that an attractive source would engender more interest and enhance message processing for the image-oriented high self-monitors, but that an expert source would enhance processing for the more value-expressive low self-monitors.

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Using probability theory, Wyer (1970) noted that:

\[ p(B) = p(B|A)p(A) + p(B|\neg A)p(\neg A) \]  

(1)

To calculate \( p(B) \), we need to know the probability that Candidate A does not favor gun control, or \( p(\neg A) \). Because a candidate only can favor or disfavor gun control, the probability of \( \neg A = 1 - p(A) = .5 \). We also need to know the probability that you would support Candidate A even if he did not favor gun control, or \( p(B|\neg A) \). Let us assume that the latter is only .3. Using Equation 1, it is predicted that:

\[ p(B) = (.9)(.5) + (.3)(.5) = .60. \]  

(2)

If people's beliefs are organized in these logical structures and people reason logically, we can use the formula to predict how new information can change a person's beliefs. For example, if Candidate A gave a speech that led you to believe that there was a .8 chance that he favored gun control (and thus .2 that he did not), substituting these values into Equation 1 produces the prediction that you should believe more strongly that Candidate A is good for the country. That is:

\[ p(B) = (.9)(.8) + (.3)(.2) = .78. \]  

(3)

Your belief that Candidate A is good for the country has increased from .6 to .78.3

A number of studies testing the viability of the notion that new information changes people's beliefs in the manner predicted by the probabilistical model have supported its utility (Wyer, Carlston, & Hartwick, 1979; Wyer & Goldberg, 1970). Of course, the fact that Equation 1 provides accurate predictions does not mean that beliefs actually are organized into syllogistic structures or that people retrieve beliefs from these structures to evaluate conclusions. In fact, Wyer and Hartwick (1980) viewed Equation 1 as simply describing an inference process in which people compute their beliefs in the conclusion (B) by considering whatever previously acquired piece of relevant information comes to mind most easily (e.g., A). The piece of information that comes to mind could be a belief that is linked syllogistically to the conclusion in memory, or it could be a belief that is momentarily salient due to situational factors. Wyer and Hartwick argued that, in this inference process, people first consider the implications of A for B. Then, they consider the likelihood of B if A were not true. Finally, if these two inferences are different, they average the two conditional probabilities, weighting them by their beliefs that A was and was not likely to occur, respectively.

Regardless of the specific interpretation of Equation 1, the probabilistical formula demonstrates how a targeted change in one belief (e.g., Candidate A favors gun control) can have an impact on a completely unmentioned belief (e.g., Candidate A is good for the country). Consistent with this view, research has shown that a message targeted at changing abortion attitudes can produce changes in people's attitudes toward the related, but unmentioned, issue of contraception (Mugny & Perez, 1991; see also, Dillehay, Insko, & Smith, 1966). In fact, merely responding to an attitude item on one issue can produce an attitude polarization effect on a related issue (Henninger & Wyer, 1976; Judd, Drake, Downing, & Krosnick, 1991). The more logical connections or associative links that exist among beliefs or that people perceive as they think about an issue, the greater the number of beliefs that could change as a result of a single belief change.

Expectancy-Value Model. The probabilistical model outlined earlier considers only the probabilities that certain statements are true or likely (e.g., that Candidate A is linked to a trait such as gun control), or that the trait is linked to some other property (e.g., good for the country). It does not consider degrees of desirability of the traits explicitly.4 Although the probabilistical model can be modified to incorporate variations in desirability (see Wyer, 1973), the most popular approach to considering degrees of likelihood and desirability comes from expectancy-value theories. In particular, expectancy-value theorists analyze attitudes by focusing on the extent to which people expect the attitude object to be related to important values or produce positive versus negative consequences (e.g., Peak, 1955; Rosenberg, 1956; see reviews by Bagozzi, 1984, 1985). In one influential formulation, Fishbein and Ajzen (1975; Ajzen & Fishbein, 1980) hold that the attributes (or consequences) associated with an attitude object are evaluated along two dimensions. That is, a person considers the likelihood (expectancy) that an attribute or consequence is associated with the object along with the desirability (value) of that attribute or consequence. The desirability of each attribute \( (e_i) \) is weighted by the likelihood that the object possesses the attribute \( (b_i) \), and the quantity is summed over all attributes. Stated mathematically, the attitude toward the object \( (A_o) \) is expressed in Equation 4:

\[ (A_o) = \sum (b_i e_i) \]  

(4)

Although questions occasionally arise about various aspects of this model (e.g., Cronen & Conville, 1975; Evans, 1991), a monumental body of research supports the idea that attitudes toward objects, issues, and people become more favorable as the number of likely desirable consequences (or attributes) and unlikely undesirable consequences associated with them increase (see Ajzen & Fishbein, 1980; Fishbein, 1980; Fishbein & Ajzen, 1975; and Pieters, 1988, for reviews).

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3Note that the quantity \( [p(B|A) - p(B|\neg A)] \) is relevant to assessing the impact of a change in \( p(A) \) on \( p(B) \). That is, the larger the difference between \( p(B|A) \) and \( p(B|\neg A) \), the greater the impact a change in belief \( A \) has on conclusion \( B \) (Wyer, 1970). Therefore, knowledge of these conditional probabilities would be useful in selecting specific beliefs to change (e.g., Candidate A favors gun control vs. Candidate A favors tax reductions) to produce maximal change in a desired conclusion (e.g., Candidate A is good for the country).

4However, McGuire (1960a) noted that the perceived likelihood of a conclusion is influenced by the desirability of the premises and the conclusion. That is, beliefs are influenced by both "logical consistency" and "hedonic consistency."
The major implication of expectancy-value theories for attitude change is that a persuasive message will be effective to the extent that it produces a change in either the likelihood or the desirability component of an attitude that is linked to the attitude object. For example, consider a person who, prior to message exposure, believes that Candidate A has a .5 chance of favoring gun control—a consequence valued at 7 on a 10-point scale. The message will produce a more positive attitude toward Candidate A to the extent that it either increases the likelihood that the candidate favors gun control beyond .5, or increases the desirability of gun control beyond 7. Given the wide applicability of Fishbein and Ajzen's approach, and the extensive number of studies documenting the link between attitudes and the likelihood and desirability components of beliefs, it is perhaps surprising that relatively little work on attitude change has been guided explicitly by this framework. Nevertheless, existing research supports the view that messages can influence attitudes by changing either the evaluation or the likelihood component of beliefs (e.g., Lutz, 1975; MacKenzie, 1986). Importantly, as might be expected given the thoughtful processing assumed by this approach, research indicates that the expectancy-value framework accounts for less variance in attitudes when topic-relevant knowledge is low (e.g., Lutz, 1977).

Thought Systems Approach. In a major elaboration of the probabilistic model, McGuire and McGuire (1991) addressed the distinctive origins of likelihood and evaluation judgments. The McGuires noted that when thinking about "core events" such as "electing Candidate A," people think about both the likelihood and the desirability of the event. The likelihood of an event is postulated to be related to the number of antecedents of the event that a person can generate. That is, the event is seen as more likely the greater the number of conditions a person can think of that would bring the event about and less likely the greater the number of conditions that would prevent it. However, the desirability of an event is postulated to be determined by the consequences of the event. That is, the event is seen as more desirable the greater the number of good things that it would provoke and less desirable the greater the number of bad things that it would inspire. The desirability of the event also is postulated to be related to the perceived goodness of the antecedents of the event.5

The McGuire's (1991) analysis of core events is applicable to understanding the strength of the arguments in a persuasive communication, especially when people think actively about the message (Petty & Wegener, 1991). For example, an argument in favor of electing Candidate A, such as "Candidate A will reduce taxes," will be more persuasive to the extent that a person generates (or a message explains) specific ways in which the candidate can bring about a reduction in taxes and provides few impediments to this action. Similarly, the argument will be more persuasive the greater the number of beneficial and the fewer the number of harmful consequences that the person generates about reducing taxes.6

Consistent with Fishbein and Ajzen's (1975) expectancy-value model, Ajzen (1991) noted that, in addition to considering the number of antecedents and consequences, it would be useful to quantify the desirability and likelihood of the salient antecedents and consequences associated with an event.

However, if people are not thinking actively about the message arguments, evaluation and likelihood judgments could be rendered by more simplistic analyses that are not considered by the thought systems approach. For example, Wyer (1991) suggested that the likelihood of an event can be judged simply on the basis of the perceived familiarity of the event where familiarity is determined by the number of event-related concepts that are accessible in memory. Consistent with the familiarity view, Arkes, Boehm, and Xu (1991) showed that mere repetition of a statement led to an increase in its perceived truthfulness (see also, Hawkins & Hoch, 1992). In an interesting analysis of perceived validity, Gilbert (1991) argued that propositions are assumed to be true until or unless countervailing information is retrieved (i.e., until they are deemed untrue). Thus, disrupted processing during the presentation of false statements should increase their perceived validity (Gilbert, Krull, & Malone, 1990; Gilbert, Tafarodi, & Malone, 1993). Grunfeld and Wyer (1992) showed that denials of information an individual already believed to be false (e.g., "Candidate A is not a crook") led to an increase in the perceived validity of what was denied (i.e., "Candidate A is a crook"). Presumably because conversational logic (Grice, 1975) led recipients to reason that the source would not make a denial unless there was something to the charge (see also Wegner, Wenzlaff, Kerker, & Beattie, 1981). Our point here is that some validity mechanisms do not require the individual to think actively about antecedent conditions that would bring about the propositional event. Later in this chapter, we discuss both effortful and more simple means of rendering evaluative judgments.

Organization of Attitude-Relevant Information and Implications for Attitude Change. Although considerable research has addressed the contents of an attitude structure in memory, relatively little work has addressed the specific organization of that information. That is, the information and experiences relevant to an attitude object can be well organized or poorly organized; if well organized, a number of systems are possible. For example, consistent with the tripartite model, it is possible that attitudes are organized into affective, cognitive, and behavioral subsystems (e.g., Berekler, 1984). Another possibility is that attitude structures are bipolar with attitude-consistent information clustered together and linked to a cluster of attitude-inconsistent information (e.g., Judd & Kulik, 1980; Pratkanis, 1989). This bipolar structure could cut across affective, cognitive, and behavioral categories, or could be the organizing structure within these categories. Alternatively, the information in memory could be organized in some other fashion, such as into the categories of acceptable, objectionable, and noncommittal (e.g., Sherif & Hovland, 1961).6

5The thought systems model also contains a number of other interesting postulates (see Wyer & Snell, 1991, for a complete review).

6Although there is considerable persuasion research in the social judgment theory tradition (Sherif, Sherif, & Nebergall, 1965), it is not clear that the measured latitudes of acceptance, rejection, and
A currently popular view of attitude structure relies on an associative network model of memory (e.g., Anderson, 1983), in which an attitude object is linked to an evaluative node as well as to other relevant information and experiences (e.g., Pratkanis & Greenwald, 1989). Although most social psychologists have focused on the structure of individual attitudes (intra-attitudinal structure; e.g., Judd & Krauss, 1989), any one attitude structure also can be linked to other attitude structures that have some basis of similarity (e.g., derive from the same values; inter-attitudinal structure; see Eagly & Chaiken, in press). Because of “spreading activation,” the activation of one concept spreads to linked nodes in the system. For example, in one study, individuals were faster to respond to an attitude item when it followed a question on a similar topic than when it followed a dissimilar one (Tourangeau, Rasinski, & D’Andrade, 1991). In general, items in an attitude structure will be more or less accessible depending on the frequency and recency of their activation and use (Higgins, 1989; Wyer & Srull, 1986).

Although understanding the organization of attitude-relevant material in memory undoubtedly awaits further developments in understanding the structure of memory in general, we nevertheless can summarize a few useful ideas about attitude structure and attitude change that are accepted by most attitude theorists.

First, changing some aspect of an individual attitude structure most likely will lead to some change in the attitude, although it might take some time and thought for the change to become manifest (McGuire, 1981). That is, if attitudes are based on beliefs, emotions, and/or behaviors, and are linked in memory to them, then a strengthening or weakening of any of these links or the addition of new links potentially could modify the attitude. Second, the more extensive the structure supporting an individual attitude, the more difficult it should be for any one new piece of information to modify the attitude, especially if the structural elements are highly accessible. Third, to the extent that any one attitude is linked to many other, it can be viewed as central in a person’s attitudinal system (Rokeach, 1968) or high in embeddedness (Scott, 1968). To the extent that a central attitude changes, others are likely to change as well.¹

Attitude Strength

Attitude structure is related to another important property of attitudes—attitude strength. Strong attitudes are those that are stable over time; resistant to counter-persuasion; and likely to influence other judgments, intentions, and behaviors (Pett & Krauss, in press). It is useful to consider attitude strength as a continuum (e.g., Fazio, 1986). At one end are non-attitudes (that is, no attitude exists about the object), and at the other end are attitudes that are quite strong. Most attitudes, of course, fall somewhere in between. In general, the stronger the attitude, the more it possesses the characteristics noted earlier. For example, the stronger the attitude, the more it tends to have an influence on a person’s behavior.

A number of measurable properties of attitudes have been related to the aforementioned strength consequences. Specifically, attitudes that are polarized or extreme (e.g., Abelson, in press; Fazio & Zanna, 1978; Judd & Brauer, in press), important (Krosnick, 1988; see Boninger et al., in press), or high in certainty (e.g., Davidson, Yantis, & Woltz, 1985; see Gross, Holz, & Miller, in press; Pelham, 1991), attitude-belief consistency (e.g., Chaiken & Baldwin, 1981; Norman, 1975), direct experience (e.g., Davidson et al., 1985; Regan & Fazio, 1977), personal relevance (e.g., Howard-Pitney, Borgida, & O’Morton, 1986; Petty & Cacioppo, 1986a; see Thomsen, Borgida, & L'Vine, in press), vested interest (see, Crano, in press), knowledge (e.g., Davidson, in press; Wilson, Kraft, & Dunn, 1989; Wood, 1982; see Wood, Rhodes, & Biek, in press), and accessibility (e.g., Bassili & Fletcher, 1991; see Fazio, in press; Fazio & Williams, 1986) all produce one or more of the strength consequences (see Krosnick & Abelson, 1992, Petty & Krauss, in press). Although it would simplify matters considerably if attitude strength was a unitary concept, research has suggested that these properties show relatively low correlations with each other (Krosnick, Boninger, Chuang, Berent, & Carnot, in press; Raden, 1985). Thus, there appears to be a variety of determinants of attitude strength.

Attitude strength is of concern to persuasion researchers for at least two reasons. First, as is seen shortly, some attitude change processes are especially effective in changing weak, rather than strong, attitudes. Second, some attitude change processes are more effective in producing strong attitudes than others. In the remainder of this chapter, we focus on the processes responsible for changes in attitudes and on the consequences of these changes. Our focus is on the theories that presently generate the bulk of empirical work on attitude change (see Insko, 1967; Kiesler, Collins, & Miller, 1969; and McGuire, 1985, for excellent reviews of earlier approaches).

INFORMATION PROCESSING STAGES IN ATTITUDE CHANGE

Now that we have reviewed the basic nature of attitudes and discussed their underlying bases and structure, we can turn to the specific theories and processes of attitude change that have developed. We begin by discussing a general information processing approach that has been popular in one form or another for a considerable period of time. A typical information-processing model of persuasion views attitude change as the culmination of a series of information-processing
stages. For example, in 1925, Strong proposed that people first needed to be exposed to a message and pay attention to it before it could influence them. However, the contemporary impetus for the information-processing approach can be found in the Yale Communication Program led by Carl Hovland (Hovland, Janis, & Kelley, 1953). The Hovland group was influential in its view that attitude change resulted if there was attention, comprehension, learning, acceptance, and retention of the message and its conclusion. A person would engage in these steps to the extent that the persuasive message or the persuasion context provided incentives for doing so. Over the years, McGuire (1968, 1989) has presented a more formal information-processing model that incorporates and extends these ideas. Although the number of steps in McGuire's information-processing model has varied, a consistent theme has been that persuasion was dependent on various factors related to the reception of message arguments and various factors related to yielding to them (see Wyer, 1974, for a mathematical specification and elaboration of this model).

Reception/Learning Processes

McGuire's (1968) reception/yielding model holds that both reception and yielding processes are required for attitude change. Thus, some variables might decrease the likelihood of persuasion by making reception more difficult (e.g., a complex or incomprehensible message), whereas others might decrease persuasion by making yielding less likely (e.g., a poorly reasoned message). Perhaps the most interesting variables in this framework were those that were postulated to influence each step differently. For example, as audience intelligence increased, reception might increase (e.g., because greater intelligence should produce greater comprehension and memory), but yielding might decrease (e.g., because an intelligent audience has greater confidence in its initial opinions or can better resist the arguments presented; Eagly & Warren, 1976). For variables having an opposite impact on reception and yielding processes, persuasion should be maximal at a moderate level of the variable (e.g., moderate intelligence).

Although some studies examined the curvilinear hypothesis from this model directly (see Rhodes & Wood, 1992), most of the attention devoted to the reception/yielding model was on examining the notion that reception was a prerequisite to persuasion. In particular, it seems obvious that a recipient at least needs to comprehend the position taken in a message if change toward that position is to take place. Consequently, most attention focused on the more open question of whether a recipient needs to comprehend or understand the supporting information or arguments offered in the message for persuasion to occur. Thus, researchers have examined the extent to which argument reception, as assessed via message recall or recognition, is related to persuasion. Although a measure of message recall requires more than the mere initial reception, comprehension, or learning of the message arguments, the learning theory approach to persuasion also included the idea that attitude change persistence should be related to message persistence. Because of this, message recall became a popular assessment technique (McGuire, 1968). However, there is surprisingly little evidence that either initial persuasion or its persistence depends on a person's ability to learn and remember the arguments in a persuasive communication (see Cook & Flay, 1978; Eagly & Chaiken, 1993; McGuire, 1969, for reviews).

There are several reasons for low attitude change-argument memory relationships. Perhaps the most important is that a pure reception model fails to consider the idiosyncratic evaluations individuals have of the arguments. That is, one person can find an argument very compelling, another only slightly convincing, and a third might find the same argument to be completely ridiculous (Petty, Ostrom, & Brock, 1981). As McGuire (1968) postulated, persuasion should depend on yielding to the arguments in addition to reception of them. When recalled information is weighted by a person's idiosyncratic evaluation of it, attitude-repel relationships are increased (e.g., Chattopadhyay & Alba, 1988).

Second, argument learning and recall might not relate to persuasion even if perceptions of argument quality were controlled. This is because a person might not find all of the arguments equally relevant to assessing the validity of the message or equally diagnostic in allowing a comparison among alternatives (Feldman & Lynch, 1988). If a person is thinking about a message as it is received and is evaluating the information it contains, it is likely that an attitude will emerge following the communication. To the extent that both relevant and irrelevant arguments are equally accessible immediately following message exposure, but only relevant arguments enter into the attitude (e.g., arguments that match the functional basis of an attitude), an inconsistency between recall and persuasion would occur.

On the other hand, suppose a person is not forming an attitude as a message is received, but must express an opinion at a later point in time. Then, the judgment is more likely to depend on the implications of the information that can be recalled if that information is perceived relevant at the time of judgment. Researchers who have distinguished between attitudes formed during information exposure (spontaneous or on-line judgments) versus judgments formed subsequent to message exposure have shown that the latter type of judgment is related more strongly to the information recalled than is the former (Bargh & Tew, 1985; Hastie & Park, 1986; Lichtenstein & Sull, 1985).

Of course, if the message appears to be gibberish or odd, persuasion will be reduced (Eagly, 1974), but accurate comprehension or learning may not be necessary. In fact, misunderstanding even could lead to more persuasion than correct perceptions. That is, an individual's subjective perception of understanding is probably more important than actual understanding. Some theorists have argued that the importance of reception and learning in the typical persuasion study has been underestimated, because the variance in reception in a typical laboratory experiment may be too restricted to detect significant effects (Eagly & Chaiken, 1984).
Thus, factors that increase a person's motivation and ability to think about and elaborate information at the time of message exposure should reduce the correlation between attitudes and information recalled from the message. Tesser and Shaffer (1990) speculated that two-sided messages on unfamiliar topics would reduce the likelihood of elaboration when compared with one-sided communications, and therefore should increase the relative importance of message learning. Consistent with this reasoning, one study found that when recipients were given two sets of persuasive arguments, both message recall and cognitive elaborations predicted persuasion, but when only one set of arguments was received, elaborations predicted attitudes but recall did not (Chattopadhyay & Alba, 1988). In another study (Mackie & Aruncion, 1990), individuals who were distracted from elaborating a persuasive message showed higher memory–attitude relationships than individuals who received the message under high elaboration conditions. Finally, in a study examining individuals who differed in their motivation to think about a message (Haugtvedt & Petty, 1992), low motivation subjects showed higher memory–attitude correlations than those who were more motivated to think. Because the messages presented in these studies contained reasonably strong arguments, it is not clear if the memory–recall relationships that were observed were due to the fact that people favorably evaluated the arguments they recalled at the time of judgment, or whether they simply made inferences of validity based on the mere number of arguments that they could recall (Petty & Cacioppo, 1984a).

The research outlined earlier suggested some circumstances in which message recall would be related to post-message attitudes. Specifically, the correlation between message recall and attitudes should be increased if: (a) the likelihood of elaborating the message arguments at the time of message exposure is relatively low, (b) an unexpected judgment is required following message exposure, and (c) no simple cues (e.g., source expertise) are available or attended to by the recipient that could produce an attitude at the time of judgment in the absence of on-line argument scrutiny.

In sum, after a period in which persuasion theorists generally dismissed recall and learning processes from the list of persuasion mediators, current research has documented conclusively that there is a specific role for a memory-based approach. In addition to work on the conditions under which argument recall will be related to attitudes, current work on learning and memory processes in persuasion is focused on questions such as: (a) the situational and contextual determinants of what information will be recalled (e.g., Kiesieus & Sternthal, 1984, 1986; MacKenzie, 1986; Schul & Burnstein, 1983; Sherer in memory (e.g., Schmidt & Sherman, 1984; Wilder, 1990); and (c) individual Cacioppo, Petty, & Morris, 1983; Chaiken et al., in press; Reardon & Rosen.

Evaluation/Yielding Processes

As our discussion implies, tracking the mere reception of information is insufficient to gauge the persuasiveness of a communication. Rather, the processes by which a person reacts to the incoming stimuli must be understood. Our discussion of the processes by which people yield to persuasive communications is divided into three parts. First, we discuss the general cognitive response idea that it is important to understand a person's idiosyncratic reactions to incoming information or a person's self-generation of information instead of (or in addition to) their reception and learning of the information presented (Greenwald, 1968; Petty et al., 1981). Next, we discuss the notion inherent in the elaboration likelihood model of persuasion (Petty & Cacioppo, 1981, 1986b) that a person's idiosyncratic reactions can be based on considerable cognitive effort or on more simplistic analyses (see also the heuristic/systematic model; Chaiken, Liberman, & Eagly, 1989). Finally, we discuss various yielding processes that do not rely on careful and effortful scrutiny of the information contained in a persuasive appeal.

Cognitive Response Approach

Cognitive Responses to Messages

The cognitive response approach to persuasion was developed as an explicit attempt to salvage a learning view of persuasion when it was challenged by numerous findings of low attitude–recall correlations. Greenwald (1968) proposed that it was not the specific arguments in a message that were paired with the message conclusion (or attitude object) in memory as the Yale approach implied, but rather a person's idiosyncratic cognitive responses or reactions to the message arguments that were paired with the conclusion and thus responsible for persuasion (see also, Brock, 1967). That is, the cognitive responses were postulated to be linked to the global evaluation of the attitude object, but the initial information on which the responses were based were stored elsewhere in memory (Anderson & Hubert, 1963). In addition to this structural difference, the cognitive response approach provided an alternative to message reception and learning as yielding mechanisms. Of course, at the most basic level, individuals only can respond cognitively to something that they have received from the message. However, in the cognitive response analysis, a person's thoughts can concern incorrectly perceived arguments as well as correctly perceived arguments. In fact, the thoughts can be to the message conclusion in the absence of receipt of any arguments. Furthermore, the cognitive response approach was sufficiently general that it accommodated cognitive responses elicited by the tone of the message or by extra message factors, such as the source of the message or the context in which it was presented. In any case, to the extent that a person's cognitive responses were favorable, persuasion was the postulated result; but to the extent that they were
unfavorable (e.g., counterarguments, source derogations), resistance or even boomerang were possible (Petty et al., 1981). Greenwald (1968) further proposed that persistence of persuasion depended on the decay function for cognitive responses, rather than the message arguments per se (Love & Greenwald, 1978).

The cognitive response approach generated a considerable body of evidence consistent with the view that, in certain situations, people spontaneously produce thoughts during message presentation, and the favorability of these thoughts is a good predictor of post-message attitudes and beliefs (Eagly & Chaiken, 1984, 1993; Perloff & Brock, 1980; Petty & Cacioppo, 1986a). In a typical cognitive response study, message recipients list or verbally report their thoughts either during or after the message. Studies in support of the cognitive response approach showed that: (a) physiological activity indicative of information processing (e.g., speech EMG) is elevated when cognitive responding is presumed to occur (e.g., Cacioppo & Petty, 1979a); (b) thought profiles show the same pattern as the attitude measure in response to some manipulation (e.g., the manipulation produces increased persuasion and increased favorable thoughts and/or decreased unfavorable thoughts; e.g., Osterhouse & Brock, 1970); (c) the polarity of these thoughts (e.g., positive minus negative thoughts) is a good predictor of the post-message attitude (e.g., Mackie, 1987); and (d) removing the effect of some manipulation on thoughts eliminates its effect on attitudes, whereas the reverse does not occur (e.g., Insko, Turnbull, & Yandell, 1974; see Cacioppo & Petty, 1981b; Wright, 1980; for reviews).

Although most studies simply have categorized thoughts into favorable, unfavorable, and neutral categories, other coding schemes are possible. For example, thoughts that implicate the self are better predictors of attitudes than thoughts that do not (Shavitt & Brock, 1986). It is also possible to distinguish between cognitive responses that are based on argument scrutiny (e.g., counterarguments) versus thoughts that are based on simple cues (e.g., source derogations). As the more recent theories of persuasion that we discuss in the next section made apparent, either type of thought can be a better predictor of attitudes under certain circumstances (e.g., Chaiken, 1980; Petty & Cacioppo, 1979b, 1984a; Wright, 1974).9

Cognitive Responses in the Absence of a Message

Self-Generation of Arguments. Just as a person’s thoughts in response to a persuasive message can determine the extent and direction of attitude change, so too can a person’s thoughts in the absence of any explicit external message. The powerful and persisting effects of completely self-generated messages were shown in early research on role-playing (Janis & King, 1954; Watts, 1967). In this research, people typically were asked to act out certain roles (e.g., convince a friend to stop smoking) or generate a message on a certain topic, and the subsequent attitudes of these people were compared with those of controls who had either passively witnessed the role-playing, or listened to a communication, or received no message.

A consistent research result was that active participation in the generation of a message is a successful strategy for producing attitude change (e.g., McGuire & McGuire, 1992), and that these changes tend to persist longer than changes based on passive exposure to a communication (e.g., Elms, 1966; Huesmann, Eron, Klein, Brice, & Fischer, 1983). In addition, some research has indicated that people find their own arguments to be more original than those that are generated by others, and self-generated arguments are also more memorable (Greenwald & Albert, 1968; Salmelva & Graf, 1978). Presentation of arguments in public, rather than in private, enhances attitude change due to role-playing, perhaps because people try harder in public, the arguments are more salient, or counter-arguing the role-playing is more likely in private (Tice, 1992).

Generating Explanations and Imagining Events. In another stream of experiments, the effects of asking people to generate explanations for some proposition or to imagine the occurrence of some event were examined. For example, in one study, students were presented with detailed case histories that led them to explain why being a good fireman was associated with either a high or a low willingness to take risks (Anderson, Lepper, & Ross, 1980). Later, it became clear that the case histories on which the explanations were based were completely false. Nevertheless, subjects who were led to think about why a high willingness to take risks predicted success in fire-fighting continued to believe in this relationship, whereas those led to think about the opposite continued to believe the opposite.

Similarly, people who were asked to imagine hypothetical events (e.g., that Ohio State would beat UCLA in the Rose Bowl) came to believe that these events have a higher likelihood of occurring than before thinking about them (e.g., Sherman, Cialdini, Schwartzman, & Reynolds, 1985). Consistent with the earlier work on role-playing, the work on generating explanations and imagining events showed consistently that self-generation is a powerful way to change beliefs, and that these beliefs are remarkably impervious to change (see also Lepper, Ross, & Laut, 1986; Sherman, Zehner, Johnson, & Hirt, 1983).

Research on Mere Thought. Finally, in an extensive series of studies, Tesser (1978) and his colleagues examined the effects of merely asking someone to think about an issue, object, or person (see Tesser, Martin, & Mendolia, in press, for a review). For example, in one early study, Sadler and Tesser (1973) introduced subjects to a likable or dislikable partner (via a tape recording). Some

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9Additional cognitive response coding schemes have been reported (e.g., recipient generated or externally originated thoughts, Greenwald, 1968; cognitive versus affective reactions, Batra & Ray, 1986; Ickes, Robertson, Tooke, & Teng, 1986), but there are too few studies to assess their utility.
of the subjects were instructed to think about the partner, whereas others were distracted from doing so. The thinking manipulation polarized judgments of the partner. Specifically, enhanced thinking was associated with more favorable evaluations of the likable partner, but less favorable ratings of the dislikable partner. Current research has indicated that both moderation and polarization can result from mere thought. Specifically, the polarization effect requires that subjects have a well-integrated and consistent schema to guide processing and that they are motivated to utilize this issue-relevant knowledge (Chaiken & Yates, 1985; Liberman & Chaiken, 1991; Tesser & Levene, 1977). In the absence of these conditions, such as when motivation to think is low or when the issue-relevant information in memory represents independent dimensions of knowledge rather than a highly interconnected (correlated) system of beliefs, mere thought is associated with attitude moderation (e.g., Judd & Lusk, 1984; Linville, 1982; Millar & Tesser, 1986a).

The Elaboration Likelihood Model of Persuasion

The cognitive response approach and research on self-generated attitude and belief change demonstrated quite conclusively that active thought processes often accompany attitude change, and that self-generated change can be quite enduring. Although the cognitive response approach in its broadest framework appears to provide a reasonable account of initial attitude change and its persistence, its focus on the very active cognitive evaluation of the message (or self-generation of arguments) implies that little attitude change is likely when active thinking is low. Yet, a number of persuasion investigations have suggested that it actually might be easier to change attitudes when people have relatively little interest in or knowledge about the topics of the persuasive message—conditions that would not be likely to foster much issue-relevant cognitive activity (see Hovland, 1959; Johnson & Eagly, 1989; Petty & Cacioppo, 1986a). Thus, active thinking about the substance of a message does not seem to be a requirement for attitude change.

Central and Peripheral Routes to Persuasion

The elaboration likelihood model of persuasion (ELM; Petty & Cacioppo, 1981, 1986b) is a theory about the processes responsible for yielding to a persuasive communication and the strength of the attitudes that result from those processes. The model holds that the processes responsible for yielding to a communication can be thought of as emphasizing one of two relatively distinct routes to persuasion. The first, or central route, involves effortful cognitive activity, whereby the person draws on prior experience and knowledge to assess and evaluate carefully the central merits of the position put forth in the persuasive message. Consistent with the cognitive response approach to persuasion, the message recipient under the central route is actively scrutinizing all of the information presented. The goal of this cognitive effort is to determine if the position advocated by the source has any merit. The end result of the effortful information processing involved in the central route is typically an attitude that is well articulated and bolstered by supporting information.

In contrast, attitudes also can be changed by a peripheral route without much thinking about information central to the merits of the attitude issue. The peripheral route recognizes 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. To function in life, people sometimes must act as “lazy organisms” (McGuire, 1969) or “cognitive misers” (Taylor, 1981) and employ simpler means of evaluation. That is, in some situations, considerable cognitive resources are allocated to the task of processing the message, but at other times few resources are allocated. The peripheral route characterizes attitude change as resulting from relatively low resource demanding processes, such as when rewards, punishments, and affective experiences are associated directly with an attitude object (as in classical or operant conditioning; e.g., Suls & Staats, 1958); or when generated inferences (as in the self-perception mandate “I bought it, so I must like it”; Bem, 1972), well-learned heuristics (as in “Experts are generally correct”; Chaiken, 1980, 1987; Cialdini, 1987), or category-based processing (“She’s a liberal, so I don’t like her”); Fiske & Pavechak, 1986) determine attitudes. Attitudes that are changed by these peripheral route processes are postulated to be weaker generally than attitudes that are changed by the central route.

The central and peripheral routes to persuasion anchor an elaboration likelihood continuum. When situational and dispositional factors render the likelihood of message elaboration high, the central route process should dominate; but as the elaboration likelihood decreases, peripheral route processes should become more evident. Persuasion researchers have identified a number of ways to assess the extent of information processing activity. Perhaps the most popular procedure has been to vary the quality of the arguments contained in a message and to gauge the extent of message processing by the size of the argument quality

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9One of the earliest theories that explicitly acknowledged different processes underlying attitude expression was Kelman’s (1958) three-process model. Kelman tied the type of persuasion largely to the source of the message—experts produced internalization (a permanent type of change based on personal acceptance of the message conclusion as one’s own); attractive sources produced identification (change that was tied to a continued association with a desirable referent); and powerful sources produced compliance (change that was expressed only under the continued threat of rewards and punishments controlled by the other). Kelman’s distinction of the different types of change was useful, even though, as is explained in this chapter, the determinants of those changes have proved to be much more complicated than he suspected initially. The term internalization can be useful when referring to changes induced by the central route. However, the term identification refers to only one process by which attitudes can be changed by the peripheral route. The term compliance does not refer to real change at all, but only that expressed when the person is under appropriate scrutiny.
effect on attitudes ( Petty, Wells, & Brock, 1976; see Johnson & Turco, 1993, for a review). Greater argument quality effect sizes, of course, suggest greater argument scrutiny.

In addition to the argument quality procedure, several other methods for assessing message processing have been used. For example, investigators have examined the number and profile of issue relevant thoughts generated ( Petty et al., 1981). High elaboration conditions are associated with more thoughts ( e.g., Burnkrant & Howard, 1984) and thoughts that better reflect the quality of the arguments presented ( e.g., Harkins & Petty, 1981). Also, correlations between message-relevant thoughts and post-message attitudes tend to be greater when argument scrutiny is high ( e.g., Chaiken, 1980; Petty & Cacioppo, 1979b), and high message elaboration produces longer reading or exposure times than more cursory analyses ( Mackie & Worth, 1989).

Our discussion so far has highlighted two ways in which variables can have an impact on persuasion. Sometimes variables are relevant to the central merits of an object, and therefore can serve as persuasive arguments. Also, variables can serve as peripheral cues, allowing favorable or unfavorable attitude formation in the absence of a diligent consideration of the central merits of the object or issue. In addition, variables can have an impact on persuasion by influencing the extent of elaboration ( i.e., the degree to which the person is motivated and/or able to evaluate the merits of the issue-relevant information presented). Finally, variables can influence the direction of thinking ( i.e., whether the thoughts elicited are relatively favorable or unfavorable). Each of these roles for variables is most likely under a specific set of conditions, as we describe shortly.

Motivation Versus Ability

The ELM holds that there are many variables capable of affecting the elaboration likelihood and thereby influencing the impact of the processes falling under each route to persuasion. Some variables affect a person's motivation to process issue-relevant arguments, whereas others affect ability or opportunity. Some variables are part of the persuasion situation, whereas others are part of the individual. Some variables affect mostly the extent of information processing activity, whereas others tend to influence the direction of the thinking. Table 2.1 illustrates variables falling into each cell of the $2 \times 2 \times 2$ matrix.

Motivation to Think. Perhaps the most important variable influencing a person's motivation to think is the perceived personal relevance of the communication. For example, in one study, Yale undergraduates generated significantly more thoughts when they were asked to think about personally relevant events than about equally desirable events that were higher in societal importance but lower in personal significance (McGuire & McGuire, 1991). Personal or self-relevance can stem from a variety of sources, such as the attitude object being linked to personal values, outcomes, groups, possessions, or individuals that are important to the individual ( Johnson & Eagly, 1989; Petty, Cacioppo, & Haugtved, 1992; Thomsen et al., in press). When the personal importance of an issue is high, people are motivated to scrutinize the information in a message, and attitude change is based largely on the quality of the information presented in support of the issue ( Leippe & Elkin, 1987; Petty & Cacioppo, 1979b, 1990). Merely changing the pronouns in a message to enhance self-relevance ( e g., you vs. people) can increase information processing activity (Burnkrant & Unnava, 1989), as can enhancing self-awareness by placing message recipients in front of a mirror (Hutton & Baumeister, 1992). When personal relevance is low, argument scrutiny is reduced and attitudes are affected more by variables serving as peripheral cues, such as the status, likability, or attractiveness of the message endorsers ( Chaiken, 1980; Miniard, Bhatia, Lord, Dickson, & Unnava, 1991; Petty, Cacioppo, & Schumann, 1983; Schumann, Petty, & Clemons, 1990).\footnote{Current work on personal relevance has stemmed from previous work in social psychology on ego-involvement conducted within the context of social judgment theory (Sherif & Sherif, 1967). Many specific definitions and models of involvement have appeared in the literature. Some definitions and models of involvement are quite narrow, but others encompass nearly every factor that can affect any type of information processing activity (cf. Greenwald & Leavitt, 1984). In this chapter, we talk about specific variables ( e g., personal relevance, knowledge, etc.) that affect a person's motivation or ability to process the merits of an attitude object, rather than dwell on the many definitions and meanings of the involvement concept.}

Of course, variables other than personal relevance can modify people's motivation to think about a message. For example, people are more motivated to scrutinize information when they believe that they are solely responsible for message evaluation ( Petty, Harkins, & Williams, 1980). People also process more when they are individually accountable ( Tetlock, 1983), and when they recently have been deprived of control (Pittman, in press). Increasing the number of message sources can enhance information processing activity (Harkins & Petty, 1981; Moore & Reardon, 1987), especially when the sources are viewed as providing independent assessments of the issue (Harkins & Petty, 1987). On the other hand,
messages that are overly quantitative increase reliance on peripheral strategies, because people are less motivated or able to process them (Yale & Elmore-Yale, 1984). Messages that are moderately inconsistent with an existing attitude schema can enhance processing over schema-consistent messages, because the former can pose some threat that needs to be understood or some incongruity that needs to be resolved (Cacioppo & Petty, 1979b; Mandler, 1982; Meyers-Levy & Tybout, 1989). Other incongruities also increase information processing activity, such as when an expert source presents surprisingly weak arguments (Muthuswaran & Chaiken, 1991).

In addition to factors associated with the persuasive message or the persuasion context, there are individual differences in people's motivation to think about persuasive communications. For example, people who enjoy thinking (i.e., those high in need for cognition; Cacioppo & Petty, 1982) tend to form attitudes on the basis of the quality of the arguments in a message, thereby following the central route to persuasion (Cacioppo et al., 1983). People who do not enjoy thinking are more reliant on simple peripheral cues in the persuasion context (Axsom, Yates, & Chaiken, 1987; Cacioppo & Petty, 1984; Haugtvedt, Petty, & Cacioppo, 1992).

Recent research has suggested that high need for cognition individuals think intensely about messages, this can produce primacy effects in judgment when they are presented with opposing communications from different sources. In particular, a primacy effect results when extensive processing of an initial message allows people high in need for cognition to resist or overargue the subsequent message (Haugtvedt & Wegener, 1993; see also, Haugtvedt & Petty, 1992). Primacy could also be produced if thinking about the first message is so intense that it disrupts or interferes with thinking about a second communication that immediately follows it (Bozolo, 1993). In contrast, individuals low in need for cognition are less likely to process either message and may therefore show recency effects due to greater utilization of information from the second message (Haugtvedt & Wegener, 1993). Active processing of the initial incoming information may explain why people high in need for cognition interpret ambiguous evidence from mock trial testimony as consistent with introductory comments that frame the evidence as either pro-defense or pro-prosecution (a primacy effect). In contrast, people low in need for cognition interpret the same evidence as consistent with concluding comments that frame the evidence as supporting the side opposed to the introductory comments (a recency effect that is perhaps due to memory processes; Kassin, Reddy, & Tulloch, 1990). On the other hand, in some judgment settings, low effort processing might lead to greater rather than reduced primacy. For example, if the two sides of an issue are presented by one source or in one communication rather than in two, low effort information processors might be more likely than highly motivated processors to form a snap judgment prior to receipt of all of the information (Ahlering & Parker, 1989).

Ability to Think. Among the important variables influencing a person's ability to process issue-relevant arguments is message repetition. Moderate message repetition provides more opportunities for argument scrutiny (e.g., Cacioppo & Petty, 1979b; Gorn & Goldberg, 1980; Rethans, Swasy, & Marks, 1986), which will prove beneficial for persuasion as long as the arguments are strong and tedious is not induced (Batra & Ray, 1986; Cacioppo & Petty, 1989; Cox & Cox, 1988). External distraction (e.g., Petty et al., 1976) and a fast presentation (Smith & Shaffer, 1991) reduce argument elaboration, which can be beneficial when the message would have been counterargued easily. People are also generally better able to process messages that appear in print than messages that are controlled externally (e.g., radio and TV; Chaiken & Eagly, 1976; Wright, 1980). On the other hand, placing time pressures on processing (Krulik & Freund, 1983), enhancing physiological arousal via exercise (Sanbonmatsu & Kardes, 1988), or filtering the message difficult to understand (Ratneswaran & Chaiken, 1991) increases reliance on simple cues.

There are also individual differences in the ability of people to think about a persuasive communication. For example, as general knowledge about a topic increases, people become more able (and perhaps more motivated) to think about issue-relevant information (Wood et al., in press). However, knowledge is only effective to the extent that it is accessible (Brucks, Armstrong, & Goldberg, 1988). When knowledge is low or inaccessible, people are more reliant on simple cues (Burke, D'Sarbo, Oliver, & Robertson, 1988; Wood & Kallgren, 1988; cf. Alba & Hutchinson, 1987). For example, increasing the mere amount of information associated with one side over another influences attitudes more for low than for high knowledge individuals (Alba & Marmorstein, 1987; Wood, Kallgren, & Preissler, 1985).

Combining Variables. In most communication settings, a confluence of factors determines the nature of information processing, rather than one variable acting in isolation. For example, the use of rhetorical questions can increase thinking about a persuasive message if the questions follow the arguments and motivation to think about the message would normally be low (Petty, Cacioppo, & Heesacker, 1981). On the other hand, if people already are motivated to think about the message or the rhetorical questions precede the message arguments, then the use of rhetorical questions can disrupt the normal processing that would have occurred (Howard, 1990; Petty et al., 1981; Swasy & Munch, 1985). As another example, message repetition is particularly important as a means of increasing thinking when the message is relatively difficult to process, but not when it is easy (Batra & Ray, 1986). The next decade is likely to see more research on the interacting effects of variables affecting motivation and ability to elaborate messages.
Relatively Objective Versus Biased Information Processing

The variables we discussed earlier, such as distraction or need for cognition, tend to influence information processing activity in a relatively objective manner. That is, all else being equal, distraction tends to disrupt whatever thoughts a person is thinking (Petty et al., 1976). The distraction does not specifically target one type of thought (e.g., favorable or unfavorable) to impede. Similarly, individuals with high need for cognition are more motivated to think in general than people low in need for cognition (Cacioppo et al., 1983). They are not more motivated chronically to think certain kinds of thoughts over others.

Biases can emerge in the processing of a persuasive message in a number of ways. First, some people simply might possess a biased store of knowledge compared with other people. If so, their ability to process the message objectively can be compromised. Second, variables in the persuasion situation can bias retrieval of information even if what is stored is completely balanced. For example, a positive mood (Bower, 1981) or vertical head movements (Tom, Pettersen, Lau, Burton, & Cook, 1991; Wells & Petty, 1980) might bias retrieval in favor of positive over negative thoughts. People also can be biased in their active search for information in memory that would support one point of view over another (Petty & Cacioppo, 1977). For example, when people are asked to present information to an audience whose opinions are known, their communications to those audiences tend to be biased in favor of the audience's opinions (e.g., Higgins & McCann, 1984; McCann, Higgins, & Fongmon, 1991). Not surprisingly, given the work on self-generated messages that we reviewed earlier, people's own subsequent attitudes are biased by the biased communications they generate (see McCann & Higgins, 1984, for a review). Finally, biases can have an impact on the integration of information. That is, even if people have an unbiased store of information in memory, and a balanced set of ideas is retrieved, certain ideas might be given greater weight than others in forming a judgment (Anderson, 1981).12

Ability Factors That Produce Bias. Although many theorists have focused on how motivational factors and a person's goals can bias information processing activity (e.g., Johnson & Eagly, 1989; Kunda, 1990), biased attitudinal outcomes can result from ability factors as well. For example, if a person can recall the message arguments that favor his or her side over the competing side (see Roberts, 1985), this does not necessarily mean that a motivated selectivity or defensiveness is operating. Rather, the arguments on one side of the issue might fit the existing attitude structure more readily than the opposing arguments, thereby producing a biased result. Similarly, people's evaluations of the evidence on two

12Biases also can influence other steps in the information processing sequence. For example, people can be biased in exposing themselves to information (Frey, 1986). However, persuasion researchers have focused on biases in processing that occur once a message has been received.
beliefs and attitudes to bring them into line with the behavior (Festinger & Carlsmith, 1959).

Although it is now clear that many of the situations described by Festinger as inducing dissonance produce physiological changes in people and an "unpleasant tension" (Elkin & Leippe, 1986; Losch & Cacioppo, 1990; see Fazio & Cooper, 1983), current research has begun to focus more on understanding the precise cause of that tension. For example, one point of view with considerable supporting evidence is that dissonance occurs when people believe that they are personally responsible for bringing about some foreseeable negative consequence or outcome (e.g., Cooper & Fazio, 1984; Scher & Cooper, 1989). Thus, if a freely chosen act is inconsistent with one's attitude, but does not result in a negative outcome, no dissonance should be produced (e.g., Cooper & Worchel, 1970). However, what is it about being responsible for negative events that people find so aversive? There are at least two points of view on this. The "self-consistency" viewpoint (Aronson, 1969; Thibodeau & Aronson, 1992) contends that if people think of themselves as competent and caring individuals, it is inconsistent with this self-view to bring about negative outcomes for oneself or others. Thus, some inconsistency between a person's actions and his or her self-concept is at the root of dissonance. Another point of view is that it violates one's "self-integrity" to see oneself as responsible for negative outcomes (Steele, 1988). If one assumes that nearly all people aspire to have positive self-concepts, then being responsible for negative actions produces an inconsistency between one's actual behavior and one's desired self-image.

The self-consistency and self-integrity points of view agree that if people are given an opportunity to restore or enhance their self-esteem in some manner (e.g., encouraging them to consider ways in which they are better than other people; Tesser & Cornell, 1991; receiving validating social support for their actions; Stroebe & Diehl, 1988), dissonance reducing attitude change is less likely. The self-integrity point of view in particular focuses on the fact that virtually any bolstering of self-integrity can undermine dissonance effects. The self-consistency and self-integrity points of view differ in their predictions of whether high or low self-esteem people should be more susceptible to dissonance effects. The self-consistency point of view contends that high self-esteem individuals would experience the most dissonance because producing unwanted or undesirable outcomes is most inconsistent with the favorable self-conceptions of this group (Aronson, 1992). The self-integrity point of view (Steele & Spencer, 1993) argues that low self-esteem individuals should show stronger dissonance effects because high self-esteem individuals can more easily restore self-integrity by recruiting self-images capable of affirming self-adequacy. Research evidence on this question is mixed in that some research with situationally induced self-esteem has supported the self-consistency point of view (Gerard, Blevans, & Malcolm, 1964), but other research examining chronically self-esteem has supported the self-integrity view (Steele & Spencer, 1993).

It is interesting to note that Festinger originally hypothesized that inconsistency among personally important elements (such as between one's behavior and one's actual or desired self-concept) would induce more dissonance than inconsistency among more trivial elements. Thus, some have speculated that Festinger was correct in asserting that inconsistency per se is dissonance arousing, but that many (e.g., non self-relevant) inconsistencies produce trivial (undetectable) amounts of dissonance (e.g., Berkowitz & Devine, 1989; Greenwald & Ronis, 1978). Low levels of inconsistency might produce degrees of dissonance below the "dissonance threshold" (i.e., a level of dissonance below which it is tolerated and not reduced; Wyer, 1974).

In any case, it is now clear that various counterattitudinal actions can lead to increased cognitive activity that results in attitude change. Dissonance can result in a reanalysis of the reasons why a person engaged in a certain behavior or made a certain choice, and cause a person to rethink the merits of an attitude object. The end result of this reassessment can be a change in attitude toward the object.

Corrections for Bias. Although ability and motivation-based biases in processing often lead to biased persuasion outcomes, this should not always be the case. For instance, if message recipients were made aware of an event that was likely to unduly bias their perceptions, those recipients might "correct" their views in light of the biasing event (e.g., Martin, 1986; Strack, Schwarz, Bless, Kühler, & Wänke, 1993). Such corrections might occur in different directions depending on recipients' perceptions of how the biasing event or stimulus (e.g., an attractive source) was likely to have influenced their views (Petty & Wegner, 1993). In general, in order for corrections to occur: (a) people should have a naive theory about the direction of the bias induced by some information (e.g., "I'm biased in favor of attractive people"), (b) the bias must become salient, and (c) the person must be motivated and able to make the correction. In some cases, integrative processing of the information (e.g., Schul & Bunn, 1985) could make it difficult for people to correct an individual piece of information that contributed to an overall impression. Rather, the attitude might be adjusted directly for the perceived direction of bias.

13 In contrast to dissonance theory, balance theory (Heider, 1958) holds that inconsistency pressures sometimes can lead to attitude change through a simple inference process, rather than because of a reassessment of the merits of the attitude object. In particular, the theory holds that balance occurs when people agree with people they like, or disagree with people whom they dislike. This theory can account for why a person would come to like a candidate more after he or she is endorsed by a favored celebrity. The theory holds that dissonance (e.g., disagreeing with someone you like) leads to attitude change toward the candidate (or the endorser) in the direction of balance (see Insko 1981, 1984, for an extended discussion). A related formulation, congruity theory, holds that attitudes toward both source and object change to restore congruity (Osgood & Tannenbaum, 1955).
Multiple Roles for Variables in Persuasion Settings

We noted that variables can serve a number of roles in persuasion settings. That is, a variable can serve as an argument or a cue, or it can affect the extent (amount) or direction (bias) of information processing. One of the powerful, albeit complex, features of the ELM is the recognition that any one variable can serve in multiple roles. The fact that variables can have the same impact on judgments via different processes makes it essential to identify the conditions under which each process operates. Research on this problem is in its early stages, but existing literature already suggests the conditions under which variables serve in different roles (Petty & Cacioppo, 1984b).

Under conditions of relatively low-elaboration likelihood, persuasion-relevant variables (e.g., source attractiveness), to the extent that they have any impact at all, serve as peripheral cues, influencing attitudes regardless of whether a message contains strong or weak arguments. When the elaboration likelihood is low, people know that they do not want and/or are not able to evaluate the merits of the arguments presented (or they do not even consider exerting effort to process the message). Thus, if any evaluation is formed at all, it is likely to be the result of relatively simple associations or inferences. When the elaboration likelihood is high, people know that they want to evaluate the merits of the arguments presented and that they are able to do so. In these high-elaboration situations, persuasion-relevant variables (such as source attractiveness) have relatively little impact by serving as simple cues. Instead, the variable can serve as a persuasive argument if it provides information central to the merits of the attitude object (e.g., a picture of an attractive source can provide persuasive visual testimony as to the effectiveness of a beauty product). Alternatively, if the variable is not of central relevance, it might bias the ongoing information processing activity (e.g., people might generate mostly favorable thoughts about the message if the source is attractive). For example, consider the mere number of people who endorse a position. Under low-elaboration conditions, this variable would likely serve as a simple peripheral cue via the heuristic, “the more people who endorse the position, the better.” However, under high-elaboration conditions, people might be motivated to think about why so many or so few people have endorsed the position and generate arguments consistent with the direction of the cue (see Burnstein & Vinokur, 1975; Burnstein, Vinokur, & Trope, 1973). Thus, a consensus cue could lead to attitude change for very different reasons under high- and low-elaboration conditions.

Finally, when the elaboration likelihood is moderate (e.g., uncertain personal relevance, moderate knowledge, moderate complexity, etc.), people might be unsure as to whether the message warrants or needs scrutiny, and whether they are capable of providing this analysis. In these situations, they might examine the persuasion context for indications of whether they should attempt to think about the message. For example, most people might be more likely to process the message if it comes from an expert rather than a nonexpert source, because it often makes little sense to waste time thinking about a message from someone who does not know very much (Heesacker, Petty, & Cacioppo, 1983; Moore, Hauskrecht, & Thamodaran, 1986). On the other hand, people who are high in dogmatism (Rokeach, 1960) simply might trust what an authority figure has to say without much scrutiny. In fact, research has indicated that high dogmatic individuals appear to accept a message from an expert source without much thinking about it, whereas low dogmatists are more dependent on the quality of the arguments provided (DeBono & Klein, 1993). The impact of expertise on the amount of elaboration should occur primarily in situations where the overall likelihood of processing the message is neither very high nor low due to other factors.

An important assumption of the ELM analysis is that the information processing activity undertaken allows the person to satisfy his or her goals. In this regard, consider a voter who becomes interested in the political campaign quite late and is reading the pamphlets of the two candidates while in line waiting to vote. What if the person is unable to discriminate the candidates based on their issue positions? Earlier in the campaign, the voter might have been satisfied in viewing the candidates equally and hoping that some further substantive information would aid in the choice. However, at this point, the voter might use any positive cues available as a basis for an evaluation to break the deadlock (see Minaid, Sirdeshmukh, & Innis, 1992).

Several studies have examined the impact of variables at two levels of elaboration likelihood (high and low), and have provided evidence for a trade-off between argument processing and the impact of peripheral cues processes (Petty & Cacioppo, 1986a). Only one published study examined the effects of a variable across three distinct levels of elaboration, however. This study (Moore et al., 1986; Experiment 3) provided support for the predictions outlined earlier (see Petty, Kasmer, Haugeveldt, & Cacioppo, 1987). Specifically, Moore et al. found that when an advertisement was presented at a very rapid pace, so that it was quite difficult to process, people were influenced greatly by the expertise of the product endorser, but the quality of the arguments for the product had little effect. When the message was presented at a normal pace and was quite easy to process, the quality of arguments in the ad had more impact, but the expertise of the endorser had less influence than in the fast presentation condition. Finally, when the message was presented at a moderately fast pace and processing was possible but challenging, the expertise of the endorser determined how much processing occurred—the expert source induced more thinking than the nonexpert.

There are a number of reasons why peripheral cues typically would have a smaller impact when the elaboration likelihood is high rather than low. For example, people might pay less attention to peripheral factors when they are motivated to scrutinize arguments, the cues may be evaluated less extremely, cues could become less salient at the time of judgment, or weighted less, and so on (e.g., McKenzie & Spreng, 1992; see Petty, in press, for discussion).
A number of persuasion variables in addition to source expertise are amenable to a multiple roles analysis. For example, the ingroup or outgroup status of the message source serves as a simple acceptance/rejection cue when the message is irrelevant to the in-group membership (i.e., low motivation to process), but influences the extent of message processing when the message has some relevance to the in-group status (Mackie, Worth, & Asuncion, 1990). To further explicate the multiple roles idea, we discuss two variables that have sparked considerable research attention.

**Multiple Roles for Affect in Persuasion.** A growing number of studies has examined the impact of a person's mood during exposure to a communication on information processing and persuasion (see Breckler, in press; Mackie, Asuncion, & Rosselli, 1992; Petty et al., 1991; Schwarz, Bless, & Bohn, 1991; for reviews). According to the ELM, when the likelihood of issue-relevant thinking is low, a person's mood will serve largely as a peripheral cue, providing meaning to the attitude object by a simple association process. Consistent with this prediction, early investigations of mood and persuasion often were guided by classical conditioning notions of a direct association between the attitude object and the person's affective state (e.g., Griffitt, 1970; Zanna, Kiesler, & Pilknis, 1970). More recently, affective states have been postulated to influence attitudes by a simple inference process in which attribution of the cause of the mood state to the persuasive message or to the attitude object occurs (e.g., I must feel good, because I like or agree with the message advocacy; see Cacioppo & Petty, 1982; Petty & Cacioppo, 1983; Schumann & Thorson, 1990; Schwarz, 1990). These direct effects of mood on attitude seem to be more likely when elaboration likelihood is low than high (Gorn, 1982; Miniard, Bhatla, & Sirdeshmukh, 1992; Stull, 1983).

As the likelihood of elaboration increases, mood takes on different roles. Specifically, when the elaboration likelihood is more moderate, mood (like source attractiveness, Puckett, Petty, Cacioppo, & Fischer, 1983; and credibility, Moore et al., 1989) has been shown to have an impact on the extent of argument elaboration. In particular, people who have been placed in a positive mood have shown less inclination to process message arguments than people in a neutral or negative mood (Batra & Stayman, 1990; Bless, Bohn, Schwarz, & Strack, 1990; Kuykendall & Keating, 1990; Mackie & Worth, 1989; Worth & Mackie, 1987).

Competing theoretical positions have been put forward to explain why positive mood disrupts processing. The "cognitive capacity" view states that positive moods activate many positive thoughts in memory. Because these thoughts occupy a person's attentional capacity, the message recipient becomes less able to process incoming information (Mackie & Worth, 1991). Support for this formulation comes from the finding that processing deficits for people in a positive mood can be eliminated by removing time pressures for processing (e.g., Mackie & Worth, 1989). However, in some studies where time to process the persuasive messages was unlimited but not emphasized, processing deficits still have been found for happy people (e.g., Batra & Stayman, 1990; Kuykendall & Keating, 1990). Thus, it could be that both a motivational as well as an ability process is operating to reduce elaboration by people in a positive mood. Or, as noted by Schwarz et al. (1991), the time pressure manipulation in the Mackie and Worth (1989) studies might be interpreted as varying subjects' motivation to process the message.

One motivational account of mood effects on message processing is the "feelings-as-information" view (Schwarz, 1990). According to this framework, negative affective states signal to the message recipient that something is wrong in the environment and that some action is necessary, whereas positive mood indicates that no scrutiny of the environment is required. Although the Bless et al. (1990) studies support such a contention, other studies have been less congenial to the feelings-as-information position. For instance, some persuasion investigators have argued that positive mood enhances thinking, based on the fact that happy mood has increased memory for a message over sad mood (Goldberg & Gorn, 1987), and that people have generated a greater proportion of content-related cognitive responses than sad individuals (Mathur & Chattopadhyay, 1991). The cognitive capacity explanation and the feelings-as-information analysis both predict that positive mood disrupts processing. Therefore, to the extent that increases in processing can be found in positive moods relative to neutral or sad moods (Isen, Daubman, & Nowicki, 1987; Murray, Sujan, Hirt, & Sujan, 1990), alternative conceptual frameworks would need to be developed. One possible alternative relies on the notion of mood management (e.g., Sinclair & Mark, 1992). That is, positive-mood enhancement of processing might occur primarily when processing allows the message recipient to maintain his or her positive mood, whereas processing deficits might occur when processing would make positive moods less likely to persevere (for similar ideas regarding mood and helping, see Isen & Simmons, 1978).

When the elaboration likelihood is high and people are processing the message arguments already, the ELM holds that affective states can influence attitudes by influencing the nature of the thoughts that come to mind. Positive mood can facilitate the retrieval of positive and/or inhibit the retrieval of negative material from memory (e.g., see Blaney, 1986; Bower, 1981; Clark & Isen, 1982). Thus, a person's mood during message processing should be related to the favorability of the cognitive responses generated. Support for this possibility has been found in a number of studies (e.g., Breckler & Wiggins, 1991; Goldberg & Gorn, 1987; Mathur & Chattopadhyay, 1991). Additional support has come from research in which the elaboration likelihood was varied explicitly. Specifically, in two studies (Pety, Schumann, Richman, & Strathman, 1993) positive mood had an impact on the thoughts and attitudes of subjects high in elaboration likelihood (i.e., for people high in need for cognition or under high message-relevance conditions), but mood influenced only attitudes when the elaboration likelihood was
low. Furthermore, under high-elaboration conditions, positive mood had an indirect effect on attitudes, being mediated by the positivity of the cognitive responses generated. However, under low-elaboration conditions, a direct effect of mood on attitudes was observed that was not mediated by thought positivity. As noted earlier, the biasing effect of mood on cognitive responses observed under high-elaboration conditions should be most pronounced when the message arguments are relatively ambiguous and open to multiple interpretations.

We do not mean to imply that positive moods always should bias processing toward being more favorable toward the position advocated or that negative moods invariably should render the message conclusion less acceptable. For instance, negative moods have been shown to make negative events seem more likely than positive events (Johnson & Tversky, 1983) and positive events and behaviors are seen as more likely positive as opposed to negative moods (e.g., Erber, 1991; Mayer, Gaschke, Braverman, & Evans, 1992). Thus, to the extent that message arguments include statements that a plan should be followed to avoid negative consequences, negative moods might predispose people to view these arguments as more compelling (see Petty & Wegener, 1991 for a discussion). For example, if a message recipient experiences fear during a message on cigarette smoking, this might influence the person's perception of the severity of the threat or the subjective likelihood of the negative consequences postulated (Rogers, 1983; Schwarz, Servay, & Kumpf, 1985). On the other hand, if the message recipient is in a positive mood, perceptions of the likelihood of the favorable consequences in the message would be inflated (Wegener, Petty, & Klein, in press).

Multiple Roles for Majority and Minority Sources. Like many persuasion variables, initial inquiries into the effects of majority/minority source status tended to ask main effect questions, such as whether majorities or minorities had greater influence (Asch, 1956; Moscovici, Leger, & Naffrechoix, 1969; Tanford & Penrod, 1984) or whether majorities and minorities induced persuasion by the same or different processes (Moscovici, 1980). However, it has been acknowledged more recently that the majority/minority status of a source can have various effects depending on the configuration of motivational and cognitive factors present (Kruglanski & Mackie, 1990; Mugny & Perez, 1991). This complexity can be seen in studies that have investigated the amount of message processing fostered by majority as opposed to minority sources (Maass & Clark, 1983; Mackie, 1987) and by discussion of how source status can bias message processing (e.g., Kruglanski & Mackie, 1990; Mackie, 1987). The multiple roles postulate of the ELM suggests that the different roles for majority and minority sources are more likely to occur under some conditions than others.

15 Like other effects, fear could serve multiple roles. For example, in addition to biasing elaboration, fear appears to reduce the overall likelihood of message elaboration, especially when the fear that a proposed action will be effective (Gleicher & Petty, 1992).

Specifically, when the elaboration likelihood is low, majority/minority source status is most likely to serve as a simple persuasion cue. That is, source status, by influencing perceptions of source credibility, competence, or trustworthiness, can provide message recipients with a simple decision rule as to whether they should agree with the message. However, source perceptions do not necessarily covary directly with majority/minority status (Kruglanski & Mackie, 1990). For instance, consistency in a source's behavior can increase attributions of competence and thereby increase influence (Bray, Johnson, & Chistrom, 1982; Maass, Clark, & Haberkorn, 1982; Moscovici & Neve, 1973); or can increase attributions of rigidity, and thereby decrease influence (e.g., Levine, Saxe, & Harris, 1976; see Maass & Clark, 1984).

When the elaboration likelihood is moderate, majority/minority status can determine the amount of message processing that occurs. However, researchers have reached conflicting conclusions regarding whether majority sources or minority sources foster greater message elaboration. For instance, Mackie (1987) found that subjects tended to recall more majority than minority arguments, and they also generated more favorable cognitive responses to the majority message. Based on these findings, she concluded that majority sources induce greater message processing than minorities do. Other researchers have concluded that the opposite is the case (e.g., Maass & Clark, 1983). It is quite possible that either majorities or minorities can induce greater message scrutiny, depending on other factors in the persuasion situation. For example, receiving a countermotivational message from a majority source implies that the message recipient is in the minority. This might be surprising and even threatening to the message recipient, making scrutiny of what the majority has to say more likely than might normally be the case. However, if a recipient encounters a proattitudinal message, the same reasoning predicts greater processing of that message when the source is a minority rather than a majority, because a proattitudinal message from a minority can be surprising and/or threatening (Baker & Petty, 1993).

Finally, when the motivation and ability to process an incoming message are high, majority/minority status should impact persuasion primarily by influencing the nature of the processing that occurs. For example, Mackie (1987) noted that, in her research, biased processing might have produced the relatively greater proportion of positive cognitive responses that subjects generated to messages from the majority source. Trost, Maass, and Kenrick (1992) found that, although a minority message was persuasive when its personal relevance was low, recipients for whom the message was highly relevant derogated the minority message more than the majority communication. Thus, biased informational processing of majority and minority sources might be exacerbated under conditions that foster elaboration. The majority/minority status of a source also can act as an argument in high-elaboration conditions. For instance, if a message recipient encounters a message about which position is likely to be supported in a local election, the number
of people who currently support the position is a piece of information that is directly relevant to the central merits of the position being presented.16

Peripheral Mechanisms in Attitude Change

In the central route to persuasion, the presumption is that attitude change results from actively considering the merits of the position being advocated. That is, people receive and elaborate arguments or generate reasons to explain or justify some outcome or behavior. Sometimes this effortful thinking proceeds in a relatively objective manner, but at other times it clearly is biased. In either case, however, the person is engaged in an active processing of the issue-relevant information presented.

On the other hand, attitudes also can be changed as a result of various peripheral cues in the persuasion setting if the motivation or ability to elaborate is low. The theories that we discuss next postulate a number of specific peripheral processes. Although many of these theories propose that the processes involved are quite general, subsequent research has revealed that they tend to operate most effectively when the likelihood of issue-relevant elaboration is low or the attitude to be modified is relatively weak. We begin with theories that emphasize inference and heuristic processes, and conclude with theories that emphasize the association of affect with attitude objects.

Inference-Based Approaches

Attribution Theory. The 1970s brought an explosion of interest within psychology in examining how people came to understand the causes of their own and others' behavior. The gist of this attributional approach was that people came to infer underlying characteristics about themselves and others from the behaviors that they observed and the situational constraints imposed on these behaviors (Jones & Davis, 1965; Kelley, 1967).

In a provocative paper, Bem (1965) suggested that people sometimes have no special knowledge of their own internal states and simply infer their attitudes in a manner similar to that by which they infer the attitudes of others. In his self-perception theory, Bem reasoned that just as people assume that the behavior of others and the context in which it occurs provides information about the presumed attitudes of these people, so too would a person's own behavior provide information about the person's own attitude. During much of the 1970s, self-perception theory was thought to provide an alternative account of dissonance effects (Bem, 1972). However, subsequent research indicated that both dissonance and self-perception processes can operate, but in different domains. In particular, the underlying tension mechanism of dissonance theory operates when a person engages in attitude-discrepant action that is disagreeable (e.g., advocating a discrepant position in one's latitude of rejection, Fazio, Zanna, & Cooper, 1977; performing self-depreciating behavior, Jones, Rhodewalt, Berglas, & Skelton, 1981), whereas self-perception processes are more likely when a person engages in attitude-discrepant, but more agreeable, behavior (e.g., advocating a discrepant position in one's latitude of acceptance, Fazio et al., 1977; performing a self-enhancing behavior, Jones et al., 1981).

Self-perception theory also accounted for some unique attitudinal phenomena. For example, the overjustification effect occurs when a person is provided with more than sufficient reward for engaging in an action that is already highly regarded (e.g., Crano, Gorenflo, & Shakelford, 1988; Lepper, Greene, & Nisbett, 1973). To the extent that the person comes to attribute the action to the external reward, rather than to the intrinsic enjoyment of the behavior, attitudes toward the behavior will become less favorable (Deci, 1975). Thus, if people are provided with extrinsic rewards for advocating a position that they already like, they may come to devalue the position when the external rewards stop, because they have come to view their attitude expression as caused by the rewards, rather than by the true merits of the position (e.g., Scott & Yalc, 1978).

According to the ELM, people should be more likely to rely on this relatively simple inference process when well-defined attitudes are not very accessible or the elaboration likelihood is low (Tybout & Scott, 1983). For example, Wood (1982) examined the power of self-perception processes for people who had relatively high versus low knowledge and experience with the issue of environmental preservation. Subjects committed themselves to deliver a speech that was consistent with their attitudes after learning that they would receive either $5.00 or nothing for the task. Following this, they expressed their opinions on the issue. The major result was that for subjects with low knowledge and experience, the $5.00 incentive undermined their positive attitudes (e.g., "I must have made the pro-environmental statements for the money"), but for high knowledge subjects, the incentive had no effect (see also Chaiken & Baldwin, 1981).

Finally, the attribution approach also has been useful in understanding how people make inferences about relatively simple cues. For example, Eagly, Chaiken, and Wood (1981) argued that people often approach a persuasion situation with some expectation regarding the communicator's position. This expectation is formed from premessage information regarding the communicator's traits and situational pressures. According to this model, if the premessage expectation about the position to be taken is confirmed by the communicator's presentation, little

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16Space limitations preclude discussion of other variables that have been shown to serve in multiple roles. For example, a person's own attitude provides a ready cue for evaluation when the likelihood of thinking is low (Jamieson & Zanna, 1989; Sanbonmatsu & Fazio, 1990), but when the likelihood of thinking is high, attitudes bias the ongoing information-processing activity (Houston & Fazio, 1989; Liberman & Chaiken, 1992; see Petty et al., 1992). Both the cue and biasing effects are more likely the more accessible the attitude is (Fazio, in press). Finally, people also might be more interested in objects about which they have attitudes (Roskos-Ewoldsen & Fazio, 1992b), and thus attitudes also might determine the extent of information processing activity.
persuasion occurs, because the recipient attributes the message to the traits and pressures that generated the expectation. In these cases, the person needs to process the message to determine its validity. However, when the premessage expectation is disconfirmed, the communicator is seen as relatively accurate and unbiased, and persuasion can be increased without the need to process message arguments (Eagly, Wood, & Chaiken, 1978). On the other hand, suppose disconfirmation of expectations leads to an attribution of untrustworthiness, rather than honesty. In these situations, the processing consequences of disconfirmation are reversed (Priester & Petty, 1991). In addition, differential processing consequences of expectancy confirmation and disconfirmation are especially likely for individuals who are inclined to conserve their cognitive resources (i.e., those low in need for cognition; Priester & Petty, 1993).17

The Heuristic/Systematic Model. Like the attributional framework developed by Eagly and her colleagues, Chaiken's heuristic/systematic model of persuasion (HSM) represents an explicit attempt to explain why certain peripheral cues, such as source expertise or message length, have the impact that they do (Chaiken, 1987; Chaiken et al., 1989). However, the HSM focuses on heuristics retrieved from memory, rather than decision rules that are generated on-line. That is, Chaiken proposed that, in contrast to systematic (or central route) processes, many source, message, and other cues are evaluated by means of simple schemas or cognitive heuristics that people have learned on the basis of past experience and observation. To the extent that various persuasion rules of thumb are available in memory and accessed, they can be invoked to evaluate persuasive communications.

According to the HSM, the likelihood of systematic processing increases whenever confidence in one's attitude drops below the desired level of confidence (the sufficiency threshold). Whenever actual and desired confidence are equal, heuristic processing is more likely. For example, because of either prior personal experience or explicit training, people could base their acceptance of a message on the mere number of arguments contained in it by invoking the heuristic "the more arguments in favor of something, the more valid it is" (a length implies strength heuristic; Alba & Marmorstein, 1981; Petty & Cacioppo, 1984a; Wood et al., 1985). The HSM holds that, as the elaboration likelihood is increased, there is an increased likelihood of heuristic and systematic information processing. In particular, as long as the two processing modes do not yield conflicting reactions (such as when an expert source presents weak arguments), heuristic processing adds to the impact of whatever systematic processing has occurred (Chaiken et al., 1989).18

Although some research has varied the accessibility (Roskos-Ewoldsen & Fazio, 1992a) or vividness (Pallak, 1983) of the peripheral cues in a message, relatively little research has attempted to explicitly test the HSM by varying the accessibility of the heuristics. Chaiken (1987) reported the most pertinent investigations. In four studies, she and her colleagues attempted to make certain decision rules more accessible, and then track their influence on attitudes following message exposure. Although the individual studies produced weak results, the general pattern supported the utility of the heuristic idea. For example, in one study, subjects in the experimental condition memorized eight phrases relevant to the length implies strength heuristic (e.g., "the more the merrier"), whereas control subjects memorized eight irrelevant phrases. Subsequently, subjects received a message from a speaker who claimed to have either 10 or 2 reasons in support of mandatory comprehensive exams for seniors. Subjects in the study also were divided into those with high and low need for cognition (Cacioppo & Petty, 1982). The only group to be influenced significantly by the claim of 10 versus 2 reasons was composed of low need for cognition subjects who had been primed with the relevant phrases.

Cialdini (1987) analyzed several other heuristics that are effective in influencing behavior. For example, although people might reason that the more people endorsing an object, the better it is, they also can reason that the fewer the number of objects available, the better it is (i.e., the scarcity heuristic; see Brock, 1968). Of course, many of these variables should influence attitudes by invoking heuristics mostly when the elaboration likelihood is low. As noted previously, as the elaboration likelihood is increased, these variables take on other roles (e.g., perceived scarcity can increase the extent of message processing: Bazzolli & Brock, 1992).

Approaches Emphasizing Affect

The attribution and heuristic models focus on simple cognitive inferences that can modify attitudes. Next, we discuss theoretical approaches emphasizing the role of relatively simple affective processes in attitude change.

17If attributional reasoning were employed in the service of evaluating the specific attributes of a position, rather than providing a simple inference about the communicator or other cue, the resulting attitude would have more in common with central than peripheral route attitudes.

18Although the ELM proposes a trade-off between the impact of central and peripheral processes along the elaboration likelihood continuum, this does not mean that central and peripheral processes cannot co-occur (cf. Petty et al., 1980; Stiff, 1986). In fact, at most points along the continuum, some joint impact would be expected. Furthermore, the ELM does not hold that peripheral processes are less likely to occur as the elaboration likelihood is increased—only that these peripheral processes are less likely to have an impact on the person's attitude. Finally, the ELM does not imply that variables serving as peripheral cues cannot have an impact on attitudes as the elaboration likelihood increases. Rather, the multiple-roles postulate argues that the same variable can have an impact under high- and low-elaboration conditions, although the mechanism would be different (see Petty, in press; Petty, Wegener, Fabrigar, Priester, & Cacioppo, in press, for additional discussion).
Classical Conditioning. One of the most direct means of associating affect with objects, issues, or people is through classical conditioning. In brief, conditioning occurs when an initially neutral stimulus (the conditioned stimulus; CS) is associated with another stimulus (the unconditioned stimulus; UCS) that is connected directly or through prior conditioning to some response (the unconditioned response; UCR). By pairing the UCS with the CS, the CS becomes able to elicit a conditioned response (CR) that is similar to the UCR (see Gardner, 1985; McSweeney & Bierley, 1984; Petty, Cacioppo, & Kasmer, 1988, for relevant reviews).

Considerable psychological research has shown that attitudes can be modified by pairing initially neutral objects with stimuli about which people already feel positively or negatively. For example, people's evaluations of words (e.g., Staats & Staats, 1958), other people (e.g., Griffith, 1970), political slogans (e.g., Ralston, 1940), products (e.g., Gesham & Shimp, 1985), and persuasive communications (e.g., Rogers, 1983) have been modified by pairing them with such affect-producing stimuli as unpleasant odors and temperatures, the onset and offset of electric shock, harsh sounds, pleasant pictures, and clanging and depressing films (e.g., Gouaux, 1971; Staats, Staats, & Crawford, 1962; Stuart, Shimp, & Engle, 1987; Zanna et al., 1970). Various motoric movements that are associated with positive and negative consequences, such as putting one's face in a smiling versus a frowning pose (Strack, Martin, & Stepper, 1988) and making an arm flexing movements (associated with moving objects toward oneself), rather than extension movements (Cacioppo, Priester, & Bemtson, 1993), also can influence evaluative responses.

As noted in our discussion of multiple roles for affect, people should be especially susceptible to simple conditioning (and other peripheral) processes when the likelihood of object-relevant thinking is rather low. For example, in one pertinent experiment, subjects were exposed to initially neutral words and nonwords while receiving electric shock either immediately after the words, immediately after the nonwords, or randomly (Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992). Conditioning was more effective for the items (i.e., nonwords) for which subjects had no preexisting knowledge or associations (see also, Shimp, Stuart, & Engle, 1991). In another relevant study (Mackie & Worth, 1990), a persuasive message was presented to subjects over headphones on one channel while either positive (e.g., happiness) or negative (e.g., pain) distraction words were presented on another. Subjects were instructed that attending to the message was the primary task. The message first provided information about a consumer product (e.g., a soda) and described favorable attributes that were either central to the merits of the product (e.g., good taste, thirst quenching) or rather peripheral (e.g., reputable brand name). Following this, subjects received additional information about the product. The major result was that the valence of the distraction words presented in the unattended ear influenced the individuals whose product attitudes were based on the peripheral information to a greater extent than the individuals whose attitudes were based on more important information. Thus, the affectively laden distraction words had a greater impact on the weaker attitudes.10

Affective Priming. In a procedure that bears some similarity to classical conditioning, subjects are presented with affect-inducing material just prior to receipt of the target stimulus so that positive or negative affect is primed and might therefore influence reactions to subsequent stimuli. This "backward conditioning" or "affective priming" procedure has proven successful in modifying attitudes. In one study, for example, subjects were shown a series of nine photos of a target person going about normal daily activities (e.g., getting into a car; Kronsick, Bezz, Jussim, & Lynn, 1992). Just prior to each picture of the target person, subjects were exposed to a subliminal photo that was presented to elicit positive (e.g., a group of smiling friends) or negative (e.g., a bucket of snakes) affect. Subjects exposed to the positive subliminal slides rated the target person more favorably than subjects exposed to the negative slides.

In a series of studies, Murphy and Zajonc (1993) found that the effectiveness of the affective priming procedure may be dependent on presenting the primes outside of conscious awareness. For example, when positive and negative affective primes (smiling and frowning faces) were presented just prior to a target stimulus (a Chinese ideograph), attitudes toward the target were influenced only when the primes were presented subliminally (a 4 ms backward masking presentation) and not when they were presented visibly (a 1 s presentation). When the primes were available for conscious analysis, features other than their primitive affective qualities (e.g., how physically attractive the pictured individual was) were invoked and this attenuated the affective priming effect.

Mere Exposure. Another procedure for modifying attitudes through simple affective means was identified by Zajonc (1968a). In this research, Zajonc and his colleagues showed consistently that when objects simply are presented to the individual on repeated occasions, this mere exposure is capable of making the individual's attitude toward these objects more positive (Zajonc & Markus, 1982). An early explanation of the mere exposure effect was provided by Titchener (1910), who proposed that familiar objects led people to experience a "glow of warmth, a sense of ownership, a feeling of intimacy" (p. 411).

The most recent work on this phenomenon indicates that simple repetition of objects can lead to more positive evaluations even when people do not recognize that the objects are familiar. For example, in one study, Kunst-Wilson and Zajonc

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10Mackie and Worth (1990) interpreted their results in terms of Fishbein and Pavelchak's (1986) category/piecewise model. That is, they argued that the evaluations of products based on important or prototypical attributes (category based evaluation) required less cognitive capacity than evaluations based on the unimportant or atypical attributes (piecewise evaluation), and therefore the former attitudes were less vulnerable to influence from the distracting material.
(1980) visually presented polygon images to subjects a number of times under viewing conditions that resulted in chance reports of recognition. During a later session, subjects were shown pairs of polygons ideal viewing conditions. In each pair, one shape had been seen in the earlier session, but the other was new. Subjects were asked which shape they liked better and which one they had seen before. Although subjects were unable to recognize beyond chance which of the polygons was the new and which was the old, they showed a significant preference for the "old" over the new shapes.

Mere exposure effects have been shown in a number of studies using a variety of stimuli in addition to polygons such as tones, nonsense syllables, Chinese ideograms, photographs of unfamiliar faces, and foreign words (e.g., Matlin, 1970; Wilson, 1979; Zajone, 1968a; see Bornstein, 1989, for a review). All of these stimuli tend to be in meaning, and thus are relatively unlikely to elicit spontaneous elaboration. In fact, the simple affective process induced by mere exposure appears to be especially successful in influencing attitudes when conscious processing of the repeated stimuli is minimal (Obermiller, 1985) or impossible such as when the stimuli are presented subliminally (Bornstein & D'Agostino, 1992). When more meaningful stimuli have been repeated, such as words or sentences, mere exposure effects have been less common. Instead, when meaningful processing occurs with repetition, the increased exposures enhance the dominant cognitive response to the stimulus. Thus, attitudes toward negative words (e.g., hate) and weak message arguments become more unfavorable, but attitudes toward positive words (e.g., love) and strong arguments become more favorable, at least until the point of tedium (e.g., Cacioppo & Petty, 1985, 1989; Grush, 1976; Sawyer, 1981).

In sum, studies of affect association and mere exposure show that primitive affective processes are most likely to influence attitudes for low knowledge, low relevance, and/or initially meaningless attitude objects or issues. However, this does not mean that affect will influence attitudes only when the elaboration likelihood is low. As noted in our discussion of multiple roles, affect can modify attitudes when the elaboration likelihood is higher. However, the underlying processes of change are different.

Information Integration Stage

Once an individual has received and accepted some portion of the message arguments, generated idiosyncratic cognitive responses to them, made attributions, retrieved heuristics elicited by various cues in the persuasion setting, or experienced a number of affective states, the information units and experiences must be combined in some manner to form an overall attitudinal reaction. Two combinatorial rules have generated the bulk of research attention. Fishbein and Ajzen's (1981) expectancy-value formulation, described earlier, provides one such model. Although this model has been applied mostly to evaluations of issue-relevant arguments, it is potentially applicable to integrating more peripheral features of the communication as well. According to this model, following exposure to a persuasive communication, the object-relevant attributes (whether provided in the message or recipient generated) that are salient are combined in the manner specified by Equation 4 (Fishbein & Ajzen, 1981).

An alternative integration formula is provided by Anderson's (1971) information integration theory. In contrast to the additive rule specified by Fishbein and Ajzen, Anderson posited that the pieces of information in a communication (or one's cognitive responses; Anderson, 1981) typically are combined by an averaging process. Specifically, the person's evaluation of the salient information (scale value \(a_i\)) is weighed by the importance of the information for the judgment (weight = \(w_i\)) and is averaged with the person's weighted \((w_e)\) initial attitude \(a_e\) to form a new attitude \(A_o\).

\[
A_o = \left( w_o a_e + \sum w_i \right) / \left( w_o + \sum w_i \right)
\]  

Most tests of this formula have relied on topics and issues for which the recipients have relatively little prior information, such as the qualities of deceased presidents (e.g., Theodore Roosevelt; Sawyers & Anderson, 1971) and evaluations of hypothetical cars (Birnbaum & Steninger, 1979). The model has performed well in these settings. Perhaps the biggest strength of this model is simultaneously its greatest weakness, namely, the very flexible use of the weighting parameter (Eagly & Chaiken, 1984; Petty & Cacioppo, 1981). On the positive side, this parameter can be used to model the impact of many variables, such as source credibility (Birnbaum, Wong, & Wong, 1976) and multiple sources (Himmel, 1972). On the other hand, the formula says little a priori about when (or why) these variables affect the impact of the information.

One clear implication of the averaging model of information integration is that it implies that it should be more difficult to change attitudes the greater their informational base. There are two reasons for this. First, the more relevant beliefs that are retrieved at the time of judgment to integrate with new beliefs, the less the new beliefs will impact on the overall attitude, because of averaging. Second, even if a person does not retrieve the specific beliefs associated with the attitude at the time of judgment, prior attitudes based on extensive beliefs are expected to be given greater weight than attitudes based on few beliefs (Anderson, 1981; Davidson, in press). This, too, would render any new information less impactful on attitudes. Thus, according to Equation 5, one can use processes that occur during the information integration stage of information processing to account for some instances of attitude strength, such as resistance to change, rather than relying on processes that occur during yielding (e.g., enhanced counterevoking due to prior beliefs).
CONSEQUENCES OF DIFFERENT ATTITUDE CHANGE PROCESSES

Our review of the major theories of persuasion focused on the processes responsible for yielding to a persuasive communication. In addition, we used the ELM to suggest some of the general conditions under which various categories of processes would be most likely to operate. For example, consider the debate on the viability of dissonance versus self-perception theories. Both conceptualizations predicted the same pattern of attitude results in many situations, although for different reasons (Greenwald, 1975). As noted, self-perception theory focused on a relatively simple cognitive inference as the basis of change, whereas dissonance theory postulated a more cognitively active process of rationalization. Thus, the dissonance process should be more likely when conditions fostered a high likelihood of elaboration (i.e., conditions of high personal relevance, consequences, responsibility, prior knowledge, etc.), rather than low. Research is generally supportive of this view (Cooper & Fazio, 1984; Fazio et al., 1977). On the other hand, self-perception processes should be more likely to operate when the elaboration likelihood is rather low (i.e., conditions of low personal relevance, consequences, responsibility, knowledge, etc.). As noted previously, this also has received empirical support (Chaiken & Baldwin, 1981; Taylor, 1975; Wood, 1982).

In this section, we turn briefly to some of the important characteristics of the consequences of attitudes that are changed by different processes. In particular, we focus on the temporal persistence of attitude changes, the resistance of attitude changes to counter-persuasion, and the ability of newly formed or changed attitudes to predict behavior (and behavioral intentions). As noted earlier, each of these qualities is indicative of attitude strength. Over the past few decades, various studies have addressed these issues. A general conclusion is that attitude changes that are accompanied by high levels of issue-relevant cognitive activity about the dimensions central to the attitude object are stronger than changes that are accompanied by little issue-relevant thought, or considerable thought, but along dimensions that are not central to the merits of the attitude object (Petty, Hagtvedt, & Smith, in press). High levels of issue-relevant cognitive activity are likely to require frequent accessing of the attitude and the corresponding knowledge structure. Therefore, this activity should tend to increase the number of linkages and strengthen the associations among the structural elements, making the attitude schema more internally consistent, accessible, and enduring (Crocker, Fiske, & Taylor, 1984; Fazio, 1986; McGuire, 1981). In comparison, attitude change that results from a simple on-line inference or heuristic process typically involves accessing the attitude structure only once to incorporate the effect or inference associated with a salient persuasion cue (Petty & Cacioppo, 1986a). In general, then, these attitudes should be weaker.

Persistence of Attitude Change

Persistence of persuasion refers to the extent to which an attitude change endures over time. In a comprehensive review of the experimental work on attitude persistence, Cook and Flay (1978) concluded quite pessimistically that most of the laboratory studies on attitude change tended to find very little persistence of persuasion. In the years since this influential paper, it has become more clear when attitude changes will persist and when they will not.

In particular, current research has indicated that when attitude changes are based on extensive issue-relevant thinking, they tend to endure (e.g., Mackie, 1987). That is, conditions that foster people's motivation and ability to engage in issue-relevant cognitive activity at the time of message exposure are associated with increased persistence of persuasion. For example, research has shown that self-generation of arguments (Elms, 1966; Watts, 1967) and autobiographical instances relevant to an issue (Lydon, Zanna, & Ross, 1988), the use of interesting or involving communication topics (Ronis, Baumgardner, Leippe, Cacioppo, & Greenwald, 1977), providing increased time to think about a message (Mitnick & McGinnies, 1958), increasing message repetition (Johnson & Watkins, 1971), reducing distraction (Watts & Holt, 1979), and leading recipients to believe that they might have to explain or justify their attitudes to other people (Boninger, Brock, Cook, Gruder, & Romer, 1990; Chaiken, 1980) are all associated with increased persistence. Also, people who characteristically enjoy thinking (high need for cognition) show greater persistence of attitude change than people who do not (Haugtvedt & Petty, 1992; Verplanken, 1991).

Simple cues can become associated with persistent attitudes if the cues remain salient over time. This can be accomplished by repeated pairings of the cue and attitude object so that the cue remains relatively accessible (Weber, 1972) or by reintroducing the cue at the time of attitude assessment (Kelman, 1953). The Yale group explicitly acknowledged the potential impact of peripheral cues in their work on the sleeper effect. A sleeper effect is said to occur when a message that is accompanied initially by a negative cue (e.g., a low credible source) increases in effectiveness over time (Cook, Gruder, Hennigan, & Flay, 1979; Hovland, Lumsdaine, & Shefield, 1949). To account for this effect, Kelman and Hovland (1953) proposed that, in addition to message arguments, various cues could have an impact on attitude change. These cues were thought to add to (or subtract from) the effects of the persuasive message.

In this model, the cues and message were viewed as independent and were postulated to have different decay functions. Given this formulation, a sleeper effect would be produced if a person were exposed to a message with a discounting cue and the following conditions were met: (a) the message alone had a strong positive impact, (b) the discounting cue was sufficiently negative to suppress the positive impact of the message, and (c) the message conclusion became dissociated from the discounting cue more quickly than it became dissociated from the
message arguments (Cook et al., 1979). Thus, at a later point in time, it is possible for the positive residue of the message to outlast the negative effect of the cue, leading to increased agreement with the message conclusion.

The conditions that are postulated to produce a sleeper effect are unique and have several implications. In particular, the discounting cue formulation requires that the effects of a low credible source and strong message arguments operate jointly and additively. Yet, as reviewed, considerable research has shown that there is often a trade-off between the operation of source factors and the impact of message arguments, or an interaction between them. When the elaboration likelihood is high, arguments tend to be the primary determinant of persuasion, but when the elaboration likelihood is low, source and other cues tend to dominate. When the elaboration likelihood is moderate, the nature of the source could determine the extent of argument processing.

In the 20 years after the Kelman and Hovland (1953) study, so few sleeper effects appeared in the literature that some researchers declared that the effect did not exist (Gillig & Greenwald, 1974). One key to producing a sleeper effect is to construct a situation in which both a strong negative cue and strong arguments have an initial impact. However, as noted, this should be difficult to produce because of the trade-off between the impact of arguments and cues, or interaction between them (e.g., people might ignore a message from a low credible source, overturning one of the critical conditions for the effect). A clever solution to this dilemma is to have subjects process the message so that the strength of the arguments is realized, and following this present a discounting cue that causes subjects to doubt the validity of the message. This is the procedure employed in a number of successful sleeper effect studies (Cook et al., 1979; Kelman & Hovland, 1953; Mazursky & Schul, 1988). In a relevant series of experiments, Pratkanis, Greenwald, Leippe, and Baumgardner (1988) showed that presenting the discounting cue after the message might be critical for obtaining a reliable sleeper effect.29

Resistance to Counterpersuasion

Resistance refers to the extent to which an attitude change is capable of surviving an attack from contrary information. Attitudes are more resistant the less they change in the direction of contrary information. Although attitude persistence and resistance tend to co-occur, their potential independence was shown conclusively by McGuire’s (1964) work on cultural truisms. Truisms such as “you should brush your teeth after every meal” tend to be highly persistent in a vacuum, but very susceptible to influence when challenged. As McGuire noted, people have very little practice in defending these beliefs, because they never have been attacked. These beliefs likely were formed with little issue-relevant thinking at a time during childhood when extensive thinking was relatively unlikely. Instead, the truisms probably were presented repeatedly by powerful, likable, and expert sources. As noted, the continual pairing of a belief with positive cues can produce a relatively persistent attitude, but these attitudes might not prove resistant when attacked.

The resistance of attitudes can be improved by bolstering them with relevant information (Lewin & Stotland, 1961). In his work on inoculation theory, McGuire (1964) demonstrated that two kinds of bolstering can be effective in inducing resistance. One form relies on providing individuals with a supportive defense of their attitudes or having them generate supportive information. For example, subjects whose initial attitudes were bolstered by recalling autobiographical instances relevant to the attitude showed greater resistance to an attacking message than subjects whose attitudes were followed by the generation of autobiographical instances that were irrelevant to the attitude issue (Ross, McFarland, Conway, & Zanna, 1983). A second type of defense relies on a biological analogy. That is, McGuire suggested that just as people can be made more resistant to a disease by giving them a mild form of the germ, people could be made more resistant to discrepant messages by inoculating their initial attitudes. The inoculation treatment consists of exposing people to a few pieces of counterattitudinal information prior to the threatening communication and showing them how to refute this information. This presumably produces subsequent resistance, because the inoculation poses a threat that motivates and enables people to develop bolstering arguments for their somewhat weakened attitude (see also, McGuire & Papageorgis, 1961; Pfau & Burgoon, 1988; Pfau, Kenski, Nitz, & Sorensen, 1990).

There has been relatively little work on the specific qualities that render attitude changes resistant to attack. However, the existing data have supported the view that attitudes are more resistant to attack when they are accessible (Bassili & Fletcher, 1991) and have resulted from considerable issue-relevant elaboration. For example, Haugtvedt and Petty (1992) provided subjects who were high or low in need for cognition with an initial message about the safety of a food additive. This initial message, containing strong arguments from an expert source, was followed by an opposite message containing rather weak arguments from a different expert source. Although both high and low need for cognition (NC) individuals were persuaded equally by the initial message, the attitudes of the high need for cognition subjects were more resistant to the attacking message. In addition, high NC individuals engaged in greater counterarguing of the attacking message. Similarly, Haugtvedt and Wegener (in press) found that subjects who encountered an initial message under conditions of high personal relevance (and thus processed it extensively) were relatively uninfluenced by a subsequent opposing message. In comparison, subjects who received the same messages under
behavior consistency could be reduced if thinking produces an expressed attitude that is not representative of the true one (Wilson et al., 1989). For example, if the central merits of an attitude object are affectively based, but a thinking task makes cognitive rather than affective information salient prior to attitude expression, the attitude expressed after thought will be less predictive of behavior than the attitude expressed without thought, especially if the behavior is affectively based as well (Millar & Tesser, 1986b; see Millar & Tesser, 1992, for a review). A related point is that attitudes predict behaviors better when the same attributes of the attitude object are salient at both the time of attitude measurement and the time of behavioral expression (Shavitt & Fazio, 1991). In general, behavioral prediction can be improved by considering attitudes toward alternative courses of action (e.g., Jaccard, Dittus, Radecki, & Wilson, in press; Jaccard, Helbig, Wan, Gutman, & Kritz-Silverstein, 1990) and by including predictor variables other than attitudes (e.g., societal and personal norms, Ajzen & Fishbein, 1977; habits, Rones, Yates, & Kirsch, 1989; Triandis, 1977; and perceived control and self-efficacy, Ajzen, 1991). The effect of attitudes on behavior is mediated by behavioral intentions (Ajzen & Fishbein, 1980), at least when the intentions are formed clearly and the behavior is costly (i.e., likely to generate behavior-relevant thought; Bagozzi & Yi, 1989). For less consequential behaviors, the impact of attitudes should be more direct (Fazio, 1990).

Although much research has examined how methodological factors and existing characteristics of attitudes (e.g., extent of knowledge, people's personality, and situations) moderate attitude–behavior consistency, relatively few studies have examined whether different attitude formation or change processes are related to the ability of newly formed or changed attitudes to predict behavior. However, some research has shown that attitudes correlate to a greater extent with behavioral intentions when the attitudes were formed under high than under low personal relevance conditions (Petty et al., 1983; Sivacek & Cramer, 1982).

In a coherent program of research, Fazio and his colleagues examined attitudes that were formed as a result of direct or indirect experience with the object, and found that the former are more predictive of behavior (see Fazio & Zanna, 1981, for a review). A primary reason for this is that attitudes based on direct experience are more accessible, and thus more available to color perception of the attitude object and guide behavior (Fazio, 1990). One reason that attitudes based on direct experience are more accessible is that direct experience typically might lead to greater thought relevant to the attitude object than passive exposure to a persuasive message (Petty & Cacioppo, 1986).

The notion that accessibility is a moderator of attitude–behavior relations is an important one, and has the potential for integrating a considerable number of research findings. For example, many of the variables found to moderate attitude–behavior consistency might be explained by the accessibility notion. Thus, low self-monitors have more accessible attitudes than high self-monitors (Kardes, Sanbonmatsu, Voss, & Fazio, 1986), and attitudes formed by the central route
and via direct experience are more accessible than attitudes formed by the peripheral route (Rennier, 1988) or those that are based only on indirect experience (Fazio & Zanna, 1981).

**SUMMARY AND CONCLUSIONS**

Our goal in this chapter was to outline the major processes of attitude change. Over the past few decades, much has been learned about the underlying determinants and consequences of different attitude change processes. We argued that it is useful to divide the theoretical processes responsible for modifying attitudes into those that emphasize effortful thinking about the central merits of the attitude object and those that do not. This framework allows understanding and prediction of what variables affect attitudes and in what general situations. It also permits understanding and prediction of the consequences of attitude change. We emphasized that all attitudes (whether toward oneself, other people, objects, or issues) can be based on cognitive, affective, and/or behavioral information, and that any one variable can have an impact on persuasion by invoking different processes under specifiable conditions of elaboration likelihood. Also, we noted that attitudes that appear identical when measured can be quite different in their temporal persistence, resistance, or ability to predict behavior.

Thus, in attempting to account for the great swings in public opinion that occurred early in the 1992 presidential campaign, it is plausible that many of the initial shifts were the result of peripheral processes. At the beginning of a political campaign, motivation to process is relatively low and attitudes toward the candidates (especially the challengers) are relatively weak. Because of this, attitudes could be modified and changed quite easily. In fact, people’s responses to political polls at this point in the campaign simply might be constructed on the basis of whatever information is momentarily salient. However, as the campaign continues, involvement should increase, and people’s attitudes should become more crystallized as a result of enhanced information processing activity. By the end of the campaign, attitudes should become relatively stable, resistant to change, and predictive of voting behavior.

Although much progress has been made in understanding the various processes responsible for attitude change, much work remains to be done. We hope that the next decade will bring advances in several areas. First, greater appreciation is needed for the view that any one variable is capable of multiple roles in the persuasion process. At present, most studies still focus on the “one” true process by which a variable has an impact on attitudes. Second, more attention should be paid to the various processes by which likelihood or truth judgments are made. Like evaluative judgments, it appears that likelihood judgments can result from relatively effortful or noneffortful processes. A third area of research that warrants increased attention concerns the consequences of attitudes changed by different means. Although considerable work has examined the extent to which existing attitudes have properties associated with strong, rather than weak, attitudes (e.g., are resistant to change and predict behavior), relatively little work has been conducted on the strength consequences of newly formed or changed attitudes. A fourth area that is likely to engage the interest of researchers concerns the emotional bases of attitudes. Although important work on the cognitive foundations of attitudes and the cognitive structure of opinions undoubtedly will continue, the next decade will likely bring new ways to conceptualize and investigate the role of affect in persuasion. What roles can affect play in persuasion and what processes can it elicit? What are the consequences of affective versus cognitive versus behavioral persuasion? Under what circumstances and for which individuals is each more effective?

Finally, research on attitudes is relevant to so much of the domain of social psychology. Yet, research in some relevant areas (e.g., prejudice, the self, group influence, etc.) has proceeded mostly in isolation from work on attitudes and vice versa. We believe that the potential for integrative linkage is great. For example, the finding in the “attitudes” domain that a positivity bias in social judgment (i.e., an attraction effect; Zajonc, 1968b) requires fewer cognitive resources than a balance effect (Cacioppo & Petty, 1981a) is similar to the finding in the “self” domain that people prefer self-enhancing information when deprived of cognitive resources, but prefer self-verifying (i.e., consistent) information otherwise (Swann, Hixon, Stein-Seroussi, & Gilbert, 1990). Also, the general idea highlighted in this chapter that people’s responses to persuasive communications can be based on careful and effortful analysis or more cue-based processes is similar to and compatible with emerging findings in nonpersuasion domains. For example, recent research suggests that people are more likely to use relatively simple response strategies (e.g., choosing the first response that seems reasonable) when answering opinion surveys when motivation and ability to think are low than when they are high (Krosnick, 1991), and people are more likely to use activated stereotypes when ability and/or motivation to think about information is low (e.g., Bodenhausen, 1990; Fiske & Pavelchak, 1986; Gilbert & Hixon, 1991). We hope that in the next decade, these and other conceptually related research streams will become more closely linked as investigators in each area of social psychology take advantage of the significant advances in the others.

**ACKNOWLEDGMENTS**

We are grateful to Bob Wyer, Tom Ostrom, and Bill McGuire for their helpful comments on a previous version of this chapter. Preparation of this chapter was facilitated by an NSF grant to REP (BNS 9021647) and NIMH traineeships to the second and third authors (T32 MH19728).
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