CHAPTER 15

Persuasion and Attitude Change

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Attitudes refer to the general and relatively enduring evaluations people have of other people, objects, or ideas. These overall evaluations can be positive, negative, or neutral, and they can vary in their extremity. For example, one individual might view jazz music in a mildly positive way, whereas another might be wildly positive and another might be somewhat negative. Individuals can hold attitudes about very broad or hypothetical constructs (e.g., anarchism) as well as about very concrete and specific things (e.g., a particular brand of chewing gum). Before turning to our primary focus on the processes involved in changing attitudes, we address some important background issues on the nature and structure of attitudes. Following this background discussion, we describe ways to change attitudes that involve relatively high versus low amounts of cognitive effort and the consequences of these different strategies.

BACKGROUND ISSUES

Bases of Attitudes

Attitudes can be based on different types of information. One popular conceptualization of the attitude construct, the tripartite theory, holds that there are three primary types of information on which attitudes can be based (Breckler, 1984; Rosenberg & Hovland, 1960; Zanna & Rempel, 1988): cognitions or beliefs (e.g., This car gets 10 miles per gallon), affect or feelings (e.g., Owning this car makes me happy), and actions or behavior (e.g., I have always driven this brand of car). The basis of the attitude object can have important implications for attitude change (see also the chapter by Olson & Maio in this volume). For example, it may generally be more effective to change attitudes that are based on emotion with emotional strategies rather than with more cognitive or rational ones (Edwards, 1990; Fabrigar & Petty, 1999).

Attitude Storage Versus Construction

Implied in our definition of attitudes is the notion that attitudes are stored memorial constructs. Some researchers have argued that attitudes may in fact not be stored in memory and instead be newly constructed, based upon salient beliefs, emotions, and behaviors each time the individual is asked to report his or her attitude (Schwarz & Bohnen, 2001; Wilson & Hodges, 1992). This perspective seems rooted primarily in the finding that attitude reports are susceptible to a variety of
contextual biases that can contaminate attitude reports (see Schwarz, 1999).

Although attitude reports are clearly influenced by the immediate context, a strict constructivist view of attitudes seems implausible for a variety of reasons. First, as we review later in this chapter, research has demonstrated that individuals experience aversive arousal when they violate their existing attitudes (e.g., Elliot & Devine, 1994; Elkin & Leippe, 1986; Losch & Cacioppo, 1990), and individuals are often motivated to defend their attitudes in the face of counterattitudinal appeals (e.g., Ditto & Lopez, 1992; Ditto, Scepansky, Munro, Apanovitch, & Lockhart, 1998; Edwards & Smith, 1996; Kunda, 1990; Petty & Cacioppo, 1979a). These findings are consistent with the view that some attitudinal representation exists in memory. Furthermore, research has delineated the conditions under which motivated defense versus attitude construction processes will operate (e.g., Fazio, Zanna, & Cooper, 1977). Second, attitudes can be automatically activated under response conditions that would make spontaneous construction seem unlikely (Bargh, Chaiken, Govender, & Pratto, 1992; Bargh, Chaiken, Raymond, & Hymes, 1996; Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Third, it would seem to be functionally maladaptive for individuals to store a lot of attitude-relevant beliefs for attitude reconstruction in the absence of summary evaluative representations (see also Lingle & Ostrom, 1981). Fourth, research has uncovered structural properties of attitudes that can influence their persistence across a variety of contexts (see Petty & Krosnick, 1995).

If there were no stored attitudes, and evaluations were simply constructed anew each time the attitude object was encountered, many of the processes described in this chapter would have little theoretical utility. Instead, attitude change researchers would better spend their time focusing solely on context effects rather than procedures aimed at changing memorial evaluative representations. In our view, the strict constructivist approach does not seem prudent. In this chapter, attitudes are conceptualized as stored memorial constructs that may or may not be retrieved upon encountering the attitude object (see Fazio, 1990).

In using this conceptualization, we do not mean to imply that attitudes are not susceptible to context effects or are never constructed from scratch. Most obviously, when individuals do not have attitudes about a particular attitude object, they may simply construct an attitude when asked for one (Converse, 1970). Also, when individuals are instructed to think about their attitude before reporting it, they may sometimes selectively focus on a subset of attitude-relevant information and this salient information would influence the attitude reported (e.g., Wilson & Kraft, 1993). Similarly, individuals may report different attitudes when contextual variables like conversational norms or social desirability concerns operate (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Schwarz, 1999). However, the fact that contextual variables can sometimes influence attitude reports is not tantamount to establishing that there are no stored evaluations for any attitude objects. Rather, attitude construction processes probably occur mostly when no stored evaluation is readily accessible or when contextual factors contribute to current attitude reports by modifying or shading a retrieved global evaluation (Petty, Priester, & Wegener, 1994).

Attitude Strength

Although we define attitudes as relatively enduring constructs (i.e., stored representations), attitudes can certainly change over time. Attitudes can change from being nonexistent to having some valence, or they can change from one valence to another. Most of this chapter focuses on the processes responsible for changes in attitudes. Polarization refers to instances in which an existing attitude maintains the same valence but becomes more extreme. Moderation refers to those instances in which an individual's existing attitude becomes less extreme and moves toward the point of neutrality. One's attitude can also cross the neutral point and change valence.

Attitudes may be fruitfully conceptualized as falling along a continuum ranging from nonattitudes to strong attitudes (see Converse, 1970). Strong attitudes are those that influence thought and behavior, are persistent over time, and are resistant to change (Krosnick & Petty, 1995). A large variety of strength indicators have been identified and studied empirically, including attitude accessibility (e.g., Bassili, 1995; Fazio, 1995), certainty (e.g., Gross, Holtz, & Miller, 1995), importance (Krosnick, 1988), and elaboration (Petty, Haugtvedt, & Smith, 1995; see Petty & Krosnick, 1995, for a review of attitude strength variables). Although it is intuitively appealing to assume that attitude strength variables are manifestations of a single latent construct, intercorrelations among the various attitude strength variables are often somewhat low (e.g., Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; Raden, 1985). Furthermore, the search for a limited number of underlying attitude strength factors has yielded inconclusive results so far (see Eagly & Chaiken, 1998, for a review). Nevertheless, it seems reasonable that the many strength variables ultimately boil down to a relatively few critical dimensions that are most important for producing the major strength consequences (e.g., making the attitude resistant to change).
Implicit Versus Explicit Attitudes

Although most research on attitudes concerns people’s explicit likes and dislikes, in recent years a good deal of research interest has been generated by the idea of implicit attitudes. In an influential review of implicit attitude effects, Greenwald and Banaji (1995) referred to implicit attitudes as “introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects” (p. 8). This definition suggests that people are unaware of some past experiences (implicit attitudes) that mediate current responses. Wilson, Lindsey, and Schooler (2000) expanded this definition by suggesting that implicit attitudes are “evaluations that (a) have an unknown origin . . . (b) are activated automatically; and (c) influence implicit responses . . .” (p. 104). This definition suggests that people may be unaware of the origin of their past attitudes, although they may be aware of the attitudes themselves. Greenwald, McGhee, and Schwartz (1998) stated that “implicit attitudes are manifest as actions or judgments that are under the control of automatically activated evaluation without the performer’s awareness of that causation” (p. 1464). This definition suggests that people are unaware of the effects of implicit attitudes. The implicit attitudes construct has been applied to a growing body of research and can have important implications for how researchers conceptualize attitude change. Although the various definitions of implicit attitudes have significant overlap, their application in practice is sometimes characterized by substantial ambiguity.

As the above definitions imply, one dimension on which implicit attitudes are thought to differ from explicit attitudes is awareness. That is, implicit attitudes are viewed as ones for which people are unaware of what the attitude is, where it comes from, or what effects it has. It is perhaps important to note that these types of awareness are not mutually exclusive. Any attitude can be characterized by all or none of these types of awareness. We discuss each of these features next.

Awareness of the Attitude Itself

The first type of awareness concerns an awareness of the attitude itself—that is, does the person consciously acknowledge that he or she holds an evaluative predisposition toward some person, object, or issue? If so, the attitude is said to be explicit. On the other hand, individuals sometimes have stored evaluative associations of which they are unaware. This type of awareness corresponds to the meaning of implicit as employed in other psychological research domains.

For example, in many demonstrations of implicit memory, an individual shows evidence of having memorized a piece of information, yet is unable to consciously retrieve the information when desired (see Schacter, 1987, for a review). Similarly, evidence for implicit learning is found when an individual acquires some knowledge or skill that is evidenced on task performance, but the individual is unable to verbalize the underlying rule or basis for the skill (see Seger, 1994, for a review). Thus, according to this criterion, to the extent that people have evaluative predispositions of which they are not consciously aware and are unable to consciously report when asked, these attitudes are said to be implicit.

Awareness of the Basis of the Attitude

Another type of awareness mentioned in some discussions of implicit attitudes concerns awareness of the basis of the attitude. If people are not aware of the attitude itself, it is unlikely that they would be aware of its basis (i.e., where it comes from). However, people are often unaware of the basis of their explicit attitudes as well. For example, repeated subliminal exposures to a stimulus can increase liking of the stimulus (Bornstein & D’Agostino, 1992) without awareness. Although the individual can explicitly report his or her preference for the previously seen stimulus, he or she has no access to the source of the liking (i.e., the previous subliminal exposures). Similarly, a consciously reported attitude (e.g., one’s life satisfaction) may be unknowingly biased by extraneous inputs (e.g., the good weather; Schwarz & Clore, 1983). Even if the source of an attitude seems quite explicit (e.g., exposure to a persuasive message), people may be unaware that the message has influenced their attitudes. People sometimes recall having had their new attitude all along (Ross & McFarland, 1988). People can also think that their attitudes have changed when they have not.

Thus, using awareness of an attitude’s basis or source as a defining criterion for implicit attitudes is problematic in part because individuals rarely (if ever) have complete access to all of the influences on their judgments (see Nisbett & Wilson, 1977; Wilson & Hodges, 1992). Therefore we do not think that this criterion is a useful one for distinguishing implicit from explicit attitudes. Stated simply, if an attitude is implicit, the basis may be unknown—but not knowing the basis of an attitude does not make it implicit.

Awareness of the Attitude’s Influence

A third type of awareness concerns awareness of the extent of an attitude’s influence on other judgments and behaviors. For
example, Greenwald and Banaji (1995) indicated that halo effects are one example of the operation of implicit attitudes. Halo effects refer to instances in which information about one attribute influences judgments about other unrelated attributes. For example, Johnny may judge Sue to be intelligent because he believes her to be attractive. To the extent that Johnny is unaware that his conscious beliefs concerning her attractiveness influence his judgments of her intelligence, his attitude toward her attractiveness may be labeled implicit by this criterion (Greenwald & Banaji, 1995). This view is problematic, however. Individuals are unlikely to be aware of all of the consequences of their attitudes for judgment and behavior, and thus this criterion would render nearly every attitude implicit. Furthermore, whether the attitude was considered implicit could vary from context to context (i.e., the person could be aware that a negative attitude was influencing him or her in one situation but not in another). Consequently, this feature does not appear to be an optimal criterion for defining implicit attitudes. As with the previous criterion, if people are unaware of the attitude itself (i.e., the attitude is implicit) they are unlikely to be aware of the effects of the attitude. But not knowing the effects of an attitude does not make it implicit.

Summary

In considering the three types of awareness, it is awareness or acknowledgement of holding the attitude itself that is the distinguishing feature of implicit versus explicit attitudes. People are aware of holding their explicit attitudes; they are not aware of holding their implicit attitudes. Our use of the phrase acknowledging one’s attitude is not meant to imply that people like or are comfortable with their attitudes—only that they recognize that they have these attitudes. For example, a person might acknowledge some prejudice for or liking of cigarettes, but the same person might also wish that these attitudes could change. People tend to be happy with and want to defend their attitudes, but this is not always the case. In addition, an implicit attitude may enter consciousness in a variety of ways. For example, therapy may reveal hidden attitudes, or an experimenter may reveal such attitudes to participants in a study. The person’s own behavior (e.g., a slip of the tongue) may also provide a clue to an implicit attitude. When presented with such information, a person can acknowledge the implicit attitude, thereby making it explicit—or the person can deny having this reaction (i.e., the therapist is wrong), keeping it implicit. Regarding the other dimensions, we note that implicit attitudes generally have an implicit basis and have implicit effects, but these attributes per se do not make the attitudes implicit because explicit attitudes can also have an implicit basis and have implicit effects (see also Wegener & Petty, 1998).

Measurement of Attitudes

Researchers have developed a multitude of attitude measurement instruments (see Eagly & Chaiken, 1993; also see the chapter by Olson & Maio in this volume). Measurement of attitudes is important for determining whether attitude change has occurred. A long-standing distinction between attitude measures has been drawn concerning whether the measure is a direct or an indirect one (Petty & Cacioppo, 1981). Direct attitude measures are those that simply ask the respondent to report his or her attitude. Because these measures are transparent and make it obvious that attitudes are being assessed, they can be considered explicit measures of attitudes. Included in this category are attitude measurement devices such as the semantic differential (Osgood, Suci, & Tannenbaum, 1957), the one-item rating scale, the Likert scale (Likert, 1932), and the Thurstone scale (Thurstone, 1928). Indirect attitude measures on the other hand are those that do not directly ask the individual to report his or her attitude. Instead, the individual’s attitude is inferred from his or her judgments, reactions, or behaviors. Because these measures do not make it obvious that attitudes are being assessed, they can be considered implicit measures of attitudes. A person completing an implicit measure is presumably unaware that the measure is assessing attitudes. Included in this category are a wide variety of methods such as the Thematic Apperception Test (Proshansky, 1943), the Information Error Test (Hammond, 1948), the Implicit Association Test (IAT; Greenwald et al., 1998), the automatic evaluation task (e.g., Fazio et al., 1995), physiological measures such as the facial electromyograph (EMG; e.g., Cacioppo & Petty, 1979a) or electroencephalogram (EEG; e.g., Cacioppo, Crits, Bernston, & Coles, 1993), and physical behaviors like nonverbal gestures, eye contact, or seating distance (e.g., Argyle & Dean, 1965; Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Macrae, Bodenhausen, Milne, & Jetten, 1994; Word, Zanna, & Cooper, 1974). Direct and indirect measurement methods typically exhibit modest positive correlations (Dovidio, Kawakami, & Beach, 2000).

It is important to note that direct and indirect measurement methods can differ in the extent to which they permit deliberative responding (Vargas, von Hippel, & Petty, 2001). For example, experimenters could require individuals to report their attitudes on a direct one-item rating scale very quickly with no time for deliberation, or they could permit individuals to make the judgment after some minimal or extensive reflection. Similarly, some indirect attitude measures permit relatively slow
and deliberate responding (e.g., the Thematic Apperception Test; Information Error Test), whereas others require very fast responses (e.g., the IAT or automatic evaluation task).

Researchers make two common assumptions about direct (explicit) and indirect (implicit) measures of attitudes, and we discuss each assumption in turn.

What Do Implicit and Explicit Measures Assess?

One assumption is that explicit attitude measures tap explicit attitudes, whereas implicit measures tap implicit attitudes (e.g., Dovidio et al., 2000; Greenwald & Banaji, 1995). This assumption is tidy but seems ill-advised for a number of reasons. First, even if it were the case that implicit attitudes could be assessed only with implicit measures, this would not mean that implicit measures assessed only implicit attitudes. In fact, implicit measuring devices have long been used to tap explicit attitudes that people were simply unwilling to report due to social desirability concerns, and such measures do tap explicit attitudes if there is no competing implicit attitude. For example, an attitude measure like eye contact or seating distance could tap primarily implicit attitudes to the extent that the individual is not aware that he or she holds that attitude. Hence, an individual may sit farther away from members of a stigmatized social category despite professing (and believing) that he or she harbors no animosity or dislike towards the group. However, behaviors like eye contact or seating distance can often also be manifestations of quite explicit attitudes. One may sit closer to one’s spouse than to a complete stranger and also be quite aware that one prefers the company of one’s spouse. Contemporary measures of automatic responding (e.g., Fazio, 1995) also assess primarily explicit attitudes if there is no competing implicit one.

On the other hand, if there is a competing implicit attitude, measures of automatic evaluation might be used to assess it. Thus, discrepancies between nondeliberative implicit measures and deliberative explicit measures can sometimes be attributed to social desirability contaminants (e.g., Fazio et al., 1995; Greenwald et al., 1998), but they can also be due to competing implicit and explicit attitudes (Wilson, Lindsey, & Schooler, 2000).

Second, it does not appear to be the case that implicit attitudes can only be assessed with implicit measures. This is because implicit measures, like explicit ones, vary in the extent to which they allow controlled versus automatic responding (Vargas et al., 2001). For example, if a direct measure is administered quickly with little time for reflection, implicit attitudes might well influence responses (see also Wilson et al., 2000). Thus, if time pressure is high, a fast direct scale might assess a prior and now-rejected attitude because it was more accessible than was the new attitude (Petty & Jarvis, 1998). Perhaps a simple generalization that can be made is that explicit attitudes are most confidently assessed with deliberative direct attitude assessments. Of course, this statement rests on the assumption that self-presentational concerns or other biasing factors are not contaminating the attitude report. To the extent that such biasing factors (e.g., an unusually positive mood) are at work, the measure may tap the influence of the biasing agents rather than solely the underlying attitude. When direct attitude reports do not permit deliberative responding, however, the direct measure could tap either explicit or implicit attitudes.

Most of the time explicit and implicit measures should assess the same underlying attitude. It is in the interesting case in which the two types of assessments produce different outcomes that one might conclude that the implicit measure has tapped an implicit attitude. Of course, before one reaches this conclusion, it is important to rule out the possibility that the person is actually aware of the conflicting attitude but simply does not report it for purposes of self-presentation.

What Do Implicit and Explicit Measures Predict?

A second assumption is that explicit attitudes predict deliberative behaviors (e.g., jury voting), whereas implicit attitudes predict spontaneous behavior (e.g., seating distances; Dovidio et al., 1997). If implicit attitudes are always more accessible than are explicit attitudes, one might expect this to be the case (Dovidio, et al. 2000; Wilson et al., 2000). For example, Fazio (1990) suggested that highly accessible attitudes influence behavior when motivation and opportunity to evaluate the consequences of one’s actions are low, but that less accessible or newly constructed attitudes can influence behavior when motivation and opportunity are high. However, the conclusion that implicit attitudes predict spontaneous behavior whereas explicit attitudes predict deliberative behavior may be premature. Vargas et al. (2001) argued that this conclusion was reached because the prominent contemporary implicit measures have relied on quick and spontaneous reactions (e.g., speeded response task; Wilson et al., 2000; automatic evaluation task; Fazio, 1995), whereas explicit measures have relied on deliberative responses. That is, the information-processing conditions of attitude measurement (spontaneous or deliberate) matched the information-processing conditions of behavioral assessment, and this assessment compatibility fostered higher correlations (Ajzen & Fishbein, 1977). To test this notion, Vargas et al. developed a deliberative implicit measure of attitudes and demonstrated that it could predict deliberative behavior over and above a series of deliberative explicit attitude measures. Although not
demonstrated yet, it presumably would be the case that a spontaneous explicit measure could predict spontaneous behavior above and beyond that predicted by a spontaneous implicit measure. To the extent that these effects hold, it suggests that both dimensions of attitudes (implicit-explicit, spontaneous-deliberate) are important to consider in predicting behavior. After discussing the major approaches to attitude change in the next section, we return to the implicit-explicit attitude distinction and discuss some implications of this distinction for understanding attitude change.

ATTITUDE CHANGE: AN OVERVIEW

Now that we have examined some important conceptual issues surrounding the attitude concept, we turn to a discussion of attitude change processes. In the remainder of this chapter, we describe the fundamental processes of attitude change that have been proposed by social psychologists in the modern era. The study of attitude change is one of the oldest in social psychology, and so many different theories and effects have been uncovered over the past 50 years that it can be challenging to understand them all.

The focus of theories of attitude change to date has been on producing and changing explicit attitudes. That is, an attitude change technique is deemed effective to the extent that it modifies a person’s self-report of attitudes. For example, if a person is neutral toward an abstract symbol prior to the change treatment but is explicitly more favorable afterward, attitude change was successful. Although some recent research has demonstrated that attitude change can be produced on implicit attitude measures (Dasgupta & Greenwald, 2001), these change techniques probably also introduced change that could have been measured with explicit measures (see also Olson & Fazio, 2001). To date, there are no persuasion techniques that have proven to be effective in changing implicit but not explicit attitudes; thus, our review focuses on changing explicit attitudes. The topic of implicit attitude change will likely occupy considerable research attention in the coming decade (e.g., Kawakami, Dovidio, Moll, Hermans, & Russin, 2000).

To organize the different theories of attitude change, we rely on the key ideas from contemporary dual process models of social judgment (Chaiken & Trope, 1999). The two such models that are most popular for understanding attitude change are the elaboration likelihood model (ELM: Petty & Cacioppo, 1986) and the heuristic-systematic model (HSM: Chaiken, Liberman, & Eagly, 1989). These models provide a metaframework from which to understand the moderation and mediation of attitude change effects, and they explain how the same variable (e.g., source credibility, mood) can have different effects on attitude change in different situations (e.g., increasing attitude change in one situation but decreasing it in another) and produce the same effect by different processes in different situations. Perhaps the key idea in the dual process models is that some processes of attitude change require relatively high amounts of mental effort, whereas other processes of attitude change require relatively little mental effort. Thus, Petty and Cacioppo (1981) reasoned that most of the major theories of attitude change were not necessarily competitive or contradictory, but rather operate in different circumstances. Later in this chapter, we use this notion to organize the major processes of persuasion. Although the ELM and HSM stem from somewhat different traditions, today the models have many similarities and can generally accommodate the same empirical results, although the explanatory language and sometimes the assumed mediating processes vary (Eagly & Chaiken, 1993; Petty & Wegener, 1998).

Contemporary persuasion theorists endorse the fundamental dual process notion that different processes lead to attitude change in different circumstances (cf., Kruglanski & Thompson, 1999). Some of these processes require diligent and effortful information-processing activity, whereas others proceed with relatively little mental effort. In this section, we first describe the elaboration likelihood model of persuasion and review some prominent factors that determine whether people exert high or low amounts of mental effort in a persuasion situation (the HSM points to similar factors). Next, we describe in more detail the persuasion processes that tend to require relatively low amounts of mental effort. Following this, we describe the persuasion processes that tend to require relatively high amounts of mental effort.

The Elaboration Likelihood Model of Persuasion

The elaboration likelihood model of persuasion (ELM: Petty & Cacioppo, 1981, 1986; Petty & Wegener, 1999) is a theory about the processes responsible for attitude change and the strength of the attitudes that result from those processes. A key construct in the ELM is the elaboration likelihood continuum. This continuum is defined by how motivated and able people are to assess the central merits of an issue or a position. The more motivated and able people are to assess the central merits of an issue or position, the more likely they are to effortfully scrutinize all available issue-relevant information. Thus, when the elaboration likelihood is high, people assess issue-relevant information in relation to knowledge that they already possess, and they arrive at a reasoned (although not necessarily unbiased) attitude that is well articulated and bolstered by supporting information (central route). When the elaboration likelihood is low, however, then information scrutiny is reduced and attitude change can result
from a number of less resource-demanding processes that do not require as much effortful evaluation of the issue-relevant information (peripheral route). Attitudes that are changed by low-effort processes are postulated to be weaker than are attitudes that are changed the same amount by high-effort processes (see prior discussion of attitude strength).

The elaboration likelihood continuum incorporates both a quantitative and a qualitative distinction (see Petty, 1997; Petty, Wheeler, & Bizer, 1999). That is, as one goes higher on the elaboration continuum, central route processes increase in magnitude (cognitive effort increases), and as one goes down the continuum, central route processes diminish in magnitude (cognitive effort decreases). This quantitative variation suggests that at high levels of elaboration, people's attitudes are determined by their effortful examination of all relevant information, but at lower levels of elaboration, attitudes can be determined by effortful examination of less information (e.g., the person critically examines only the first argument in a message but not the remaining arguments), or less effortful examination of all of the information. In addition, however, the ELM incorporates a qualitative distinction—that is, the ELM holds that not all change processes are the same. For example, consider a person who is exposed to a message with 10 arguments. The high elaboration (central route) processor tends to think carefully about much or all of the information. If motivation or ability to think were reduced, the recipient might think about each argument less carefully or think about fewer arguments (quantitative difference). However, the ELM holds that when the elaboration likelihood is low, people might also process the arguments in a qualitatively different way. For example, rather than assessing the substantive merits of the arguments, they might simply count them and reason, “there are so many arguments, it must be good” (Petty & Cacioppo, 1984). In the section of this chapter entitled “Relatively Low-Effort Processes of Attitude Change,” we describe a variety of relatively low-effort processes that can modify attitudes.

In addition to the elaboration continuum and the various processes that operate along it, two other ELM notions are worth explaining. The first is that the ELM postulates a trade-off between the impact of high- and low-effort processes on judgments along the elaboration continuum—that is, as the impact of high-effort processes on judgments increases, the impact of low-effort processes on judgments decreases. This trade-off hypothesis implies a number of things. First is that at most points along the continuum, various change processes can co-occur and jointly influence judgments. Second, however, is that movement in either direction along the continuum tends to enhance the relative impact of one or the other family of processes (e.g., effortful scrutiny for merit vs. reliance on a counting heuristic) on judgments.

Another important ELM notion is called the multiple roles hypothesis: this is the idea that any given variable can influence attitudes by different processes at different points along the elaboration continuum. For example, if a pleasant television show makes you feel happy, this happiness might make you develop a positive attitude toward the products featured in the commercials shown during the show. The mechanism by which this happens can vary, however, depending on the overall elaboration likelihood. When the elaboration likelihood is low (e.g., high distraction), happiness could affect judgments by serving as a simple associative cue (e.g., if I feel good, I must like it). On the other hand, if the elaboration likelihood is high, happiness could affect judgments by biasing the thoughts that come to mind (Petty, Schumann, Richman, & Strathman, 1993). If the elaboration likelihood is not constrained to be high or low, being happy can affect the extent of processing of the message arguments. In particular, if the message is counterattitudinal or unpleasant in some way, being happy reduces message processing (Bless, Bohnen, Schwarz, & Strack, 1990). If the message is uplifting and pleasant, however, happiness can increase message processing over neutrality (Wegener, Petty, & Smith, 1995). Other variables can also play different roles depending on the overall elaboration likelihood.

Determinants and Dimensions of Elaboration

According to the ELM, in order for high-effort processes to influence attitudes, people must be both motivated to think (i.e., have the desire to exert a high level of mental effort) and have the ability to think (i.e., have the necessary skills and opportunity to engage in thought). There are many variables capable of affecting the elaboration likelihood and thereby influencing whether attitude change is likely to occur by the high- or low-effort processes we describe in more detail shortly. Some of these motivational and ability variables are part of the persuasion situation, whereas others are part of the individual. Some variables affect mostly the amount of information processing activity, whereas others tend to influence the direction or valence of the thinking.

One of the most important variables influencing a person's motivation to think is the perceived personal relevance or importance of the communication (Johnson & Eagly, 1989; Petty & Cacioppo, 1979b, 1990; Petty, Cacioppo, & Haugtvedt, 1992; Thomsen, Borgida, & Lavine, 1995). When personal relevance is high, people are more influenced by the substantive arguments in a message and are less affected by peripheral processes (e.g., Petty, Cacioppo, & Goldman, 1981). There are many ways to render a message self-relevant, such as including many first-person pronouns (Burnkrant & Unnava, 1989) or matching the message in some way to a
person’s self-conceptions (Petty, Wheeler, & Bizer, 2000). In addition, people are more motivated to scrutinize information when they believe that they are solely responsible for message evaluation (Petty, Harkins, & Williams, 1980), when they are individually accountable (Tetlock, 1983), when they recently have been deprived of control (Pittman, 1994), and when they expect to discuss the issue with a partner (Chaiken, 1980). Increasing the number of message sources can enhance information-processing activity (e.g., Harkins & Petty, 1981; Moore & Reardon, 1987), especially when the sources are viewed as providing independent assessments of the issue (Harkins & Petty, 1987). Various incongruities can increase information-processing activity, such as when an expert source presents surprisingly weak arguments (Maheshvaran & Chaiken, 1991), when the message does not present the information in a form that was expected (S. M. Smith & Petty, 1996), and when people feel ambivalent rather than certain about some issue (Maio, Bell, & Esses, 1996).

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 rather than on peripheral cues (see Cacioppo, Petty, & Morris, 1983). Factors associated with the attitude itself can also influence the extent of information processing. For example, people tend to think more about messages relevant to their accessible attitudes rather than to their relatively inaccessible attitudes (Fabrigar, Priester, Petty, & Wegener, 1998).

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), which is beneficial for processing as long as the medium is not induced (Cacioppo & Petty, 1989; Cox & Cox, 1988). External distractions (e.g., Petty, Wells, & Brock, 1976), fast presentations (S. M. Smith & Shaffer, 1991) external pacing of messages (such as those on radio or TV rather than in print; Chaiken & Eagly, 1976; Wright, 1981), time pressures on processing (e.g., Kruglanski & Freund, 1983), enhancing recipients’ physiological arousal via exercise (e.g., Sanbonmatsu & Karides, 1988), placing recipients in an uncomfortable posture (Petty, Wells, Heesacker, Brock, & Cacioppo, 1983), and rendering the message difficult to understand (e.g., Ratanshwar & Chaiken, 1991) all decrease substantive message processing and should increase the impact of peripheral processes. Interestingly, even though a number of studies have examined differences in the actual ability of recipients to process a persuasion message, little work has examined differences in perceived ability to process. For example, a message that appears technical or overly quantitative (Yalch & Elmore-Yalch, 1984) may reduce processing not because it interferes with actual ability, but rather because it interferes with a person’s perceived ability to process (e.g., it’s probably too complicated for me, so why bother).

Individual differences also exist in the ability of people to think about a persuasive communication. For example, as general knowledge about a topic increases, people can become more able (and perhaps more motivated) to think about issue-relevant information (Wood, Rhodes, & Biek, 1995). Knowledge is only effective to the extent that it is accessible, however (e.g., Brucks, Armstrong, & Goldberg, 1988). When knowledge is low or inaccessible, people are more reliant on simple cues (e.g., Wood & Kallgren, 1988).

Of course, in most communication settings, a confluence of factors rather than one variable acting in isolation determines the nature of information processing. Although the effects of single variables on information processing have been studied extensively, there is relatively little work examining possible interactions among variables (cf. Petty, Cacioppo, & Heesacker, 1981).

**Relatively Objective Versus Biased Information Processing**

The variables we have discussed, 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 per se 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 are people low in need for cognition (Cacioppo, Petty, Feinstein, & Jarvis, 1996). They are not more motivated to think certain kinds of thoughts over others. Some variables, however, are selective in their effects on thinking. For example, when people are highly motivated to think, a positive mood tends to encourage positive thoughts, discourage negative thoughts, or both (Petty et al., 1993), and expert sources tend to encourage favorable rather than unfavorable interpretations of message arguments (Chaiken & Maheswaran, 1994).

The ELM accommodates both relatively objective and relatively biased information processing by pointing to the motivational and ability factors involved. The ELM assumes that motivation is relatively objective when no a priori judgment is preferred and a person’s implicit or explicit goal is to seek the truth, wherever it might lead (Petty & Cacioppo, 1986). In contrast, a motivated bias can occur whenever
people implicitly or explicitly prefer one judgment over another (see also Kruglanski, 1990). A wide variety of motivations can determine which particular judgment is preferred in any given situation. For example, if the reactance motive (Brehm, 1966) is aroused, people prefer to hold whatever judgment is forbidden. If balance motives (Heider, 1958) are operating, people prefer to adopt the position of a liked source but distance themselves from a disliked source. If impression management motives (Tedeschi, Schlenker, & Bonoma, 1971) are operating, people prefer to hold whatever position they think would be ingratiating. Importantly, many of these biasing motives could have an impact on judgments by either the central or the peripheral route. For example, invocation of reactance could lead to simple rejection of the forbidden position without much thought or through active counterarguing of the position.

The ELM holds that biased processing can occur even if no specific judgment is preferred (i.e., if based on motivational factors alone, processing would be relatively objective)—this is because ability factors can also introduce bias. For example, some people might simply possess a biased store of knowledge compared to other people. If so, their ability to process the message objectively can be compromised. That is, recipients with a biased store of knowledge might be better able to see the flaws in opposition arguments and the merits in their own side compared to recipients with a more balanced store of knowledge (cf. Lord, Ross, & Lepper, 1979). In addition, variables in the persuasion situation can bias retrieval of information even if what is stored is completely balanced and no motivational biases are operating. For example, a positive mood can increase access to positive material in memory (e.g., Bower, 1981). In general, biases in processing a persuasive message are fostered when the message contains information that is ambiguous or mixed rather than clearly strong or weak (Chaiken & Maheswaran, 1994).

Finally, just because some motivational or ability factor results in biased information processing, this does not mean that a biased judgment will result because people sometimes attempt to correct for factors they believe might have unduly biased their evaluations (e.g., Martin, Seta, & Crelia, 1990; Petty & Wegener, 1993; Wilson & Brekke, 1994). The available research suggests that corrections can proceed in different directions depending on recipients' theories of how the biasing event or stimulus (e.g., an attractive source) was likely to have influenced their views. According to the flexible correction model (Petty & Wegener, 1993; Wegener & Petty, 1997), in order for corrections to occur, people should (a) be motivated and able to identify potentially biasing factors, (b) possess or generate a naive theory about the magnitude and direction of the bias, and (c) be motivated and able to make the theory-based correction.

Assessing Information Processing

Persuasion researchers have identified a number of ways to assess the extent to which persuasion is based on effortful consideration of information. Perhaps the most popular procedure to assess the amount of objective information processing that takes place has been to vary the quality of the arguments contained in a message and examine the size of the argument quality effect on attitudes and valenced thoughts (e.g., Petty et al., 1976). Greater argument quality effects suggest greater objective scrutiny. Because strong arguments elicit more favorable thoughts and become more persuasive with thought, but weak arguments elicit more unfavorable thoughts and become less persuasive with thought, thinking enhances the argument quality effect on attitudes and valenced thoughts. If the message processing is biased, however, the size of the argument quality effect on these variables can be attenuated over what it is with objective processing (Nienhuis, Manstead, & Spears, 2001; Petty & Cacioppo, 1986); this is because when engaged in biased processing, people may fail to appreciate the merits or demerits of the arguments (e.g., seeing strengths in even weak arguments and finding some flaws in strong ones).

When biased processing is an issue, there are other means to gauge the extent of thinking. In particular, one can assess the mere number of issue-relevant thoughts generated (Petty, Ostrom, & Brock, 1981). High elaboration conditions are associated with more thoughts (e.g., Burnkrant & Howard, 1984). Also, correlations between message-relevant thoughts and postmessage attitudes tend to be greater when argument scrutiny is high (e.g., Chaiken, 1980; Petty & Cacioppo, 1979b), although other variables, such as the confidence people have in their thoughts, can affect this correlation (Petty, Brinol, & Tormala, 2002). Finally, high message elaboration can produce reading or exposure times longer than more cursory analyses (Mackie & Worth, 1989), although longer reading times might also reflect daydreaming rather than careful message scrutiny (see Wegener, Downing, Krosnick, & Petty, 1995, for a discussion of these measures).

RELATIVELY LOW-EFFORT PROCESSES OF ATTITUDE CHANGE

We have now seen that a multitude of variables can determine whether the attitude change context is likely to be one of relatively high or low cognitive effort. First we focus on the specific low-effort processes that can determine whether attitudes will change, and then we turn to high-effort processes.

The low-effort mechanisms of attitude change vary in the extent to which they require conscious processing, ranging
from those relying on automatic associations to those positing simple inferences. Thus, some peripheral processes require somewhat more cognitive effort than do others (Petty & Cacioppo, 1986). Nevertheless, these processes have in common the fact that none of them requires extensive and effortful scrutiny of the central merits of the attitudinal advocacy or position.

**Associative Processes**

Some low-effort attitude change processes are associative in nature—that is, attitudes are often impacted by associations that develop between attitude objects and positive or negative stimuli (i.e., objects and feelings), or even by observations of those associations. Examples of these processes include classical conditioning, affective priming, mere exposure, and balance.

**Classical Conditioning**

One way to produce attitude change in the absence of effortful scrutiny is to associate an attitude object that is initially neutral (e.g., a new product) with stimuli that already have positive or negative meaning. Considerable research has demonstrated that when an initially neutral stimulus immediately precedes another stimulus that already has positive or negative associations, the neutral stimulus can come to be positively or negatively evaluated itself. For example, attitudes toward words (e.g., Staats & Staats, 1958), people (e.g., Griffitt, 1970), and products (e.g., Gresham & Shimp, 1985) have been influenced by their association with pleasant or unpleasant odors, temperatures, sounds, shock, photographs, and so on (e.g., Gouaux, 1971; Staats, Staats, & Crawford, 1962; Zanna, Kiesler, & Pilkonis, 1970). Furthermore, attitudes have been shown to be influenced by the contraction of certain muscles associated with positive and negative experiences (e.g., Cacioppo, Priester, & Bernston, 1993; Priester, Cacioppo, & Petty, 1996; Strack, Martin, & Stepper, 1988). Consistent with the classification of classical conditioning as a low-effort process, conditioning effects have been found to be particularly likely when effortful processing is at a minimum (Field, 2000). Specifically, these effects are enhanced when the stimuli are presented subliminally (DeHouwer, Baeyens, & Eelen, 1994) and when the stimuli have no a priori meaning attached to them (Cacioppo, Marshall-Goodell, Tassinary, & Petty, 1992; Priester et al., 1996; Shimp, Stuart, & Engle, 1991).

**Affective Priming**

Another process that relies on associations between stimuli is affective priming. In this method, also known as backward conditioning, presentation of positively or negatively valenced stimuli immediately precedes rather than follows presentation of target stimuli. These presentations have been found to influence evaluations of the target stimuli. For example, Krosnick, Betz, Jussim, and Lynn (1992) found that subliminal presentation of positive or negative pictures (e.g., smiling people vs. snakes) made subsequent evaluations of target individuals more favorable or less favorable, respectively. Consistent with classification of this change mechanism as a low effort process, these effects have been found to be unaffected by cognitive load (e.g., Hermans, Crombez, & Eelen, 2000) and more likely to occur when the initial affective stimuli can be processed only minimally (DeHouwer, Hermans, & Eelen, 1998) or not at all (e.g., when they have been presented subliminally; Murphy, Monahan, & Zajonc, 1995; Murphy & Zajonc, 1993).

**Mere Exposure**

Research has also shown that the mere repeated exposure of an object can make one's attitude toward that object more favorable even if one does not recognize the object as having been encountered previously (Zajonc, 1968). Kunst-Wilson and Zajonc (1980), for instance, repeatedly presented participants with a series of polygon images and found that even though participants could not recognize which images they had seen before and which they had not, they expressed significantly greater preferences for those they had seen. Additionally, mere exposure effects also occur in patients suffering from Alzheimer's disease (Winograd, Goldstein, Monarch, Peluso, & Goldman, 1999). Some researchers have argued that even when a stimulus cannot be consciously identified as having been encountered, its previous exposure might make it easier to process. This could create a kind of perceptual fluency (Bornstein, 1989; Jacoby, Kelley, Brown, & Jaseckho, 1989) that becomes attached to the stimulus or confused with a positive evaluation of the stimulus. This process only occurs, however, to the extent that the feeling of familiarity is not directly attributed to the repeated exposure. If people attribute the experience of familiarity to the repeated exposure of a stimulus, the mere exposure effect is attenuated (Bornstein & D'Agostino, 1994). Moreover, as with other low-effort processes, the influence of mere exposure on attitudes appears to be increased when the repeated object is low in meaning (see Bornstein, 1989, for a review) or presented subliminally (Bornstein & D'Agostino, 1992), thus reducing or eliminating conscious processing. Similarly, the effect appears to be decreased as conscious processing increases, such as when evaluation apprehension is induced (Kruglanski, Freund, & Bar-Tal, 1996). When meaningful
stimuli are presented (e.g., familiar words or persuasive messages). repeated exposure has been found to accentuate the dominant reaction (e.g., Cacioppo & Petty, 1989; Brickman, Redfield, Harrison, & Crandall, 1972) regardless of whether the reaction is positive or negative. With meaningful stimuli, deliberative analyses can enhance the dominant response, at least until tedium sets in.

Balance

According to balance theory (Heider, 1958), certain cognitive states are associated with pleasantness, whereas other states are associated with unpleasantness. More specifically, balance (harmony) within the elements of an attitudinal system exists when people agree with others they like (or with whom they are closely associated) and disagree with others they dislike (or with whom they are dissociated). Because imbalance is an uncomfortable state (Heider, 1958), people should seek to eliminate it as quickly and easily as possible. In many cases, the easiest way to restore balance is to alter one’s evaluation of one of the elements in the attitude system (Rosenberg & Abelson, 1960; see also Visser, 1994). Unlike the effortful restoration of cognitive consistency associated with dissonance reduction (Festinger, 1957; see subsequent discussion), the alteration of evaluations need not be effortful according to balance theory. In addition to the general preference for balanced relationships among people, objects, and attitudes, research has also shown that people prefer positivity in these relationships (Miller & Norman, 1976). Importantly, the changes people make to ensure balance and positivity do not require thoughtful consideration of the central merits of the attitude objects in the system (see Insko, 1984; Newcomb, 1968, for further discussion).

Inference-Based Processes

Low-effort attitude change processes can also be more inferential in nature rather than a result of the operation of affective or associative processes. In other words, people sometimes base attitudes on simple inferences that do not require considerable cognitive processing. The use of balance principles can be considered inferential if people reason that they will feel better if they adopt the attitude of a liked other. Two other inferential rules are to infer one’s attitude from one’s own behavior and to rely on simple heuristics, or decision rules, that circumvent effortful scrutiny of information.

Attribution

At a general level, attribution theory addresses the inferences people make about themselves and others after witnessing behaviors and the situational constraints surrounding those behaviors (e.g., Bem, 1965; Jones & Davis, 1965). In some cases, these inferences involve attitudes, such as when individuals infer their own or someone else’s attitudes on the basis of their behavior with respect to some attitude object (e.g., if a person donates money to a candidate, it is reasonable to infer that that person favors the candidate). Although some attributional processes require effortful cognitive activity (see Gilbert, 1998, for a review), others result in relatively quick and simple inferences (e.g., inferring that you like a certain TV program because you smile when you watch it).

According to Bem’s (1965, 1972) self-perception theory, when people are not attuned to their internal states, they can infer their own attitudes from their behaviors just as they might do when inferring the attitudes of others. Self-perception may be more likely to operate under relatively low-effort conditions. For example, Taylor (1975) conducted a study in which women evaluated the photographs of men under high or low personal relevance conditions. Participants also received false physiological feedback about their responses toward some of the men (see Valins, 1966). Taylor found that the women inferred attitudes from their ostensible physiological reactions to a greater extent when personal relevance was low than when it was high (see also Chaiken & Baldwin, 1981; Wood, 1982). This implies that self-perception processes are more likely to operate when the likelihood of thinking about the attitude object is relatively low rather than high.

Attribution theory has also contributed to attitude change research in other ways. In one application called the overjustification effect, people come to devalue previously enjoyed activities (e.g., running) when they are given overly sufficient rewards for engaging in them (e.g., Lepper, Greene, & Nisbett, 1973). If someone is given an extrinsic reward for promoting a proattitudinal advocacy, for instance, their attitude may become less favorable to the extent that they view their behavior as stemming from the reward rather than from the merits of the position they are endorsing (e.g., Scott & Yalcin, 1978). Furthermore, attribution theory has shed light on the processes by which inferences about a message source impact attitudes. For example, Eagly, Chaiken, and Wood (1981) argued that when people are exposed to a persuasive communication, their expectations regarding the source of the communication have an important impact on their acceptance of that source’s position. If the communicator advocates a position that violates his or her own self-interest, he or she is perceived as more trustworthy and the position as more valid. If the communicator takes a position consistent with self-interest, however, he or she is perceived as less trustworthy and the position as less valid. When the position is viewed as valid, it can be accepted with relatively
little scrutiny. However, when the position is seen as possibly invalid, effortful scrutiny of the information is increased (Priester & Petty, 1995). We find it interesting that when a source takes a position that violates his or her group’s interest (rather than individual self-interest) the source is not seen as more trustworthy—perhaps because violating group interest is seen as disloyal. As a result, when an individual advocates a position that violates group interest, people are surprised and this leads to enhanced message scrutiny (Petty, Fleming, Priester, & Feinstein, 2001).

**Heuristics**

The heuristic-systematic model of persuasion (HSM; Chaiken et al., 1989) suggests that when people are engaged in relatively little information-processing activity, they typically evaluate persuasive information in terms of stored heuristics, or simple decision rules based on prior experiences or observations. One such heuristic might be that *length implies strength*. In several studies (e.g., Chaiken, 1987; Petty & Cacioppo, 1984) it has been found that people are more persuaded by messages containing large numbers of examples or arguments, but only when recipients of such messages are relatively unmotivated to engage in extensive thought (e.g., low need for cognition or low personal relevance). Similarly, some people might have stored heuristics pertaining to source credibility, such as *experts are usually correct*, and use of these heuristics is especially potent when personal relevance is relatively low (e.g., Petty, Cacioppo, & Goldman, 1981), distraction is high (e.g., Kiesler & Mathog, 1968), or elaboration likelihood is low for some other reason (see Andreoli & Worchel, 1978; Wood & Kallgren, 1988).

As noted earlier, according to dual process models, source expertise, like other variables, can serve in other roles when the elaboration likelihood is moderate or high—such as affecting the extent of processing or biasing argument processing. If source expertise takes on other roles, its impact under high elaboration conditions can be equivalent to or even exceed its impact under low elaboration conditions (Chaiken & Maheswaran, 1994; Kruglanski & Thompson, 1999; Petty, 1994).

A variety of additional variables have been shown to operate as cues when the elaboration likelihood is low—such as source attractiveness (e.g., Chaiken, 1980) and speed of speech (e.g., S. M. Smith & Shaffer, 1995). These variables also can serve in other roles as the likelihood of elaboration is increased (see Petty & Wegener, 1998, for a review). Chaiken et al. (1989) propose that the use of heuristics depends on their availability (i.e., the heuristic must be stored in memory), accessibility (i.e., it must be activated from memory), and applicability to the judgment at hand (see Chaiken, Wood, & Eagly, 1996). Although this proposition is intriguing, little research has been conducted examining these aspects of heuristics (but see Chaiken & Eagly, 1983). Thus, the operation of some variables that have been attributed to heuristics under low elaboration conditions (e.g., a person’s mood state; Schwarz, 1990; Schwarz & Clore, 1983) might instead have impact on attitudes through some other peripheral process (e.g., classical conditioning). Nevertheless, the heuristic concept has been very useful and has sparked a great deal of persuasion research.

**RELATIVELY HIGH-EFFORT PROCESSES OF ATTITUDE CHANGE**

In addition to the low-effort attitude change mechanisms described previously, attitudes can also be formed and changed through relatively high-effort processes. According to dual-process formulations, these high-effort processes tend to influence persuasive outcomes when motivation and ability to think are relatively high, such as when the issue is of high personal relevance, when people are accountable for their judgments, when they have high knowledge on the topic, when few distractions are present, and so forth.

**Message Learning and Reception**

Early information-processing theories of attitude change held that persuasion was contingent upon a sequence of stages, including attention, comprehension, learning, acceptance, and retention of the information in a persuasive communication (Hovland, Janis, & Kelley, 1953). Thus, a given persuasive appeal would be successful to the extent that the message and its conclusion were processed, understood, accepted, and later recalled. McGuire (1968) later modified this model and focused on two core processes—reception and yielding. According to McGuire, variables could influence persuasive outcomes by affecting either of these processes, and variables might affect each process in different ways. For example, increasing intelligence might increase the likelihood of reception but decrease the likelihood of yielding. Although some research has examined the role of literal comprehension or reception of a message in attitude change (Eagly, 1974), a majority of the research in this domain has addressed the reception-yielding hypothesis by assessing the relationship between attitude change and message recall. Despite the intuitive appeal of the model, considerable research has demonstrated that attitudes and message recall are often weakly related at best (e.g., Anderson & Hubert, 1963; Watts & McGuire, 1964; see Eagly & Chaiken, 1993, for a review).
A number of factors have been proposed to account for the relatively low correlation between attitude change and information recall. One argument, for example, has been that simple learning theories do not account for the fact that different people form different evaluations of information contained in persuasive messages—that is, although one person may be convinced by an argument, someone else might find it to be ludicrous (see Petty, Ostrom, et al., 1981). Yet both might be able to recall the argument. Attitude change has been found to correspond more closely with information recall when individuals’ unique assessments of the information recalled is accounted for (Chattopadhyay & Alba, 1988). Furthermore, attitudes have been found to correlate more strongly with learning and recall when people are not evaluating information on-line at the time of exposure. For example, processing is made difficult (e.g., Bargh & Thein, 1985; Bodenhausen & Lichtenstein, 1987), when people are given non- evaluative processing goals (e.g., Chartrand & Bargh, 1996; Hastie & Park, 1986; Lichtenstein & Srull, 1987; Mackie & Asuncion, 1990), or when they are the type of people who do not spontaneously engage in evaluation (low in their need to evaluate; Tormala & Petty, 2001), the attitude-recall correlation is higher. Under these conditions, when people are asked to report their attitudes, they are forced to first retrieve what they can from memory, and then base their attitudes on the evaluative implications of this information.

Cognitive Response Approach

Following a series of early findings that attitude change and information recall were not consistently related, researchers developed the cognitive response approach to persuasion (e.g., Brock, 1967; Greenwald, 1968; Petty, Ostrom, et al., 1981). According to this approach, attitudes and message argument recall are not always related because persuasion typically depends largely on an individual’s idiosyncratic thoughts in response to a persuasive message (i.e., thoughts about message arguments or other factors such as the tone, source, or context of the message). According to the cognitive response view, when exposed to a persuasive message, people reflect on the message with respect to their preexisting knowledge and prior attitude (if they have one), considering information not contained in the message itself. Three aspects of people’s cognitive responses have proven important.

Extant of Thought

First, investigators have explored determinants of the extent of issue-relevant thinking. As noted earlier in our discussion of the elaboration likelihood model, a number of variables have been found to affect how much people are motivated (e.g., personal relevance) or able (e.g., distraction) to think about a persuasive communication.

Content of Thought

Another aspect of thinking that has garnered considerable research attention is the content of thought. Perhaps the most important dimension in this regard is the overall valence of the thinking that occurs. Researchers typically categorize thoughts as favorable, unfavorable, or neutral, and then compute an overall valence index (e.g., positive thoughts minus negative thoughts; see Mackie, 1987). According to the cognitive response approach, persuasion can be increased to the extent that the message elicits mostly favorable thoughts (e.g., If I raise taxes, the roads will improve and reduce my commute time) and few unfavorable thoughts (e.g., If we raise taxes, I’ll have less money to go out to dinner). On the other hand, people can resist messages to the extent that they generate mostly unfavorable thoughts and few favorable thoughts.

As noted earlier, people can be motivated to generate particular thoughts by external variables such as their mood (Petty et al., 1993) or the message source (Chaiken & Maheswaran, 1994). In a series of studies on resistance to change, McGuire (1964) demonstrated that counterarguing of persuasive messages could be increased by giving people weak attacking messages prior to a stronger attack. The underlying logic of this inoculation approach to resistance is that a small dose of an attacking virus (i.e., a weak challenge to the person’s attitude that is refuted) motivates the person to build up antibodies (i.e., counterarguments) that can be used against subsequent attacks. Even if an exact defense is not anticipated, people are presumably motivated by the inoculation treatment (i.e., the initial attack and refutation) to defend their attitudes by counterarguing opposition messages in the future. Recent research has shown that having people experience a successful defense of their attitudes can produce greater confidence in the initial attitude. This enhanced confidence renders the attitude not only more resistant to change in the future, but also more predictive of future behavior (Tormala & Petty, in press).

Confidence in Thoughts

In addition to extent and content of thinking, recent research has uncovered a third aspect of thought that influences persuasion—the confidence people have in their own cognitive
responses. According to the self-validation hypothesis (Petty, Briñol, & Tormala, in press), people vary in the extent to which they have confidence in or doubt the validity of the thoughts that they generate to a persuasive message. Although thoughts in which people have confidence have a large impact on attitude change, thoughts in which people have low confidence do not. Thus, this research suggests that favorable thoughts increase persuasion primarily when people have confidence in them. Similarly, unfavorable thoughts decrease persuasion mostly when people have confidence in them. When confidence in thoughts is low, thoughts do not predict attitudes very well even under high elaboration conditions.

Several variables have been shown to affect the confidence people have in their thoughts and thereby to influence the extent of attitude change. For example, in one study (Briñol & Petty, 2001), people who were nodding their head in a yes (vertical) fashion while listening to a message reported more confidence in their thoughts than did people who were nodding their heads in a no (horizontal) fashion. As a result, when processing a compelling message that elicited mostly favorable thoughts, people nodding yes were more persuaded than were people nodding no (see also Wells & Petty, 1980). However, when processing a specious message that elicited mostly unfavorable thoughts, people nodding yes were less persuaded than were people nodding no. In addition to head nodding, the case of generating thoughts affects the confidence people have in them (Tormala, Petty, & Briñol, in press). When people are asked to generate a small and easy number of cognitive responses (e.g., counterarguments or favorable thoughts), they have more confidence in the responses and rely on them to a greater extent in determining their attitudes than when they are asked to generate a higher and more difficult number of thoughts.

Self-Persuasion with No Message

The importance of one's own thoughts in producing persuasion outcomes is highlighted in research showing that self-persuasion can occur even in the absence of an external message. For example, research has demonstrated that persuasion in the absence of a message can occur when individuals are asked to actively present or generate their own messages or even when individuals are simply permitted to engage in thought about an attitude object.

Role Playing

Early research on role playing in persuasion found it to be an effective tool to increase persuasion as well as the resistance and persistence of the resulting attitudes. In one of the earliest role-playing demonstrations, Janis and King (1954) examined the differential effects of having people actively present persuasive arguments versus passively hear arguments presented by others. Results indicated that participants who actively generated and presented messages were typically more persuaded than were those who passively listened to messages. This effect has been replicated numerous times (e.g., Elms, 1966; Greenwald & Albert, 1968; Janis & Mann, 1965).

A number of mechanisms have been proposed to account for these role-playing effects. Janis (1968) proposed a biased scanning explanation whereby individuals, in the process of supporting an attitudinal position, recruit consistent beliefs and inhibit inconsistent beliefs (see also, Kunda, 1990). This interpretation is based in part on the finding that improvisation is an important element in eliciting role-playing effects. King and Janis (1956) showed that a process of active argument generation was necessary to elicit role-playing persuasion effects. Simply reading a set of persuasive arguments to others did not elicit as much persuasion as did extemporaneously elaborating on the message. Presumably, actively generating arguments in favor of a given position leads to the active retrieval of supportive information that is uniquely persuasive to the individual and to the inhibition of nonsupporting information (Greenwald & Albert, 1968; Janis & King, 1954). The information that people self-generate might seem particularly compelling to the generator because of the enhanced effort involved in generation over passive exposure (Festinger, 1957)—or the arguments might seem more compelling simply because they are associated with the self (i.e., an ownness bias; Perloff & Brock, 1980). People might also have more confidence in the thoughts that they generate, leading them to be more influential than are arguments received by others (Petty et al., 2002).

Mere Thought

Some research has indicated that attitude polarization can sometimes occur when individuals simply engage in extensive thought about an attitude object (see Tesser, Martin, & Mendolia, 1995, for a review). Attitude polarization following thought requires a well-integrated and consistent attitude schema (e.g., Chaiken & Yates, 1985; Tesser & Leone, 1977): otherwise, thought leads to attitude moderation. This relationship appears to be bidirectional—that is, just as having a consistent schema fosters attitude polarization with thought, simply thinking about an issue also tends to increase schema consistency via the generation of schema-consistent cognitions and the reinterpretation of inconsistent cognitions (e.g.,
The attitudinal consequences of mere thought are dependent upon the salient subset of information that is the focus of the thought (Tesser, 1978). Attitude change can sometimes occur following thought because individuals focus on selective subsets of information (e.g., Levine, Halberstadt, & Goldstone, 1996; Wilson, Dunn, Kraft, & Lisle, 1989). For example, when participants are instructed to analyze the reasons for their attitudes, they often focus on those that are easiest to verbalize (Wilson et al., 1989). Consequently, they may often overemphasize the cognitive component of their attitudes to the neglect of the affective component, leading to a momentary attitude shift. Selective focus on a subset of attitude-relevant information increases the impact of that limited subset of information on attitude judgments and can consequently lead to suboptimal decision making (e.g., Wilson et al., 1993; Wilson & Schooler, 1991).

Self-Persuasion as a Result of Dissonance Processes

We have seen that self-persuasion can occur when people are prompted to think by receiving a persuasive message, by doing a role-playing exercise, or by simply being asked to think. Attitude change can also occur when a person’s own behavior motivates him or her to think. A common assumption of many persuasion theories is that individuals have a default motivation of accuracy—that is, people want to hold correct attitudes. However, the elaboration likelihood model and other persuasion theories acknowledge that a variety of biasing motivations can sometimes distort objective information processing. Although a number of these motivations exist, the motive to be consistent is the most studied, and the theory of cognitive dissonance is the most influential of the consistency theories. In its original formulation (Festinger, 1957), dissonance was described as a feeling of aversive arousal akin to a drive state experienced by an individual when he or she simultaneously held two conflicting cognitions. The resulting aversive arousal was hypothesized to instigate attempts to restore consonance among the relevant cognitions. Attempts to restore consistency typically involved very active thinking about the attitude object, and the end result of this thinking was often a change in the person’s attitude.

Dissonance Effects

A large body of research using different experimental paradigms has supported the essence of dissonance theory (see Brehm & Cohen, 1962; Cooper & Fazio, 1984; Harmon-Jones & Mills, 1999; for reviews). Some experimental procedures used to induce dissonance include coxing people to write counterattitudinal essays under the illusion of free choice (e.g., Losch & Cacioppo, 1990), undergoing harsh initiations to join an uninteresting group (e.g., Aronson & Mills, 1959), selecting between two different but equally desirable products (e.g., Brehm, 1956), and eating grasshoppers after a request from a dislikable person (Zimbardo, Weisenberg, Firestone, & Levy, 1965). In these instances, people become more favorable toward the initially counterattitudinal position, the uninteresting group, the chosen product, and the initially distasteful grasshoppers.

Early work in dissonance theory suggested that individuals must directly resolve the cognitive inconsistency by changing their attitudes—generating cognitions to make the dissonant elements more consistent (i.e., bolstering)—or by minimizing the importance of the dissonant cognitions (i.e., trivializing; see Simon, Greenberg, & Brehm, 1995). However, some research has suggested that dissonance can be reduced (at least temporarily) by engaging in virtually any activity that distracts one from the dissonance. For example, individuals appear to successfully reduce their dissonance by affirming even unrelated aspects of their self-concepts (Steele, 1988; Tesser & Cornell, 1991), by consuming alcohol (Steele, Southwick, & Critchlow, 1981), or by watching a comedy film (Cooper, Fazio, & Rhodewalt, 1978). By contrast, individuals avoid receiving even positive information about themselves if it is highly related to the dissonance-arousing event, and when such exposure is forced, the amount of experienced dissonance increases (Blanton, Cooper, Skurnik, & Aronson, 1997).

A number of research studies have supported the hypothesis that physiological arousal follows from situations thought to induce cognitive dissonance (e.g., Elkin & Leippe, 1986; Losch & Cacioppo, 1990), and such arousal has been shown to be subjectively unpleasant (Elliot & Devine, 1994). When the arousal can be plausibly misattributed to some unrelated environmental agent (rather than to the true dissonance-arousing event), dissonance-based attitude change fails to occur (e.g., Fazio et al., 1977; Zanna & Cooper, 1974). However, evidence for the mediational role of arousal in eliciting dissonance-based attitude change is equivocal. Some work, for example, suggests that the experience of dissonance has less to do with arousal per se and more to do with feeling unpleasant (e.g., Higgins, Rhodewalt, & Zanna, 1979; Losch & Cacioppo, 1990). Additionally, in contrast to the predictions of dissonance theory, attitude change following a dissonance induction can sometimes fail to reduce dissonance-based

**Limiting Conditions**

Early research supported the hypothesis that dissonance was experienced when a person had insufficient justification for violating a belief or attitude (Festinger, 1957; Festinger & Carlsmith, 1959). Since the original formulation of the dissonance construct, however, many researchers have imposed limiting conditions on the basic dissonance predictions. For example, some researchers asserted that commitment to the behavior was necessary to elicit dissonance (e.g., Brehm & Cohen, 1962). Additionally, some research indicates that cognitive inconsistency per se is neither necessary nor sufficient to generate dissonance. In an influential new look at dissonance research, Cooper and Fazio (1984) concluded that for dissonance to be aroused, an individual must be responsible for engaging in an action that has negative or undesired consequences. If an individual engages in a counterattitudinal action that has no apparent effect (e.g., Collins & Hoyt, 1972; Cooper & Worcel, 1970) or a positive effect (Scher & Cooper, 1989), dissonance effects do not occur. Similarly, even a proattitudinal behavior can arouse dissonance if it has unintended, aversive consequences (Scher & Cooper, 1989). Moreover, if the individual does not feel responsibility for the discrepant action because the consequences were unforeseeable (e.g., Cooper, 1971; Hoyt, Henley, & Collins, 1972), dissonance likewise fails to obtain.

**Alternative Views**

Two additional alternatives implicate the self as the essential component in eliciting dissonance. Steele’s self-affirmation theory suggests that dissonance results from any threat to viewing oneself as “adaptively and morally adequate” (Steele, 1988, p. 262). Alternately, Aronson (1969) has argued that dissonance is based on inconsistency between one’s self-view and one’s actions (e.g., *I am a good person and did a bad deed*). These two alternatives differ in their predictions of whether individuals prefer self-verification or self-enhancement. Steele’s self-affirmation theory predicts that people prefer positive feedback even if it is inconsistent with their self-view, whereas Aronson’s self-inconsistency view postulates that people will prefer self-consistent feedback even if it is negative. The views also differ in whether people high or low in self-esteem should be more susceptible to dissonance effects. The self-inconsistency view holds that individuals high in self-esteem should show greater dissonance effects because it is more inconsistent for a person with high self-esteem to engage in bad deeds. The self-affirmation view holds that high self-esteem individuals should show reduced dissonance effects because they have more self-affirmational resources to use to protect against dissonance. Unfortunately, the research evidence on this question is mixed, with some studies showing greater dissonance effects for individuals with low self-esteem (Steele, Spencer, & Lynch, 1993) and other studies showing greater dissonance effects for persons with high self-esteem (Gerard, Blevans, & Malcolm, 1964).

A final alternative is the self-standards model of dissonance (Stone & Cooper, 2001). This model attempts to put the new look, self-consistency, and self-affirmation theories under a single conceptual umbrella by suggesting that dissonance results from the violation of salient normative or idiosyncratic self-standards. According to this model, when dissonant-relevant self-attributes are salient, higher dissonance should result in persons with high than low self-esteem. This is because high self-esteem individuals have higher personal standards and the dissonant behavior is more likely to be inconsistent with these standards. When irrelevant self-attributes are salient, however, the opposite pattern is predicted to occur: this is because the positive irrelevant self-attributes should provide high self-esteem individuals with greater self-affirmational resources to draw upon and therefore reduce the need to engage in self-justification via attitude change. Last, when normative standards are more salient, dissonance should be equal between high and low self-esteem individuals because the same normative standard is determining dissonance arousal for everyone (see Stone & Cooper, 2001, for more detail regarding these predictions).

The true distinctions between the original dissonance theory, the new look formulation, the self-approaches, and the self-standards model are sometimes nebulous, however, and findings consistent with one approach can often be incorporated by another. For example, results that could be inconsistent with the new look formulation include the finding that engaging in counterattitudinal behaviors with no apparent consequences to others (Harmon-Jones, 2000; Harmon-Jones et al., 1996) or engaging in proattitudinal behaviors with positive consequences to others (Dickerson, Thibodeau, Aronson, & Miller, 1992; Prislin & Pool, 1996; Stone, Aronson, Crain, Winslow, & Fried, 1994) can elicit dissonance-based attitude change. However, when aversive consequences are considered to be “anything that blocks one’s self-interest or an event that one would rather have not occur” (Cooper & Fazio, 1984, p. 232; Cooper, 1992) or the violation of some standard (Cooper, 1999), the new look approach can accommodate such results (Cooper, 1992; cf. Harmon-Jones, 2000; Harmon-Jones et al., 1996; Stone & Cooper, 2001).
Results that might be inconsistent with the original dissonance formulation include the finding that proattitudinal behaviors can elicit dissonance when aversive consequences result (e.g., Scher & Cooper, 1989) and that inconsistency might fail to arouse dissonance if the individual has low consistency needs (e.g., Cialdini, Trost, & Newsom, 1995; Snyder & Tanke, 1976). The original dissonance formulation might account for such results by considering the importance of the cognitions creating the inconsistency (Harmon-Jones et al., 1996). Important cognitions should have greater weight in determining dissonance magnitude than should unimportant cognitions. Therefore, if aversive (and inconsistent) consequences are highly important, they could override the effect of the proattitudinal act itself (Harmon-Jones et al., 1996). Similarly, individual differences in importance weights might be accounted for by differential importance weights across individuals.

As should be apparent, the original dissonance formulation and its alternatives appear to be quite flexible in accounting for the wide variety of effects one's behavior can have on one's attitude. The flexibility associated with these different ways of interpreting dissonance findings affords greater explanatory breadth, but it comes with a cost. Specifically, this flexibility makes it difficult to accurately predict when any given individual will experience dissonance—a criticism that has often been leveled at dissonance theory (Aronson, 1992, 1999).

Nondissonance Alternatives

In addition to the dissonance modifications described previously, two nondissonance alternatives have been proposed to account for the findings of dissonance researchers. One such alternative is self-perception theory. As described earlier, self-perception theory (Bem, 1965) holds that individuals often infer their attitudes from their own behavior. Self-perception theory was a formidable opponent to the dissonance view because it was able to account for many of the results attributed to dissonance mechanisms (Greenwald, 1975). It later became apparent that self-perception was a different phenomenon that functioned in different settings and was not simply an alternative explanation for cognitive dissonance (e.g., Beauvois, Burgert, & Mariette, 1995). For instance, in contrast to dissonance processes, self-perception processes appear to operate when one's behavior falls in one's latitude of acceptance and thus elicits little aversive arousal (Fazio et al., 1977). In addition, whereas dissonance reduction has been proposed to require considerable cognitive effort (Festinger, 1957), self-perception processes appear to involve simpler attributional decisions that operate under relatively low-effort circumstances (see attribution section in this chapter).

A second alternative mechanism is impression management. Proponents of this view believe that the attitude change observed in dissonance experiments results not from aversive arousal associated with cognitive inconsistency, but instead from the desire to appear consistent to others (e.g., Tedeschi et al., 1971). Although impression management is a motivational variable that can affect attitude reports, it cannot account for all dissonance phenomena. For example, dissonance-based attitude change can also occur in situations in which attitude reports are private and anonymous and should therefore arouse no impression management concerns (e.g., Baumeister & Tice, 1984; Hoyt et al., 1972).

Combinatory Approaches

Combinatory approaches emphasize the different ways in which individuals assign value to pieces of information and integrate them into a structure of beliefs and attitudes. These models differ in their emphasis on the types of information individuals consider, as well as the means by which the information is integrated. Three different types of models have received the most research attention.

Probabilogical Model

The probabilogical model (McGuire, 1960, 1981; Wyer, 1970, 1974) suggests that beliefs are represented in memory in a network of syllogistic structures that have both horizontal and vertical dimensions. Each syllogism contains two premises that logically imply a conclusion. Consider the following syllogism:

Premise 1: Drinking Brand X beer makes one popular.
Premise 2: Being popular is desirable.
Conclusion: Drinking Brand X beer is desirable.

The conclusion of this syllogism relies on Premises 1 and 2. The vertical structure of the network is formed by related syllogisms. For example, Premises 1 and 2 could each be the conclusion of other syllogisms, and the premises that lead to these conclusions could each be the conclusions of yet other syllogisms. The vertical structure of the network has important implications for attitude change because changing beliefs at one point in the vertical structure can lead to logical change in other elements within the vertical structure.

The network of syllogisms also has a horizontal structure. The horizontal dimension incorporates other syllogisms that
share the same conclusion and can also have important implications for attitude change. In particular, the probabilistic model specifies that belief in the conclusion of a syllogism should be resistant to the extent that many other syllogisms imply the same conclusion. Hence, if a conclusion that Brand X beer is desirable rests on a single syllogism, undermining one belief in the syllogism should easily undermine one's belief that Brand X beer is desirable. However, if multiple premises support Brand X's virtues, undermining a single syllogism should have less of an effect—that is, the more information on which an attitude is based, the more difficult it should be to change the attitude.

Importantly, the models of McGuire (1960, 1981) and Wyer (1970, 1974) do not assume that beliefs in premises or conclusions are all or none. Rather, people can hold beliefs with differing degrees of likelihood. A number of studies have shown that the probability one assigns to a conclusion follows closely what it should based on the laws of probability (Henninger & Wyer, 1976; Rosen & Wyer, 1972; Wyer, 1973). More important is that changes in the belief of a conclusion based on a change in belief in one of the premises can also be predicted to a good extent by the laws of probability (McGuire, 1981). However, logical consistency is not the only factor that determines the strength of people's beliefs. The desirability of the beliefs is also important. This hedonic consistency (McGuire, 1960) leads to a bias such that people tend to see as likely things that are good, and to see as good things that are likely.

One of the most interesting elements of the probabilistic model is its ability to describe how some attitudes or judgments affect others. The model offers one explanation for how attitude change on one issue such as abortion can affect related attitudes such as one's attitude toward contraception (Mugny & Perez, 1991; see also Dillehay, Insko, & Smith, 1966). Changing one attitude can lead to a change in another if the attitudes are somehow related in the syllogistic network (e.g., being derived from common premises; see also Crano & Chen, 1998).

Expectancy-Value Formulations

Expectancy-value theories propose that attitudes reflect an individual's subjective assessment of the likelihood that an attitude object will be associated with positive or negative consequences related to important values (Peak, 1955; Rosenberg, 1956; see Baggozi, 1985, for a review). A particularly influential model, the theory of reasoned action (Fishbein & Ajzen, 1975, 1981), posits that attitudes are a multiplicative function of the desirability of an individual's salient beliefs about an attitude object and the likelihood that those beliefs are true. For example, one's attitude toward a political candidate could be predicted by the expectancy that the candidate will enact certain policies if elected and the value or desirability the individual places on those policies.

Although studied primarily within the framework of behavioral prediction rather than that of attitude change, this formulation has clear implications for the successful developments of persuasive communications. Specifically, the theory of reasoned action implies that attitude change should follow changes in perceptions of the likelihood or desirability of the consequences associated with a position (see Albarracin, in press; Petty & Wegener, 1991, for discussion). And, in fact, a number of studies have indicated that persuasive messages and contextual variables such as a person's mood can produce attitude change by changing the perceived likelihood or desirability of salient beliefs (e.g., Albarracin & Wyer, 2001; Fishbein, Ajzen, & McArdle, 1980; Lutz, 1975; MacKenzie, 1986; Wegener, Petty, & Klein, 1994).

Although some researchers have proposed that virtually all attitude change occurs via the thoughtful consideration of likelihood and desirability assessment (Fishbein & Middlestadt, 1995; McGuire & McGuire, 1991), as we described previously, attitude change can also occur via multiple low-effort processes. Additionally, even likelihood and desirability assessments could be made via low-effort processes. For example, under low-elaboration conditions, individuals are prone to believing whatever they hear (Gilbert, 1991; Gilbert, Tafarodi, & Malone, 1993) and perceiving stimuli positively (Cacioppo & Berntson, 1994; Peeters & Czapinski, 1990). Repeated exposure appears to magnify these propensities. For example, repeated exposure to a piece of information increases perceptions of its validity (e.g., Arkes, Boehm, & Xu, 1991), and as noted earlier, repeated mere exposure to a stimulus increases its desirability (Zajonc, 1968), even when the exposure is subliminal (Bornstein & D'Agostino, 1992).

However, it seems likely that the retrieval and integration of likelihood and desirability assessments of multiple salient beliefs would require effort and would occur only when individuals have the ability and motivation to do so. In support of this reasoning, expectancy-value processes tend to account for more variance in attitudes when motivation (e.g., the need for cognition; Wegener et al., 1994) and ability (e.g., topic-relevant knowledge; Lutz, 1977) to think are high.

Information Integration

In addition to specifying the primary components of attitudes, attitude theorists have also attempted to specify the means by which these components are combined to influence attitudes. As just noted, the expectancy-value formulation of
Fishbein and Ajzen predicts that the information is combined additively to form attitudes—that is, attitudes are postulated to be the sum of the likelihood \( \times \) desirability products for each salient attribute associated with the attitude object. However, other theorists such as Anderson (1971) have proposed that beliefs are combined by an averaging function. In this formulation, each salient belief is weighted by the individual’s assessment of the importance of that piece of information.

Anderson’s averaging model has proven efficacious in explaining the impact of different information on resulting attitudes or summary judgments. The flexibility of the averaging account in accommodating the data is simultaneously its greatest strength and weakness (see Eagly & Chaiken, 1984; Petty & Cacioppo, 1981). By adjusting the weighting parameter of the initial attitude or beliefs in a post hoc fashion, the model can accommodate nearly any finding, but an a priori basis for different combinatorial patterns is not well specified by the model. Distinguishing the averaging account from additive accounts can be exceedingly difficult, and crucial tests have yet to emerge. At present, there is some suggestion that people are more likely to use an adding integration rule when thinking is at the low end of the elaboration continuum (Betsch, Plessner, Schwieren, & Güttig, 2001), but they use an averaging rule when elaboration is higher (Petty & Cacioppo, 1984).

**WHAT HAPPENS WHEN ATTITUDES CHANGE?**

We have now discussed the major low- and high-effort approaches to understanding attitude change. As we noted earlier, all of these approaches focus on changing a person’s explicit attitude—but what role do implicit attitudes play in attitude change? Our previous discussion of implicit and explicit attitudes suggested that a given individual might hold more than one attitude toward the same attitude object—one explicit and one implicit. It has been demonstrated, for instance, that although people tend to report favorable attitudes toward minority group members on some explicit measures, they may simultaneously show evidence of unfavorable attitudes on more implicit measures (e.g., Banaji & Greenwald, 1995; Devine, 1989; Dovidio et al., 1997; Fazio et al., 1995; Wittenbrink, Judd, & Park, 1997). A common explanation for this finding (e.g., Devine, 1989) has been that negative associations develop early in life and remain accessible in memory even after more positive attitudes are later formed. This explanation is consistent with the dual-memory system articulated by E. R. Smith and DeCoster (2000). According to this model, people have two memory systems—a slow-learning system that detects regularities in the environment over time and a fast-learning system designed more for the memory of single events or one-time experiences. Based on this formulation, conflicting attitudes might coexist in different systems.

The possibility of people having both implicit and explicit attitudes has a number of important implications. Perhaps the most relevant implication for attitude change is that it suggests that on some occasions when attitudes appear to change (e.g., when initial negative racial attitudes become more positive), the new attitude might not literally replace the old attitude, but may instead coexist in such a way that the old attitude can resurface under specifiable circumstances (Cacioppo et al., 1992; Jarvis, Petty, & Tormala, 1999; Petty, Baker, & Gleicher, 1991; Wilson et al., 2000). This notion is a radical departure from previous treatments of attitude change—that is, the prevailing assumption of prior models was that when attitude change occurred, the prior attitude was incorporated into the new attitude such that the old attitude ceased to exist and was replaced by the new one. In his information integration theory discussed earlier, Anderson (1971) represented this mathematically as

\[
A_n = \left( w_0 A_0 + \sum w_i s_i \right) / \left( w_0 + \sum w_i \right)
\]

(15.1)

This formula says that a person’s new attitude \( A_n \) following some new information \( s \) is a weighted \( w \) average of the new information and the old attitude \( A_0 \). Stated differently, the old attitude is weighted by its importance along with the importance of the new information, each piece of which has some scale value \( s \). After the integration has taken place, the old attitude is replaced by the new one.

In contrast to the information integration approach, the notion of implicit attitudes suggests that people can have different attitudes toward the same object: one that is explicit and one that is implicit. According to the dual attitude model (Wilson et al., 2000), two attitudes can form when one attitude, \( A_0 \), changes to another, \( A_n \). When this occurs, the original attitude \( A_0 \) does not actually disappear. Instead, according to this model, it becomes implicit and persists in memory along with \( A_n \), which is considered the explicit attitude. The dual attitude model is depicted schematically in the top panel of Figure 15.1. This model represents a case in which a person with an initially negative attitude toward a racial group subsequently becomes positive. Wilson et al. posit that both attitudes can influence responding. Whereas the newer (explicit) attitude affects controlled responses (e.g., direct attitude measures; deliberative behaviors), the older (now implicit) attitude affects responses that individuals are not motivated or able to control (e.g., indirect attitude measures; spontaneous behaviors; see Dovidio et al., 1997; and Greenwald & Banaji, 1995, for similar views).
An alternative to the dual attitude model, the PAST (prior attitudes are still there; Jarvis et al., 1999; Petty & Jarvis, 1998) model was also proposed to account for what happens to the old attitude when attitudes change. The PAST model differs, however, in that it presents a more dynamic picture of the relationship between the old and new attitude, suggesting that both can simultaneously influence responding under certain circumstances. In short, the PAST model, like the dual attitudes model, holds that the prior attitude remains in memory, and because it is consciously rejected can be considered implicit (i.e., people are unaware of currently holding this attitude). However, the PAST model proposes that when a new attitude is acquired, the old attitude takes on a false or "low confidence" tag that must also be activated if the old attitude is to be suppressed (see Gilbert et al., 1993). The bottom panel of Figure 15.1 presents a schematic depiction according to the PAST model of a person who was initially unfavorable toward a minority group and then became favorable. According to the PAST model, to the degree that the false tag is accessible, the newer attitude will guide responses (see also Kawakami et al., 2000). The prior attitude will have an impact, however, if it was never fully rejected (i.e., no false tag or a weak one), if the false tag cannot be retrieved, or if the tag is retrieved but one is still unable to inhibit the prior attitude's influence for some other reason. According to the PAST model, when current and prior attitudes conflict and both are accessible, they should produce ambivalent responding. Thus, the PAST model, unlike the dual attitude model, suggests that current and prior attitudes do not always operate in an either-or fashion. Rather, depending on the circumstances, either one or the other or both could exert some impact. Over the coming years, the viability of dual attitude models for understanding attitude change is likely to receive considerable research attention.

**CONCLUSIONS**

Our goal in this chapter has been to present an organizing framework for understanding the psychological processes responsible for attitude change. Since the earliest empirical studies of attitude change in the 1920s, much has been learned about the underlying determinants and consequences of different attitude change processes. We divided the theoretical processes responsible for modifying attitudes into those that emphasize effortful thinking about the central merits of the attitude object and those that rely on less cognitively demanding processes. This framework allows understanding and prediction of what variables affect attitudes and in what general situations they do so. In addition, this framework helps to place the various minitheories of attitude change in their proper domain of operation. For example, high-effort processes like cognitive responses should account for attitude change in those contexts in which thinking is expected to be high, whereas a lower-effort process such as balance or use of simple heuristics should be more likely to account for empirical effects in those contexts in which thinking is expected to be low. Finally, recognition of an elaboration continuum permits understanding and prediction of the strength of attitudes charged by different processes. Attitudes that are changed as a result of considerable mental effort tend to be more persistent, resistant to counterpersuasion, and predictive of behavior than are attitudes that are changed by a process invoking little mental effort in assessing the central merits of the object.

Although a multitude of processes are involved in changing attitudes, we have a reasonably good handle on what these processes are and when they operate. Yet despite the considerable progress that has been made in understanding attitude change, much work remains to be done. The next decade will likely bring advances in a number of 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 process by which
a variable has an impact on attitudes. More research is needed on the multiple ways in which variables can influence attitudes in different situations. Second, one of the most exciting new domains of inquiry is the interplay between explicit and implicit attitudes. For example, what is the best way to conceptualize and assess implicit attitudes? Under what conditions are implicit and explicit attitudes likely to guide action? Are some attitude change processes more likely to influence implicit attitudes, whereas others are more likely to change explicit attitudes? Work on the topic of implicit attitudes is in its infancy, but the next decade promises to provide more definitive answers to these and other questions.

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