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 can vary in their extremity. For example, one individual might view exercise 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 abstract constructs (e.g., freedom) as well as very concrete and specific things (e.g., a particular brand of chewing gum). Attitudes are of interest because they often drive behavior. That is, people tend to act favorably toward things they like (e.g., purchase, marry) and unfavorably toward things they do not like. 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 thinking, 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.”). Interestingly, people are not necessarily aware of the bases of their attitudes. For example, people can believe that their attitudes are based primarily on cognition when they are in fact based on affect, and both meta- and structural bases of attitudes influence how people respond to persuasive messages (See, Petty, & Fabrigar, 2008). In particular, it is generally more effective to change attitudes that are actually based or perceived to be based on emotion with emotional strategies than with more cognitively rational ones and vice versa (Edwards, 1990; Fabrigar & Petty, 1999; see also Maio & Olson, this volume). Attitudes have also been shown to have some genetic basis, and highly heritable attitudes can be more resistant to change than less heritable attitudes (Olson, Vernon, Harris, & Jang, 2001; Tesser, 1993).
**Attitude Storage vs. Construction**

Implied in our definition of attitudes is the notion that attitudes are stored in memory. However, some researchers have argued that attitudes are not stored in memory and instead are newly constructed when requested based upon salient beliefs, emotions, and behaviors (Wilson & Hodges, 1992; Schwarz & Bohner, 2000). This perspective is rooted primarily in the finding that attitude reports are susceptible to a variety of contextual biases that influence the attitudes reported (see Schwarz, 1999; Schwarz & Bohner, 2000; Wilson & Hodges, 1992).

Although attitude reports are clearly influenced by the immediate context, a strict constructivist view of attitudes seems implausible for a number of reasons. First, as we review below, 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 make little sense if people didn’t have stored attitudes 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), though people can also have automatic evaluative reactions to specific objects (e.g., abstract paintings) they have never seen (Duckworth et al., 2002). In the latter instances, people could be retrieving reactions to salient features of the object (e.g., colors, shapes). 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). Sixth, many studies supporting the idea of attitude construction have relied on unusual tasks and on people’s difficulty in estimating absolute attribute values. This obscures the presence of what is frequently underlying attitude stability (Simonson,
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, or at a minimum they would be theories of attitude construction. In our view, the strict constructivist approach does not seem prudent. In this chapter, attitudes are conceptualized as stored memorial constructs that can be retrieved with more or less difficulty 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 can 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 (e.g., Wilson & Kraft, 1993). Similarly, individuals might 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 likely occur mostly when no stored evaluation is readily accessible or contextual factors contribute to current attitude reports by modifying or shading a retrieved global evaluation (Olson & Fazio, 2003; Petty, Priester, & Wegener, 1994).

Attitude Strength

Although we define attitudes as relatively enduring constructs (meaning they are stored representations), attitudes can certainly change over time. Attitudes can change from being non-existent to having some valence, or 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 in the direction of neutrality. One's attitude can also cross the neutral point and change valence.
Attitudes are fruitfully conceptualized as falling along a continuum from non-attitudes 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). Many indicators of attitude strength have been identified and studied empirically, including attitude accessibility (e.g., Bassilli, 1995; Fazio, 1995), certainty (e.g., Petty et al., 2008), importance (Krosnick, 1988), ambivalence (Priester & Petty, 1996), and elaboration (Petty, Haugtvedt, & Smith, 1995; see Visser, Bizer & Krosnick, 2006, for a review of attitude strength variables). Though 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 (Krosnick, et al., 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). Nevertheless, it seems reasonable that the many strength variables will 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 vs. Explicit Attitudes

Historically, most research on attitudes concerned people’s explicit likes and dislikes, but much recent research has also explored the notion of implicit attitudes. Although there are a number of different definitions of implicit attitudes (e.g., see Greenwald & Banaji, 1995; Wilson, Lindsey, & Schooler, 2000), two aspects have assumed the most importance. First, implicit attitudes are said to come to mind automatically upon the mere presentation of the attitude object. As we will see shortly, these automatic evaluative reactions can differ from the more deliberative assessments that people provide when asked to think about their attitudes.

Other features sometimes attributed to implicit attitudes are that people might be unaware of what they are, where they come from, or what effects they have. Because people are often unaware of the total array of sources and effects of their attitudes – even when they can easily report the evaluations themselves -- these forms of awareness are not good candidates for distinguishing implicit from explicit attitudes (Petty, Wheeler, & Tormala, 2003). The question of whether people are invariably aware of their attitudes has generated some controversy. Some have argued that there is no compelling evidence
that people lack awareness of their evaluations (e.g., Fazio & Olson, 2003). Instead, some researchers suggest that people are generally aware of their evaluations, but that evaluative responses can arise from different processes: (1) automatic attitude activation or associative processes, and (2) more reflective or propositional processes (Gawronski & Bodenhausen, 2006).

The MODE model (Fazio, 1990) suggests that implicit measures tap a stored, underlying automatic evaluative association, whereas explicit measures tap that association plus additional downstream processes (e.g., contextual factors) that can modify expression of that attitude. The meta-cognitive model (MCM; Petty, Briñol & DeMarree, 2007) assumes attitude objects can be linked in memory to both positive and negative evaluations (see Cacioppo, Gardner, & Berntsen, 1997) which in turn can be linked to stored validity tags. Implicit measures tap the links between the attitude object without respect to the validity tags whereas deliberative (explicit) measures also consider the perceived validity of the evaluative associations along with any contextual factors operating. The Associative Propositional Evaluation (APE) model (Gawronski & Bodenhausen, 2006) takes a more process-oriented view by suggesting that implicit evaluative responses are constructed from the affective associations elicited by the attitude object, and these activated associations can differ substantially depending on the context. Propositional processes are then thought to modify the explicit expression of these associations depending on the assessed validity of those activated associations at the time of attitude assessment.

Measurement of Attitudes

Researchers have developed a multitude of ways to measure attitudes (see Eagly & Chaiken, 1993; Maio & Olson, this volume). Measurement of attitudes is important for determining what people’s current attitudes are and whether or not they have changed. A longstanding distinction about attitude measures is 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. 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. These measures do not make it obvious that attitudes are being assessed. 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 (e.g., 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, Crites, Bernston, & Coles, 1993), and physical behaviors like non-verbal 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).

Direct and indirect measurement methods differ in the extent to which it is obvious that an attitude is being assessed, but such measures can also differ in other ways such as in the extent to which they permit deliberative responding (Vargas, von Hippel, & Petty, 2001). Typical direct measures allow some time for making an attitude report whereas some indirect measures aim to tap more spontaneous evaluations. Indirect measures that attempt to assess an automatic attitude are often referred to as *implicit measures* whereas direct measures that allow for some deliberation are often referred to as *explicit measures* (see Petty, Fazio, & Briñol, 2009; Wittenbrink & Schwarz, 2007; for reviews). When defined in this way, implicit measures are sometimes said to assess implicit (automatic) attitudes, whereas explicit measures are said to assess explicit (deliberative) attitudes.

Much research has focused on the utility of implicit and explicit measures for predicting behavior. Often, explicit and implicit measures lead to the same conclusion about a person’s attitude and in these cases would predict the same behavioral outcomes (cf., Greenwald, Poehlman, Uhlman, & Banaji, 2009). When the two measures yield different attitudes, the explicit attitude measure tends to be better in predicting deliberative behaviors (e.g., jury voting) whereas the implicit attitude measure tends to be better in predicting spontaneous behavior (e.g., seating distances; Dovidio et al., 1997; 2000). Vargas et al. (2001) argued that this is because 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).
Furthermore, if implicit measures tend to tap attitudes that are more accessible than explicit measures, this would also help to explain this result (Dovidio, et al., 2000). For example, Fazio’s (1990) MODE model suggests that highly accessible attitudes will influence behavior when motivation and opportunity to evaluate the consequences of one’s actions are low, but that less accessible attitudes can influence behavior when motivation and opportunity are high. Generally, implicit and explicit measures each serve as independent predictors of behavior above and beyond the other, suggesting that they both provide input into most action (Greenwald, et al., 2009). We return to the utility of implicit and explicit measures of attitudes at the end of this chapter.

**Attitude Change: An Overview**

Now that we have examined some important definitional and 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 (see Briñol & Petty, 2011, for a history of the field).

The focus of theories of attitude change to date has mostly been on understanding how to produce change in explicit or deliberative attitudes, though research is accumulating rapidly on methods of changing implicit or automatic attitudes. In general, it appears that each technique that has worked to change deliberative attitudes has also worked to change automatic attitudes, though some techniques might work a bit better in one domain than the other (e.g., Rydell & McConnell, 2006; see Briñol, Petty, & McCaslin, 2009, for a review). Because the change techniques are similar across the two kinds of measures, we make no further differentiation in discussing them. In general, an attitude change technique is deemed effective to the extent that it modifies either a person’s self-report of attitudes or the attitude assessed with a more indirect or implicit measure. For example, if a person is neutral toward an abstract symbol prior to the change treatment, but is more favorable afterward, attitude change was successful.

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 meta-framework from which to understand the moderation and mediation of attitude change effects, and explain how the same variable (e.g., source credibility, emotion) 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 competitors or contradictory, but operated 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, though the explanatory language and sometimes the assumed mediating processes vary (Eagly & Chaiken, 1993; Petty & Wegener, 1998). After describing the Elaboration Likelihood Model of persuasion and reviewing some prominent factors that determine whether people will tend to exert high or low amounts of mental effort in a persuasion situation, we next describe in more detail the persuasion processes that tend to require relatively low versus high amounts of mental effort.

The Elaboration Likelihood Model of Persuasion

The Elaboration Likelihood Model of persuasion (ELM; Petty & Briñol, 2011; 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 will assess issue-relevant information in relation to knowledge that they already possess, and arrive at a reasoned (though not necessarily unbiased) attitude that is well articulated and bolstered by supporting information (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 (e.g., not at impactful on behavior) than attitudes that are changed the same extent by high effort processes (see prior discussion of attitude strength).

The elaboration likelihood continuum incorporates both a quantitative and a qualitative distinction (see Petty, 1996; 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 will be 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 just the first argument in a message, but not the remaining arguments), or less effortful examination of all of the information. However, the ELM holds that when the elaboration likelihood is low, people also can 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 low effort processes section of this chapter we describe a variety of relatively low effort mechanisms that can produce attitude change.

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 tradeoff 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 tradeoff hypothesis implies a number of things. First, at most points along the continuum various change processes can co-occur and jointly influence judgments. Second, however, movement in either direction along the continuum would tend to enhance the relative impact of one or the other process (e.g., effortful scrutiny for merit versus 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. But the mechanism by which this happens can vary 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 et al., 1990). But if the message is uplifting and pleasant, happiness can increase message processing over neutrality (Wegener, Petty, & Smith, 1995). Other variables similarly can serve in 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 that takes place 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 (Petty & Cacioppo, 1979b; 1990; Thomsen, Borgida, & Lavine, 1995; Johnson & Eagly, 1989; Petty, Cacioppo, & Haugtvedt, 1992). When personal relevance is high, people are more influenced by the substantive arguments in a message and are less impacted 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-conception (Petty, Wheeler, & Bizer, 2000). For example, framing a message as intended for extraverts rather than introverts increases message processing among extraverts (Wheeler, Bizer, & Petty, 2005). Furthermore, simply priming a concept can lead people to identify with that concept and therefore process concept-relevant messages more. For example, simply priming extraversion leads people to process messages framed for extraverts more than messages framed for introverts and merely priming the concept of African Americans can enhance processing of messages framed for Blacks among White college students (Wheeler, DeMarree, & Petty, 2008).

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), and when they expect to discuss the issue with a partner (Chaiken, 1980). In addition, processing is increased when people recently have been deprived of control (Pittman, 1994) or are made to feel powerless (Briñol et al., 2007). 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 such as when an expert source presents surprisingly weak arguments (Maheshwaran & Chaiken, 1991), or when the message does not present the information in a form that was expected (Smith & Petty, 1996). People are more likely to engage in processing information if they hold ambivalent attitudes (Maio, Bell, & Esses, 1996), especially if processing that information will help them to resolve the ambivalence (Clark, Wegener, & Fabrigar, 2008b). Conflict between individuals’ automatic and deliberative attitudes also increases the tendency to process attitude-relevant information (Briñol, Petty, & Wheeler, 2006).

Along with 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). Low need for cognition individuals will engage in thinking, however, if they are sufficiently motivated to do so such as when they are told that the message is simple to process (See, Petty, & Evans, 2009). 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 rather than their relatively inaccessible attitudes (Fabrigar, Priester, Petty, & Wegener, 1998), at least when the message is counter to existing attitudes (Clark, Wegener, & Fabrigar, 2008a).

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 will prove beneficial for processing as long as tedium is not induced (Cacioppo & Petty, 1989; Cox & Cox, 1988). External distractions (e.g., Petty, Wells, & Brock, 1976), fast presentations (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 & Kardes, 1988), placing recipients in an uncomfortable posture (Petty, Wells, Heesacker, Brock, & Cacioppo, 1983), and rendering the message difficult to understand (e.g., Ratneshwar & Chaiken, 1991) all decrease substantive message processing and should increase the impact of low effort persuasion processes. Interestingly, even though a number of studies have examined differences in the actual ability of recipients to process a persuasive 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) might reduce processing not because it interferes with actual ability, but because it interferes with a person’s perceived ability to process (e.g., “it’s probably too complicated for me, so why bother”). On the other hand, individuals high in need for cognition become less motivated to process if the message is described as simplistic and beneath their perceived abilities (See et al., 2009).

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,
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 determines the nature of information processing rather than one variable acting in isolation. 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 vs. 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 people low in need for cognition (Cacioppo, Petty, Feinstein, & Jarvis, 1996; Petty Briñol, Loersch, & McCaslin, 2009). 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 and/or discourage negative thoughts (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. Regarding motivation, the ELM assumes that motivation is relatively objective when no apriori 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 will prefer to hold whatever judgment is forbidden. If balance motives (Heider, 1958) are operating, people would
prefer to adopt the position of a liked source but distance themselves from a disliked source. If impression management motives (Tedeschi, Schlenker, & Bonoma, 1971) are operating, people would prefer to hold whatever position they think would make them look good. 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 determine 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. This is because people sometimes attempt to correct for factors they believe could 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. People not only correct their judgments to render them more accurate, but they can also be motivated to correct by motives for fairness, self-enhancement, and others (e.g. McCaslin, Petty, & Wegener, 2010).

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 to gauge the extent of message processing by 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 valenced message-relevant thoughts and post-message attitudes tend to be greater when argument scrutiny is high (e.g., Chaiken, 1980; Petty & Cacioppo, 1979b), though other variables can affect this correlation such as the confidence people have in their thoughts (Petty, Briñol, & Tormala, 2002). Finally, high message elaboration can produce longer reading or exposure times than more cursory analyses (Mackie & Worth, 1989), though 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 some of 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 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 conditioning, affective priming, and mere exposure.

Classical and evaluative 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; Strack, Martin, & Stepper, 1988). Consistent with the classification of conditioning as a low effort process, these 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).

Some recent work has attempted to separate conditioning into two types – classical and evaluative. The former is based on the early work by Pavlov on teaching dogs to salivate at the sound of a bell by associating it with food. This type of conditioning is based on individuals learning that good or bad things follow the stimulus to be conditioned. When the good or bad things stop, the conditioning effects extinguishes over time. In evaluative conditioning (Martin & Levey, 1978), awareness of the paring of the CS and UCS is not necessary. Perhaps because of this, the conditioned response in evaluative conditioning tends not to extinguish when the UCS is no longer presented (see de Houwer, Thomas, & Baeyens, 2001, for a review). Recent research suggests that evaluative conditioning might even be reliant on relatively simple misattribution inferences similar to the self-perception and heuristic processes that are described shortly (see Jones, Fazio, & Olson, 2009).

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 previously neutral target stimuli. For example, Krosnick, Betz, Jussim, and Lynn (1992) found that subliminal presentation of positive or negative pictures (e.g., smiling people versus snakes) made subsequent evaluations of unfamiliar target individuals more favorable or unfavorable, respectively. Consistent with classification of this change mechanism as a low effort processes, 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 is processed only minimally (DeHouwer, Hermans, & Eelen, 1998) or not at all (e.g., when they have been presented subliminally; Murphy & Zajonc, 1993; Murhpy, Monahan, & Zajonc, 1995). Interestingly, one method (i.e., the Affect Misattribution Procedure) relies on this mechanism to assess individuals’ attitudes indirectly. For example, if people are presented with a stimulus about which their attitudes are unknown (e.g., a picture of the President of the United States), followed by an unfamiliar target (e.g., an unfamiliar
symbol), ratings of the target can be used to infer attitudes toward the preceding stimulus (see Payne et al., 2005).

**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.

Prior exposures could create a *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 feelings of fluency or familiarity are not directly attributed to the repeated exposure. If people attribute those feelings to the repeated exposure, 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), whether this is positive or negative. With meaningful stimuli, deliberative analyses can enhance the dominant response, at least until tedium sets in.

Interestingly, feelings of fluency and familiarity—the mechanisms thought to be responsible for mere exposure effects—have been shown to influence attitudes and persuasion even when they do not stem from mere prior exposure. For instance, messages written in easy-to-read fonts or more clear color
combinations are sometimes evaluated more favorably than those written in difficult-to-read or unclear fonts (e.g., Briñol, Petty, & Tormala, 2006; see Schwarz, 2004; Alter & Oppenheimer, 2009; for reviews).

**Inference-Based Processes**

Low-effort attitude change processes can also be more inferential in nature rather than as a result of the operation of some affective or association process. In other words, people sometimes base attitudes on simple inferences that do not require considerable cognitive processing. For example, people might infer that they should agree with people they like. They can also draw inferences about what their attitudes should be from observing their own behavior and relying on simple heuristics, or decision rules, that circumvent effortful scrutiny of information. We discuss these inferences next.

**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 exits 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. Aside from 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)

**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 they favor 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 is 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 the merits of the position they are endorsing. 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 expectancies 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).

Heuristics. The heuristic/systematic model of persuasion (HSM; Chaiken, Liberman, & Eagly, 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 is that “experts are correct.” In several studies it has been found that people rely on simple heuristics more when they are relatively unmotivated or unable to engage in extensive thought (e.g., low need for cognition or low personal relevance; Chaiken, 1980; Petty, Cacioppo, & Goldman, 1981). Chaiken et al. (1989) proposed 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 is an intriguing proposition, little research has been conducted examining these aspects of heuristics.

Heuristics can stem from many places such as the communicator or the message itself. One message-based heuristic is that “length implies strength.” Thus, when thinking is low, people tend to be more persuaded the more information that is presented regardless of whether that information is strong or weak. When thinking is high, however the merits of information is examined so that more good arguments lead to more persuasion but more weak arguments lead to less persuasion (Petty & Cacioppo, 1984).

In addition to presenting large versus small numbers of arguments to invoke a numerosity heuristic, an intriguing set of studies by Schwarz and colleagues (1991) has suggested that people infer different numbers of arguments are available depending on how easy or difficult it is to generate them. In one study, for instance, Schwarz and his colleagues (1991) asked participants to rate their own assertiveness after recalling either 6 or 12 examples of their own assertive behavior. They found that people viewed themselves as more assertive after retrieving 6 rather than 12 examples. This result was initially surprising because a straightforward application of the availability heuristic would have suggested that people generating 12 instances of assertiveness would have judged themselves to be more assertive than those generating only 6 instances. Schwarz and colleagues reasoned that people also
considered the ease with which the thoughts could be retrieved from memory (see Schwarz, 2004; for a review). The easier it was to generate information in favor of something, the more supportive information people were assumed to infer there must be. Conversely, having difficulty generating thoughts would be associated with perceptions that there is little support available. These inferences about the amount of information available rather than the actual amount of information generated would then drive judgments. Furthermore, because a heuristic was involved, this mechanism was proposed to be most salient when people were relatively unmotivated or unable to think.

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; Petty, Wells, Heesacker, & Brock, 1983) speed of speech (e.g., Smith & Shaffer, 1995), and information about the effort associated with an object or message. For example, when people think a particular poem or painting took more time and effort to create, they tend to provide higher ratings of quality, value, and liking (Kruger, Wirtz, Van Boven, & Altermatt, 2004). Although many heuristics have been suggested to operate under low thinking conditions (e.g., a person’s mood state; an “affect heuristic,” Schwarz & Clore, 1983; Schwarz, 1990) some of these might instead impact attitudes through some other peripheral process (e.g., classical conditioning) rather than as a heuristic. Nevertheless, the heuristic concept has been very useful and has sparked a great deal of persuasion research.

**Priming.** Another low effort means by which attitudes can be shifted is through priming. This method does not create or modify associations between attitude objects and valenced stimuli, nor does it necessarily rely on inferences. Rather, priming procedures can shift attitudes by activating constructs related to attitudes, which then alter the attitude itself. For example, exposure to situations can affect the private expression of attitudes. In one experiment (Berger, Meredith, & Wheeler, 2008), people who were assigned to vote in schools (vs. other locations, like churches) were more likely to support raising the state sales tax to fund education. Social construct primes, such as stereotypes, can also shift attitudes. For example, those primed with the “skinhead” stereotype subsequently report more racist attitudes (Kawakami, Dovidio, & Dijksterhuis, 2003). These effects are especially pronounced among those who have inconsistent or uncertain self-views. For instance, participants primed with the African American
stereotype report more stereotype-consistent attitudes (e.g., liking rap music), especially if they are ambivalent regarding relevant stereotype traits (e.g., believe they are both lazy and industrious; DeMarree, Morrison, Wheeler, & Petty, in press). Similarly, participants primed with the elderly stereotype express more conservative attitudes (consistent with the stereotype of the elderly as conservative), especially if they are uncertain regarding an important aspect of the self-concept (Morrison, Johnson, & Wheeler, 2011). Similarly, participants primed with goal-relevant words (e.g, regarding thirst) are subsequently more persuaded by advertisements targeting that goal, but only when they already motivated to pursue that goal (Strahan, Spencer, & Zanna, 2002). Hence, primes, whether situations, social constructs, or goals, can lead people to hold more prime-consistent attitudes. One mechanism by which this can occur is by people incorporating the primed material into their active self-concept. Once people view themselves as like the primed concept, relevant attitudes can behaviors will follow (Wheeler, DeMarree, & Petty, 2007).

**Relatively High Effort Processes of Attitude Change**

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

**Message Learning/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 was 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 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 the same argument to be ludicrous (see Petty, Ostrom, & Brock, 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, when 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;” Jarvis & Petty, 1996), the attitude-recall correlation is higher (Tormala & Petty, 2001). 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.

**Expectancy/Value Formulations**

Following a series of early findings that attitude change and information recall were not consistently related, researchers shifted toward approaches that attempted to gauge individual’s idiosyncratic reactions to the information presented. Expectancy value theories propose that attitudes reflect an individual's subjective assessment of the desirability of the consequences with which an attitude
object is linked and the likelihood that those consequences will come about (Peak, 1955; Rosenberg, 1956; see Bagozzi, 1985 for a review).

Theory of reasoned action. A particularly influential model, the theory of reasoned action (Fishbein & Ajzen, 1975, 1981), posited that attitudes were a multiplicative function of the desirability and likelihood of the consequences associated with an object or issue, summed across all consequences. For example, one's attitude towards a political candidate could be predicted by the expectancy that the candidate will enact a certain policy if elected and the desirability of that policy, summed across all relevant policies. Though studied primarily within the framework of behavioral prediction rather than attitude change, this formulation has clear implications for the successful developments of persuasive messages. 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 Fishbein & Ajzen, 2010). 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 automatically believing whatever they hear (Gilbert, 1991; Gilbert, Tafarodi, & Malone, 1993) and perceiving stimuli positively (Cacioppo & Bernston, 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 typically require effort and would occur primarily 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, Petty, & Klein, 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 x 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 and a weighted average of beliefs then best predicts the person’s attitude.

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 combinatory patterns is not well specified by the model. Distinguishing the averaging account from additive accounts can be exceedingly difficult, and convincing 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, & Guetig, 2001), but an averaging rule when elaboration is higher (Petty & Cacioppo, 1984).

Cognitive Response Approach
Another approach touting the view that individuals’ own reactions to a message are more important than memory for the message itself was the cognitive response approach to persuasion (e.g., Brock, 1967; Greenwald, 1968; Petty, Ostrom, & Brock, 1981). According to this approach, attitudes and message argument recall are not always related because persuasion typically depends more 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 it with respect to their pre-existing 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.

*Content of thoughts.* Perhaps the most important dimension of thoughts for persuasion 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 is likely to be effective to the extent that the message elicits mostly favorable thoughts (e.g., “If we 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 or the message source. For example, if people are forewarned that a speaker is going to try to persuade them, they typically become motivated to counterargue the anticipated message in advance of receiving it and this undermines the effectiveness of the appeal (e.g., Petty & Cacioppo, 1979a). In a classic series of studies on resistance to change, McGuire (1964) demonstrated that people could be motivated to counterargue an upcoming counterattitudinal message that ordinarily would be effective by initially giving them an easy to counterargue communication prior to the 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.
Amount of thoughts. Another important aspect of thinking is the amount of valenced thoughts generated. 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. As people generate more positive thoughts to a message, persuasion is increased and the more they generate unfavorable thoughts (counterarguments) to a message, persuasion is decreased. Conversely, the more positive thinking can be reduced, persuasion is reduced, and the more negative thinking can be interfered with, the more persuasion is increased (e.g., Petty et al., 1976).

Confidence in thoughts. In addition to the valence and amount thinking that takes place, 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, 2002), people vary in the extent to which they have confidence or doubt in 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. People can also have so much doubt in their thoughts that they tend to form an attitude that is opposite to what their thoughts imply (Briñol, Petty, & Barden, 2007). Although people tend to be more confident in thoughts that point to likely rather than unlikely consequences, confidence is not the same as the likelihood component from expectancy-value theories. As we explain shortly, thought confidence stems from a variety of other sources as well (Petty et al., 2002).

The self-validation idea is part of a growing body of work in social psychology on metacognition, or people’s thoughts about their thoughts or thought processes (Briñol & DeMarree, 2011; Jost, Kruglanski, & Nelson, 1998). One of the first meta-cognitive studies relevant to the use of thoughts was described earlier. Recall that Schwarz and colleagues found that asking people to generate a relatively small (and easy) number of reasons in favor of something led to more influence than generating a large
(and difficult) number of examples. The cognitive response approach would have led to the prediction that the more thoughts in favor of something the more influence that would occur, but the opposite was found. The self-validation idea provides one explanation for this finding. Specifically in a series of studies, Tormala, Petty, & Briñol (2002) found that when it was easy to generate thoughts, people assumed that these thoughts were more valid than when generating them was difficult and thus they relied on them more. Furthermore, consistent with the idea that ease or retrieval effects can stem from a relatively high effort meta-cognitive process rather than a lower effort availability heuristic process, the ease effects were greater when the likelihood of thinking was high rather than low.

After accounting for ease of retrieval effects, various additional studies have found that self-validation mechanisms can account for numerous other variables. For example, in one study (Briñol & Petty, 2003), people who were nodding their head in a “yes” (vertical) fashion while listening to a message reported more confidence in their thoughts than 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 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 people nodding no. Other variables that have been shown to affect the perceived validity of thoughts and thus their use are source expertise, feelings of power, emotions, self-affirmations, body postures, and many others. These variables tend to affect thought confidence when conditions favor high rather than low thinking and the experience of confidence follows or is contiguous with rather than precedes thought generation (see Briñol & Petty, 2009, for a review).

Self-Persuasion With No Message

The importance of one’s one 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 continued 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 hearing arguments presented by others. Results indicated that participants who actively generated and presented messages were typically more persuaded than those who passively listened to messages. This effect has been replicated numerous times (e.g., Elms, 1966; Greenwald & Albert, 1968).

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 while inhibiting 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 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 non-supporting 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 impactful than arguments received by others (Briñol & Petty, 2009).


Mere thought. Some research has indicated that attitude polarization can also 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 bi-directional, such that 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., Millar & Tesser, 1986; Sadler & Tesser, 1973; Tesser & Cowan, 1975).

The attitudinal consequences of mere thought are dependent upon the salient subset of information that is the focus of the thought (Tesser, 1978). Sometimes, attitude change occurs following thought because individuals focus on a selective subset 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, Lisle, Schooler, Hodges, Klaaren, & LaFleur, 1993; Wilson & Schooler, 1991). In addition to structural components of thoughts, the mere thought effect also depends on metacognitive properties such as thought confidence. Clarkson, Tormala, and Leone (2011) found that when individuals find it easy to think (e.g., because enough time is provided), they feel more confident about their thoughts and show the polarization effect. When it is more difficult to think (e.g., because too little or even too much time is provided), thought confidence is reduced and the polarization effect attenuates or even reverses.

Self-Persuasion as a Result of Dissonance Processes

We have seen that self-persuasion can occur when people are prompted to think by a persuasive message, by 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 create dissonance include inducing people to comply with a counterattitudinal request (the induced compliance paradigm, e.g., Losch & Cacioppo, 1990), undergo harsh initiations to join an uninteresting group (the effort justification paradigm, e.g., Aronson & Mills, 1959), and choosing between two different but equally desirable products (the free choice paradigm, e.g., Brehm, 1956). In these instances, people become more favorable toward the initially counterattitudinal behavior, the uninteresting group, and the chosen product.

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, Zanna, & Cooper, 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 arousal (Elkin & Leippe, 1986; Harmon-Jones, Brehm, Greenberg, Simon, & Nelson, 1996).

**Clarifying dissonance effects.** Early research supported the hypothesis that dissonance was experienced when a person had insufficient justification for violating a belief or attitude (Festinger, 1957; e.g., Festinger & Carlsmith, 1959). Since its original formulation, 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 a “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 obtain. 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.

In addition to the new look perspective, three additional attempts at clarifying dissonance theory 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 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; Aronson, 1969).
A third alternative is the Self-Standards Model of Dissonance (Stone & Cooper, 2001). This model puts 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 ideographic self-standards. 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. The flexibility associated with these different ways of interpreting dissonance findings affords greater explanatory breadth, but 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).

Non-consistency alternatives. In addition to the dissonance modifications described above, two non-dissonance 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, Bungert, & 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, Zanna, & Cooper, 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 self-perception section, this chapter).

A second alternative mechanism is impression management. Proponents of this view believe that the attitude change observed in dissonance experiments does not result from the aversive arousal associated with cognitive inconsistency, but instead from the desire to appear consistent to others (e.g., Tedeschi, Schlenker, & Bonoma, 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, Henley, & Collins, 1972).

In closing our discussion of dissonance theory it is notable that specific criticisms of various aspects of dissonance theory research continue to arise. Notably, however, these newer criticisms tend to apply only to particular studies or paradigms (e.g., see Chen & Risen, 2010) and thus do not undermine the dissonance framework in general. For example, one classic dissonance finding is that individuals induced to undergo an unpleasant task (a severe initiation) in order to gain an unsatisfying outcome (participating in a boring discussion group) come to like that result more (Aronson & Mills, 1959). The dissonance explanation for this effect is that participants feel motivated to justify their endurance of the initially unpleasant event, so liking for the outcome increases. A non-dissonance alternative explanation (Zentall, 2010) is that the increased liking for the second event follows from a contrast effect. That is, evaluation of the outcome is contrasted away from the initially unpleasant experience and seems more positive than in the absence of that initially negative experience. According to this alternative, any initially aversive event should increase preferences for a relatively more positive stimulus that follows it. In support of this notion, many studies with pigeons and other animals have shown that they prefer stimuli that follow aversive events (Zentall, 2010). This occurs even though these animals presumably have no need to justify their effort. However, these more simplistic mechanisms cannot account for all effects within this or similar paradigms (e.g., liking an unpleasant food more when done at the request of a dislikable than likable source; Zimbardo et al., 1965), and can certainly not account for dissonance effects in other domains. Thus, the theory remains viable today.

Multiple Roles for Variables

We have now described the various low and high effort processes that can determine persuasion and some of the variables that influence these processes (e.g., personal relevance can enhance thinking; source expertise can serve as input to a simple heuristic; emotion can affect thought confidence). It is important to note, however, that most of the variables that we have considered are not relegated to just
one process by which they operate. Rather, in concert with the multiple roles postulate of the ELM, variables operate differently to influence attitudes at different points along the elaboration continuum. Consider source expertise. Expertise is most often thought of as a simple cue that affects attitudes in response to a message without much thinking. And, indeed, expertise can serve in this role when thinking is low (Chaiken, 1980). However expertise takes on other roles at other points along the elaboration continuum. When thinking is high, expertise can be analyzed as an argument or can bias the thoughts that come to mind (Chaiken & Maheswaran, 1994). Learning of the source’s expertise after processing a message can affect confidence in one’s thoughts to the message (Tormala, Briñol, & Petty, 2006). If the source is revealed prior to a message and people are uncertain as to whether the message warrants processing, they may decide to do so based on the source (Priester & Petty, 1995). Notable, the impact of source expertise on attitudes depends on the mechanism involved. For example, the impact of expertise under high elaboration conditions can be equivalent to or even exceed its impact under low elaboration conditions, though the mechanism is different (Chaiken & Maheswaran, 1994; Kruglanski & Thompson, 1999; Petty, 1994). Furthermore, the impact of increasing source expertise can even be negative under some conditions (Tormala, Briñol, & Petty, 2006) such as when expertise enhances confidence in one’s thoughts to weak arguments.

The power of the multiple roles idea is that many variables can serve in these same roles under the same conditions. For example, a variable like happiness, though very different from source credibility, affects attitudes in the same ways. That is happiness can serve as a simple cue when the likelihood of thinking is low or bias thinking when the likelihood is high. Happiness can affect how much thinking occurs if people are unsure of whether the message warrants scrutiny. And, happiness can be evaluated as an argument or serve to validate thoughts if thinking is high and happiness is experienced after thinking is completed (see Petty & Wegener, 1998, for discussion of multiple roles for many persuasion variables). Just as was the case with expertise, whether happiness is good or bad for persuasion depends on the mechanism involved. For example, if happiness is a serving as a simple positive cue, it would enhance persuasion regardless of the arguments presented. However, if happiness serves to validate thoughts, it would enhance persuasion if the thoughts to the message were favorable but
reduce persuasion if thoughts to the message were unfavorable.

**What Happens When Attitudes Change?**

We have described many ways to changes people’s attitudes – from those requiring relatively little thought to those that require much. Dual process theories of persuasion from the ELM to the HSMS and single process theories such as the unimodel (Kruglanski & Thompsen, 1999) agree that the more thought that goes into forming a new attitude, the stronger that attitude will be. That is, the more it will persist over time, resist attempts at changing it, and guide further thought and behavior. Thus, the process by which variables produce attitude change are important to understand not only for the initial effects produced (i.e., whether attitudes move in a positive or negative direction), but also because these processes help to elucidate the long term consequences of persuasion.

Another aspect of attitude change that is important is understanding whether a particular change technique has produced a change in deliberative attitudes, automatic attitudes, or both. Some researchers have argued that some techniques are more effective in changing one type of attitude than another. For example, in one study, a target was paired with subliminal primes of one valence (e.g., negative) and supraliminal information of the opposite valence (e.g., positive). Results indicated that automatic attitudes were responsive to the subliminally presented information, but explicit attitudes were responsive to the supraliminal information, resulting in implicit and explicit attitudes of opposing valence (Rydell, McConnell, Mackie, & Strain, 2006). These types of findings are consistent with what is sometimes called a “dual attitudes” model (e.g., Wilson et al., 2000) in which people are said to be capable of holding separate implicit and explicit attitudes that are formed by separate mechanisms, operate in different situations, and are held in separate memory systems (Smith & DeCoster, 2000).

According to the dual-attitudes model, dual attitudes can form in a number of ways, one of which is when evaluatively inconsistent information is presented in different ways (Rydell et al., 2006). A second way dual attitudes might arise is when an initial attitude changes to another. When this occurs, the original attitude does not actually disappear. Instead, according to this model, it becomes implicit and persists in memory along with the new attitude which is considered the explicit attitude. The dual attitudes model is depicted schematically in the top panel of Figure 1. This model represents a case where
a person with an initially negative attitude toward a racial group subsequently becomes positive. Wilson et al. posit that both attitudes—the old and the new one—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, Kawakami, Johnson, Johnson, & Howard, 1997; and Greenwald & Banaji, 1995, for similar views).

An alternative to the dual-attitudes model is provided by the Meta-cognitive Model (MCM; Petty et al., 2006; 2007) described earlier. The MCM differs from the dual attitudes model in providing a more dynamic picture of the relationship between the old and new attitudes, suggesting that both can simultaneously impact responding under certain circumstances. In short, the MCM, like the dual attitudes model, holds that when an attitude changes, the prior evaluation remains in memory, and because it is consciously rejected, can be considered implicit (i.e., people deny currently holding this attitude). However, the MCM proposes that when a new attitude is acquired, the old attitude takes on a “false” tag that must also be activated if the old attitude is to be suppressed (see Gilbert, Tafarodi, & Malone, 1993). The bottom panel of Figure 1 presents a schematic depiction according to the MCM of a person who was initially unfavorable toward a minority group and then becomes favorable. According to this framework, to the degree that the false tag is accessible, the newer attitude will guide responses. The prior attitude will have an impact, however, if it was never fully rejected (i.e., no “false” tag was developed), if the false tag cannot be retrieved (e.g., is low in accessibility), 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 MCM, when current and prior evaluations conflict, and both are accessible, they should produce ambivalent responding. Thus, the MCM, unlike the dual-attitudes 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. In the latter case, the result is a form of implicit ambivalence, whereby individuals with conflicting old and new attitudes act as if they are ambivalent. Evidence for this underlying ambivalence comes from studies in which discrepancies between implicit and explicit attitudes led to enhanced processing of attitude-relevant information even though people expressed no explicit conflict or
uncertainty regarding their attitudes (Briñol et al., 2006; Petty et al., 2006; see Petty et al., 2011, for a review).

**What Happens When Attitudes Resist Change?**

Although a vast majority of the literature on attitudes and persuasion has focused on understanding mechanisms driving successful attitude change—or revealing the conditions under which attitude change is most likely to emerge—researchers periodically have explored resistance to change (e.g., resistance to persuasive messages) as well. As noted earlier, McGuire’s inoculation theory (1964) represents one of the earliest attempts to better understand resistance, suggesting that practice in counterarguing weak arguments could help bolster or strengthen attitudes against future stronger attacks. More recent work in this domain suggests that people’s metacognitive appraisals of their own resistance experiences can have important implications for their attitudes and future behavior. Thus, when persuasive attacks appear to have had no impact on their target attitudes (i.e., because they failed to change the valence or extremity of those attitudes), they might actually have had a hidden yet important impact.

In particular, research suggests that people can appraise their own success at resisting a persuasive message and adjust their attitude certainty accordingly, becoming more or less certain of their original attitudes than they were to begin with (Petty, Tormala, & Rucker, 2004; Tormala 2008). When people are impressed with their resistance, because they resisted easily or withstood a strong attack or an attack from an expert, they become more certain of their initial attitudes (Tormala & Petty, 2002; 2004; Tormala, Petty, & Clarkson, 2006). By contrast, when people are unimpressed with their resistance, because they believe that they struggled to resist or resisted by illegitimate means, they become less certain of their attitudes (Tormala et al., 2006; Tormala, DeSensi, & Petty, 2007). Moreover, by becoming more or less certain of their attitudes following resistance to persuasion, people’s attitudes can become more or less predictive or future behavior and more or less open to future change. Thus, resistance to change in the face of a persuasive message can belie important changes to an attitude’s foundation that affect the future life of that attitude.

Ultimately, whether people become more or less certain of their attitudes following an encounter
with a persuasive message depends on numerous situational appraisals—including whether people believe they considered both sides of the issue in question (Rucker & Petty, 2004; Rucker, Petty, & Briñol, 2008), whether people believe they thought a lot or just a little about the message or issue (Barden & Petty, 2008; Wan, Rucker, Tormala, & Clarkson, 2010), whether people think of their attitude as one of opposition or support (Bizer, Larsen, & Petty, 2011) or think their reactions to the message converged with or diverged from the reactions of others (Tormala, DeSensi, Clarkson, & Rucker, 2009), and whether people evaluated the message or topic in a way that fits their preferred evaluative style (Tormala, Clarkson, & Henderson, 2011; Tormala & DeSensi, 2008), among others. Of importance, the certainty that arises from these various appraisals is as consequential as the certainty that arises from more structural features (e.g., actually engaging in more thinking; see Petty, Briñol, Tormala, & Wegener, 2007).

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 persuasion in the 1920s, much has been learned about the underlying determinants and consequences of different attitude change processes. After making some important distinctions about implicit versus explicit attitudes and attitude strength, we divided the theoretical processes responsible for modifying attitudes into those that emphasize effortful thinking about the central merits of the attitude object from those that rely on less cognitively demanding processes. This framework allows understanding and prediction of what variables affect attitudes and in what general situations. In addition, this framework helps to place the various mini-theories of attitude change in their proper domain of operation. For example, high effort processes like cognitive responses or dissonance should account for attitude change in those contexts in which thinking is expected to be high, whereas lower effort processes such as balance or the use of simple heuristics should be more likely to account for empirical effects in those contexts in which thinking is low. Finally, recognition of an elaboration continuum permits understanding and prediction of the strength of attitudes changed by different processes. That is, attitudes that are changed as a result of considerable mental effort tend to be more persistent, resistant to counterpersuasion, and predictive of
behavior than 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, many 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 impact implicit attitudes whereas others are more likely to change explicit attitudes? Work on the topic of implicit attitudes is in the early stages, but the next decade promises to provide more definitive answers to these and other questions.
Figure 1: Dual attitudes (top panel) and meta-cognitive model (bottom panel) depiction of conflicting implicit and explicit attitudes.

**Dual attitudes model**

![Dual attitudes model diagram]

**Meta Cognitive Model**

![Meta Cognitive Model diagram]
References


